INTERDISCIPLINARY CONTRIBUTIONS TO ARCHAEOLOGY

The Scioto Hopewell

and Their Neighbors

Bioarchaeological Documentation and Cultural Understanding

D. Troy Case and Christopher Carr

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D. TROY CASE

North Carolina State University,
Raleigh, North Carolina

and

CHRISTOPHER CARR

Arizona State University,
Tempe, AZ, USA

with contributions by

Cheryl A. Johnston, Beau Goldstein, Rex Weeks, Mark Bahti,
Rebekah A. Zinser, and Ashley E. Evans

Springer

D. Troy Case
North Carolina State University
Raleigh, North Carolina
USA
dtcase@chass.ncsu.edu

Christopher Carr
Arizona State University
Tempe, AZ
USA
christopher.carr@asu.edu

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Cover Design Acknowledgment: Digital painting, “On the Way”, by Christopher Carr, based on portraits of three ceremonial leaders rendered on three copper celts by anonymous Ohio Hopewell artists, compositions of processions of persons rendered on copper breastplates by anonymous Ohio Hopewell artists, and an early photograph of a virgin hardwood forest in the Allegheny Plateau province of Ohio. The three celts bearing the portraits of leaders, from left to right, are: Carr no. C023 Side A, from the Hopewell earthwork, possibly Mound 25, Skeletons 260–261, curated at the Ohio Historical Society, cat. no. 283/351B; Carr no. C301 Side A, from the Edwards Mound Group, 33HA7, curated at the Harvard Peabody Museum, cat. no. 84-6-10/32346; and Carr no. C011 Side A, from the Seip earthwork, curated at the Ohio Historical Society, cat. no. 957/-. Example depictions of processions of ceremonial leaders are found on breastplates Carr B061 Side B, from the Liberty earthwork, curated at the Ohio Historical Society, cat. nos. 7/1.007 and 13716; and Carr B025 Side A, from the Hopewell earthwork, Mound 25, Burial 6, curated at the Ohio Historical Society, cat. no. 283/83C. The portraits and processions were revealed by color and near-infrared digital photography, hybrid color-near-infrared image display, and image contrast enhancement. The full forest photograph is published by Gordon (1969:Frontispiece). Top and bottom border designs are, respectively, a snake-skin design incised on the top of a pottery vessel and a rocker-stamped bird feather design placed on the body of the same vessel, from the Hopewell earthwork, Mound 25, Altar 1 (Moorehead 1922:171, Figure 70). Cover layout by Christopher Carr and Deann Gates.

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To Hopewell people of the Scioto

for your creative spirits and passions in living

Preface

Investing in the future of Hopewell archaeology is the spirit in which this book has been written and is its substance. Our passion to do so derives from our admiration of Hopewell peoples, themselves, and all they achieved. Hopewell peoples of the Scioto valley and their neighbors were remarkable by any measure. Their graceful and powerful artwork, monumental earthen architecture, and knowledge of geometry and astronomy; their social finesse in choreographing ritual performances with many hundreds of persons, local and foreign; the long-lasting intercommunity peace they achieved through the rich and crosscutting social and ritual ties they wove; and their extraordinary sensitivity to and relations with the animal persons and spirit beings with whom they cohabited—each humble the Western mind. For us, it seems only right and worthwhile that an empirical and conceptual path be cleared whereby future archaeological work might help Hopewell peoples to speak better for themselves of their lives, accomplishments, concerns, and disappointments.

This book shares with you the empirical tools and a broad vision for exploring the ways of Scioto Hopewell and other Ohio Hopewell peoples. In these pages and the accompanying CD, we summarize what is known about Scioto Hopewell culture, life, and history as a beginning point, compile four massive data bases for further investigating the culture, lives, and histories of Scioto and other Hopewell peoples in Ohio, present preanalyses of the data to ready researchers for deeper studies, and offer a detailed agenda of pressing empirical issues and intriguing interpretive questions that remain to be addressed in the attempt to understand Hopewell peoples.

The first half of the book provides a synthesis and expansion of current knowledge about the anthropology of Scioto Hopewell peoples: their natural and symbolically interpreted environments, subsistence, settlement and mobility patterns, community organization at several scales, social-political-ritual organization, and world view, and the history of changes of each of these over time. Coming to an understanding of how Scioto Hopewell social-ceremonial life abruptly began and abruptly ended, neither of which were triggered proximally by subsistence or demographic change, is one of the fruits born from attempting the broad synthesis. The ethnohistory presented here is made tangible with over 195 photographs of artistic renderings that Scioto Hopewell peoples made of themselves, of artifacts that marked their social roles and were used in their ceremonies, and of views of their sacred landscape.

The reconstruction of Scioto Hopewell life presented in this book is an integration, maturing, and substantial widening of the ideas developed in the individual, focal studies reported in its sister book, *Gathering Hopewell*, edited by us and published in 2005 by Springer. Here, we make a first attempt to write an integrated "thick prehistory" of Scioto Hopewell peoples. By this is meant a text that empirically and richly describes the lives, lifeways, and motivations of individuals and social groups in their own local context, considering a full spectrum of social, cultural, natural environmental, and historical matters, and personalizing the past with people in active, created, on-the-ground sociocultural roles. In complement, *Gathering Hopewell* focuses on primarily social, political, and ceremonial organization, and spans and compares multiple Hopewell local groups across the northern Eastern Woodlands for this one subject. A number of the social and ceremonial analyses presented in *Gathering Hopewell* for Scioto and other Ohio Hopewell peoples have been reworked for this publication.

The second half of the book presents four massive computer data bases of primary archaeological and ethnographic data that made possible the integrated reconstruction of Scioto Hopewell life summarized here, and that open the way for future archaeological studies and insightful advances. Central is a bioarchaeological data base that documents the mortuary records of over 1000 Ohio Hopewell people and over 75 ceremonial deposits of artifacts buried in 113 mounds and cemetery areas within 52 ceremonial centers across the state—all reported, excavated and provenienced Ohio Hopewell individuals of whom we are aware. The ceremonial centers include well known ones, such as the Hopewell and Mound City sites, and ones that have long been forgotten in the archives of libraries and museum collections. The people are described in detail for their sex and age at death, tombs, body treatment, grave goods, and the spatial organization of their graves by over 500 variables, making fine-grained social and anthropological analysis possible. To support these studies, the bioarchaeological data base is supplemented with three others. One places the individuals and ceremonial deposits of artifacts in spatial context by assembling 84 maps of the layouts of the burials and deposits on mound floors and the spatial arrangement of mounds, embankments, and other earthen constructions within ceremonial centers. A second data base places the 52 ceremonial centers in a regional context. It reproduces 53 detailed-scale Ohio county maps and one state-wide overview map of the locations of Adena and Hopewell mounds and earthen enclosures as recorded in W. C. Mills' (1914) comprehensive *Archaeological Atlas of Ohio*. The third data base collects and systematizes more than 1000 dispersed ethnohistoric accounts of the ceremonial functions, religious and symbolic meanings, and social role associations of 51 kinds of ceremonial paraphernalia and raw materials used by historic Woodland and Plains Native Americans and analogous to ones used by Ohio Hopewell peoples. The accounts are crucial to interpreting the mortuary records in the bioarchaeological data base in terms of the social roles and actions of once living Hopewell people. Together, these four data bases provide researchers with the information necessary to make extraordinarily detailed, personalized, ethnographic-like reconstructions of the social, political, and ceremonial lives and ways of each of several Ohio Hopewell peoples. At the same time, they permit broad-scale cultural comparisons among Ohio Hopewell peoples and contextualizing demographic and ecological inquiries.

The data bases compiled here make possible the study of Ohio Hopewell lifeways, with nearly instantaneous feedback between idea and testing of idea, great detail, and broad comparative coverage in a way that it simply was not previously. Lack of publication of much primary data, geographic dispersion of collections, documentation of individual sites and mounds in a multitude of partial sources by different archaeologists, and inconsistencies among records put stringent practical limits on the kinds of studies that could be made of Ohio Hopewell archaeological records. Assembling the bioarchaeological data base, alone, took 27 months of full-time archival research in seven institutions, and 8 years of continuous computer coding and verification by one to two persons working ten to twenty hours per week. The ethnographic data base took an additional person-year to assemble and tabularize, and the two spatial data bases a half-person year. These overhead costs to fine-grained yet broad-scale investigations are largely eliminated with the publication of the data in this book. We gladly share them with you, with the hope that you and other researchers will use them to help further advance anthropological understanding of Ohio Hopewell peoples and the extraordinary and thought-provoking lives they lived.

CHRISTOPHER CARR
D. TROY CASE
September 22, 2007

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When colleague and friend become interchangeable terms, life is good. The patience, care, guidance, good cheer, and open generosity of all those who supported us in the massive tasks of assembling, checking, and presenting the primary data in this book are deeply appreciated, professionally and personally. Immeasurable, faithful assistance over many years was provided by museum collections curators and staff during extended research stays and long-distance communication cycles to collect and clarify basic data. Central in this effort were the archaeology curators and staff of the Ohio Historical Society, Columbus, where the bulk of the artifacts, human remains, and written documentation reported here are housed. We extend our hearty thanks to Martha Otto, Melinda Knapp, Brad Lepper, Cheryl Johnston, Melanie Pratt, Linda Pansing, William Pickard, and Don Bier at the Society. Equally essential helping hands were offered by Jennifer Pederson, Jarrod Burks (Hopewell Culture National Historical Park); Robert Genheimer (Cincinnati Museum Center); Jonathan Haas, Janice Klein, Wil Grewe-Mullins, Elisa Aguilar-Kutza, Jon Eric Rogers, Jamie Kelly, Scott Demel (Field Museum of Natural History); Gloria Greiss, Scott Fulton, Penelope Drooker, Susan Haskell (Harvard Peabody Museum of Archaeology and Ethnology); Lynn Simonelli (Dayton Society of Natural History, Boonshoft Museum of Discovery); Kasey Eichensehr (Clark County Historical Society, Springfield, OH); Brent Eberhard, Franco Ruffini (Ohio State Historical Preservation Office, Columbus); N'omi Greber (Cleveland Museum of Natural History); James Krakker (National Museum of Natural History); Pattie Malenki (Johnson-Humrickhouse Museum, Coshocton, OH); and Rosemary McCarthy (Museum of the American Philosophical Society).

A number of Ohio archaeologists were instrumental in helping us to identify obscure Hopewell ceremonial centers and to obtain documentation on them: Kent Vickery, Mark Seeman, Robert Genheimer, Robert Riordon, Jeff Carskadden, and Brad Lepper. Robert Connolly guided us in understanding the chronological complexities of the Fort Ancient site and which burials should be attributed to the Middle Woodland component. He generously provided us his transcriptions of field notes by previous excavators of the site, his personal notes that compile published and unpublished information from multiple excavators on specific locations within the site, and personal photographs of artifacts from the Wolfe and Powell deposits at the site. Frank Cowan provided us with summary descriptions of the Wolfe and Powell deposits, the Koenig quartz deposit in the vicinity of the Stubbs earthwork, and the Stubbs earthwork, itself, as well as maps of the site. Teresa Rodrigues provided us with field notes by multiple excavators of the Turner site, with permission of the Harvard Peabody Museum of Archaeology and Ethnology, and her own syntheses of human remains at the Peabody that can be attributed to Turner rather than the Madisonville site. To all these archaeologists we are very grateful.

Several physical anthropologists generously contributed to the HOPEBIOARCH data base their own analyses of the ages and sexes of Ohio Hopewell individuals: Cheryl Johnston, Paul Sciulli, Myra Geisen, Robert Pickering, and Teresa Cadiente. Lyle Konigsberg found and shared with us Charles Snow's original recording forms with his age and sex identifications of crania from several Ohio Hopewell sites. We greatly appreciate the openness and willingness of these researchers to share the results of their osteological studies.

The enormous tasks of coding, verifying, and evaluating the accuracy of information in the HOPEBIOARCH data base on the CD accompanying this book were supported by Beau J. Goldstein, over the course of three years, Ashley E. Evans, over more than a year, and Ed Ritchie during one semester. The conceptual design of the data base was significantly improved by Ashley Evans. She also typed, from their handwritten form, over 700 of the provenience sheets presented in Appendix 6.2. The huge and tedious work of drafting and cleaning up maps of sites, cleaning up and enhancing photographs of artifacts, and creating page layouts of figures was steadfastly accomplished by Rebekah A. Zinser over 2 years. We give a very big thanks to these persons for their major contributions to the book.

The survey and compilation of ethnohistoric literature on the ceremonial uses, social role associations, and social and spiritual meanings of artifacts analogous to those used by Ohio Hopewell peoples, as presented in the appendices to Chapter 11, could not have been accomplished without the tenacious efforts of Rex Weeks and Mark Bahti over a year and a half. Both added substantially to the design of the survey as it proceeded. We are grateful for their enormous, careful, and thoughtful efforts.

The challenge of writing an ethnographic-like and historical description of the lifeways of Scioto Hopewell peoples, as presented in Chapters 2 through 5 and augmented in Chapter 15, was made easier for Chris Carr by a stream of conversations he had with his close colleagues in Ohio and Kentucky. Mark Seeman, Bret Ruby, Paul Pacheco, DeeAnne Wymer, Bruce Aument, Stan Baker, Paul Sciulli, Bob Riordan, Brad Lepper, Berle Clay, and Chuck Niquette each lent open ears and provided insights and data as the substance of these chapters was being mulled over and written. The sage advice of these colleagues is very much appreciated.

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Contents

Contributors

Mark Bahti, M.A., A.B.D. Anthropology Program, School of Human Evolution and Social Change, Arizona State University, Tempe, Arizona 85287-2402.

Christopher Carr, Professor**.** Anthropology Program, School of Human Evolution and Social Change, Arizona State University, Tempe, Arizona 85287-2402.

D. Troy Case, Assistant Professor**.** Department of Sociology and Anthropology, North Carolina State University, Raleigh, North Carolina 27695-8107.

Ashley E. Evans, M.A. Anthropology Program, School of Human Evolution and Social Change, Arizona State University, Tempe, Arizona 85287-2402.

Beau J. Goldstein, M.A., Senior Archaeologist. Transcon Environmental, 3740 E. Southern Avenue, Suite 218, Mesa, Arizona 85206.

Cheryl A. Johnston, Assistant Professor. Department of Anthropology and Sociology, G15B McKee Building, Western Carolina University, Cullowhee, North Carolina 28723.

Rex Weeks, M.A., A.B.D. Anthropology Program, School of Human Evolution and Social Change, Arizona State University, Tempe, Arizona 85287-2402.

Rebekah A. Zinser, M.A, Project Director, Human Osteologist, and Faunal Analyst. Northland Research, 1865 E. 3rd St., Phoenix, Arizona.

Part I

Rationale and Framework

Chapter 1

Documenting the Lives of Ohio Hopewell People: A Philosophical and Empirical Foundation

Christopher Carr and D. Troy Case

How does one come to know another? Ethnographers, social psychologists, historians, biographers, and economists and political scientists of micro decision-making each face this most fundamental issue in exploring and studying the social and individual lives of people. It is no less true of anthropological archaeologists who wish to come to know a past people. In actuality, all human beings share this concern, to the extent that they depend on others and must understand them and adapt to them at some level in the course of social relations.

Rapport with and understanding of another person comes in part from taking the time to experience life together with them, cultivating within oneself an awareness of their actions, responses, and sensitivities in varying contexts, and situating oneself, to the extent possible, in their social and personal worlds. Without taking enough time to experience in detail another and their ways of living life, one's constructed image of them becomes dominated by the contents of projections of one's own unconscious, personality, world view assumptions, and paradigms – an imprisonment in one's own existence and understanding of life without substantial companionship and enrichment from others, and a condition of which psychologists and philosophers of science repeatedly warn. For an archaeologist, openly experiencing and understanding a past people – or a particular individual of the past (e.g., DeBoer 2004; Gillespie 2001; Hodder 2000; McGregor 1941; White et al. 2004) – necessarily implies reconstructing their lives, and the social, cultural, natural, and historical contexts in which they lived, in rich detail. Immersing oneself in such details constrains the range of reconstructions that can logically be made, and gives at least the hope that the material voices of a past people will speak louder than one's own presuppositions, and will help to jar one into awareness of them.[1]

Experiencing others of the past in their own terms entails the discipline that we previously have called *thick prehistory* (Carr and Case 2005a:19–21). By this we mean the detailed describing of individuals, social groups, events, actions, patterned behaviors and ideas, and their interrelationships within a local social, cultural, natural, and historical context. The thick prehistory approach has four key elements, which are followed in this book. First is carefully exploring and keeping close to the data while *empirically and richly describing* people and their culture and lives. Second is *personalizing* the past with people in their active, created, on-the-ground, sociocultural roles. Archaeologically identifying and defining the roles of past people provide social substance and dynamism to their archaeological records, and discourage the projection of one's own self, culture, and implicit patterns of thought and behavior onto them. The rights, duties, functions, and latitude of a social role define the domains and forms of action of those people who take on the role, potentially lead to their action in a normative or negotiated manner, and point toward possible motivations.[2] Third, thick prehistory attempts to *contextualize* the ideas and practices of past people within their own *local* social, cultural, natural, and historical milieux. It is within the context of local conditions and demands, and individuals' needs that may be particular to a place and time, that insights are fostered into the motivations behind the specific actions, patterns of behavior, and selected ideas of the people there. Locally contextualizing the ideas and ways of a past people is an essential vehicle for experiencing and understanding them in a manner that is faithful to them rather than as largely an extension of oneself and one's own cultural, natural, and historical milieux. Finally, thick prehistory involves tracking the *local history* of people and contextualizing them within it. Detailed sequences of events and historical contingencies can give strong insights into the motivations of past peoples.

Finding the faces, actions, and motivations of past people, as individuals, as social persons within varying roles, and as larger social formations, and within their local social, cultural, natural, and historical milieux, is essential to a fully realized, anthropological archaeology. As an aspect of basic archaeological observation and identification, it is a precondition to faithfulness in sociocultural reconstruction – of coming to experience and know a people prior to trying to interpret or explain their ways with the additional vantages of high theory or cross-society comparison in heavy application.[3] Thick description of past people in context is also necessary to the potent wedding of scientific, humanistic, and historical approaches of understanding – a union to which contemporary and earlier archaeologists have aspired (Carr and Neitzel 1995:10, 15; Flannery 1972:409; Hall 1977, 1997; Hawkes 1968:255, 260–262; Hodder 1987; Hogarth 1972:304; Wheeler 1950:128–129). Focusing on dynamic social roles in the context of local conditions, demands, and needs encourages the study of persons and their motivations, as do the humanities, but also opens exploration of the structural and processual regularities that those conditions, demands, and needs may produce, as studied in the social sciences by scientific method. Thick, contextualized descriptions of people, their motives, and their milieux over time also provide the foundations for developing understandings of the kinds that the discipline of history seeks: seeing how cultural and behavioral changes are generated by personal actions and motives that are constrained or encouraged by and interact with local, temporally contiguous events and factors. It is in the wholeness of humanistic, scientific, and historical points of view combined that an individual or a people can be made understandable and that this fundamental aim of anthropological archaeology can be achieved.[4]

This book has two aims. The first is to describe in rich, ethnographic-like detail and genre, to the extent possible, the culture, lifeways, environment, and history of a remarkable set of peoples: the Hopewell who lived in the Scioto valley and its tributaries in Ohio in the first centuries A.D. (Figure 1.1). These were the most socially complex and materially vocal of Native Americans who resided in Eastern North America at the time, and for centuries before and afterward. The Scioto Hopewell built monumental, 80 acre earthworks aligned precisely to events in the day and night skies, masterfully worked glistening metals and semiprecious stones into intricate and elegant symbolic designs, and honored their dead with these vocal artifacts in community burial houses two-thirds the size of a football

Figure 1.1. A Scioto Hopewell person costumed as a feline, with eared headdress and facial tattoos or scarification for whiskers. From the Mound City earthwork, Mound 8, altar. See credits.

field. The world view and rituals of the Scioto Hopewell inspired their artistic exploration of the principles of three-dimensional perspective a thousand years before Renaissance artists discovered them in the Old World and unlike the artistic norms of any other Native American people. The Scioto Hopewell's intricate social order of complementary and crosscutting groups and their religious-based concepts of alliance afforded them three centuries of peace among both individuals and communities, as revealed by the lack of evidence for interpersonal violence in their skeletal record and many other lines of evidence. All of these civilized qualities of Scioto Hopewell life perhaps seem out of place among a people who were hunter-gatherer-horticulturalists and lacked any centralized leaders, making Hopewell peoples and their accomplishments all the more curious, as well as challenging to anthropological theory.

The second goal of this book is to systematize and present for use by other researchers the massive, largely unpublished mortuary-archaeological and physical anthropological information and other supporting data that exist on the Scioto Hopewell and their Hopewellian neighbors across Ohio (Figure 1.2). These data have made possible the fullnesss of the cultural reconstructions of Scioto Hopewell life that we present here, and of the lives of Scioto and other Ohio Hopewellian peoples that we and our colleagues have previously offered in the book, *Gathering Hopewell: Society Ritual, and Ritual Interaction* (Carr and Case 2005c). Through our presentation of this information, we remove the extraordinarily heavy burdens of data acquisition and organization that previously have constrained archaeologists from making in-depth, empirical inquiries into the social and political lives, rituals, and religious concepts of Ohio Hopewellian peoples generally. In so doing, we allow evaluation of our findings, and encourage further detailed studies and deeper, faithful understandings of these culturally rich peoples.

The title of our book expresses both of its aims: to develop an understanding of Scioto and other Ohio Hopewell peoples through thickly describing them, and to empirically document their bioarchaeological record. Yet, the title also bears a deeper meaning and goal of this book: to foster an attitude of respect for Ohio Hopewell peoples and to accept them for who they were – regardless of whether their evidenced ways fit neatly with general anthropological theoretical expectations, ethnohistorical Woodland Native American analogs, or popular interpretations. By "Cultural Understanding" in the title we mean both "*an* understanding" of Ohio Hopewell peoples and to "*be* understanding of" Ohio Hopewell peoples – both noun and verb.

To develop an understanding of a past people that is faithful to them requires the researcher to be understanding – to respect their material voices and to leave behind his or her own Western and personal preconceptions, regardless of how comfortable those ideas feel. In turn, both forming an understanding and being understanding of a past people are encouraged by, and indeed cannot occur without, the researcher delving deeply into the details of their material remains and the details of the lives that those remains imply – that is, listening carefully and sincerely to others of the past – the discipline of thick prehistory.

Figure 1.2. Most excavations of Ohio Hopewell ceremonial sites occurred from the 1840s through the 1920s. Unsystematized and/or unpublished information on site layouts, features, artifacts, and skeletal series from these investigations and some later ones has discouraged the analysis and cultural interpretation of the material legacy of Ohio Hopewell peoples. Here, Warren King Moorehead (*front row, second from right, in suit*) and his field crew stand before a deposit of 69 copper and iron celts and 92+ copper and iron breastplates that covered Skeletons 260 and 261 in Cut 3 of Mound 25 at the Hopewell earthwork. See credits.

REQUISITES FOR REVEALING THICK PREHISTORIES

Doing thick prehistory as a means for coming to know, understand, and respect a past people entails more than the attitude and strategies described above for approaching the archaeological record. It has very practical implications: the nature of the archaeological records to which it is amenable, the large amounts of data it requires, and the archaeologist's budget, tenacity, and talent for team research. Here we consider each of these three practical matters.

Revealing the social and cultural lives of a people in detail requires that their material record be socially and culturally vocal, intentionally or not. When some certain aspect of a past people's lives is unexpressed materially, the researcher is left to surmising its nature from direct culture-historical analogies, crosscultural generalizations and correlations, and/or theoretical models that contextually seem appropriate. These strategies, of course, do not acknowledge the cultural inventiveness of individual peoples. They also open the way to laying interpretations upon a people that coincide with the researcher's own views on cultural life and that may not be true to the people.

Ohio Hopewell societies, fortunately, were very expressive materially about their social, political, and spiritual lifeways and beliefs.

Claws, talons, foot bones, teeth, and jaws of various animal species – their "power" parts – marked the clan affiliations and clan eponyms or totems of deceased persons in their graves. Quartz crystals and cones, sucking tubes, sets of awls, barracuda jaw scratchers and conch shells, and geometric symbols of copper and mica reveal the roles of shaman-like leaders respectively in divining, healing, processing corpses, leading public ceremonies, and integrating their people with the cosmos. Metallic earspools and breastplates, combined with demographic information on who they accompanied at burial and how commonly, indicate the developing presence of ceremonial sodalities in Scioto Hopewellian life, while changes in the relative frequencies of metallic headdresses of various forms seem to mark a shift in the nature of community-wide leadership from self-designed, shaman-like positions to more professionalized, priest-like ones. Spatial distributions of grave goods and persons of various age-sex classes among the rooms of charnel houses evidence multiple local communities that came together to bury their dead under one roof to solidify intercommunity alliances (Carr 2005a; Carr and Case 2005b; Thomas et al. 2005; Weets et al. 2005).

Socially and culturally expressive material records like these make it possible to begin to know and experience the lives of past people in their own social and cultural terms. This situation can be contrasted with, for example, Classic period Hohokam cemeteries, where deceased persons were seldom buried with indicators of their social roles and the most common grave goods were ceramic vessels that, for now, are largely silent about the social positions of individuals (Brunson 1995; Mitchell 2003:108–110, 115; Mitchell and Brunson 2001:53, 55). In general, societies in which "corporate" strategies of leadership and organization of social groups predominate are less socioculturally expressive materially than societies where "exclusive", "network" strategies and organization are key (Blanton et al. 1996; Feinman 2000).

Second, doing thick prehistory practically also entails the building of very large and systematized archaeological collections and computerized data sets, which encompass many sites over the expanse of a regional-scale landscape. Documentation at the scope of the region is necessary because this is the scale at which a society and its closely interacting neighbors operates, in the pre-state contexts that we consider here. Data from multiple sites, rather than some single "typical" or "representative" site within the area, are required because, in the course of the lives of a people, varying subgroups of them will carry out differing suites of social and cultural activities at different locations. The regional and multi-site requirements for doing thick prehistory follow from the "partitive" view of culture in distinction from the "normative" view (Binford 1964a; Gearing 1958): different individuals "participate in" different aspects of culture at different locations across a region through the varying roles they take on at those different locations, rather than each share all of culture and its norms and express all of them at all locations.

Although the partitive view of culture was first applied in archaeology to define regional, multi-site, settlement-subsistence systems (Struever 1968a; Winters 1969), it has been extended since then to consider regional, multi-site mortuary programs (Buikstra 1976; Carr 2005b), ritual landscapes (Buikstra and Charles 1999; Carr 2005a, b), and communities (Ruby et al. 2005; Charles 1995). These more recent concepts, like the settlement-subsistence systems viewpoint, make it clear why doing thick prehistory requires large, regional-scale data sets.

Specifically, a single society may produce multiple cemeteries of diverse kinds over a landscape for burying different subsets of its members who held different social roles, died by different means, were believed to be bound for different afterlives, or were distinguished in any of a variety of other social, philosophical-religious, circumstantial, or physical ways (Carr 1995). Similarly, one society may construct over its lands many and distinct kinds of ritual sites that vary in their function, the social segments that use them, and the roles enacted at them. Further, a community need not be a compact group of people who live in a common place but, instead, multi-scalar in geographic extent and organization. Beyond nucleated or dispersed "residential communities" (Murdock 1949a:79–80), which are held together by common residence and perhaps kinship, race, dialect, and/or other cultural criteria, may exist geographically broader "sustainable communities" or networks. Within these networks, mates, labor, food, and other material resources are exchanged fairly regularly to offset and buffer against local variations in demography or in subsistence productivity (Mahoney 2000). Multiple residential communities, or segments of them or sustainable communities, can also seek out each other to form what have been termed "symbolic communities" (Charles 1995; Ruby et al. 2005) – self-identifying social units of negotiated affiliation and spatial and temporal fluidity that are created in order to meet mutual political, economic, and or religious goals, such as regulating irrigation or warfare (Abbott 2000; Rice 1998; Chagnon 1968) or maintaining the cosmos (Rappaport 1968, 1971). The regional and multi-site expanses of subsistence-settlement systems, some mortuary programs, ritual landscapes, and multi-scalar communities each require the collecting and analyzing of huge data sets to begin to unfold the thick prehistory of a past people and to experience the lives in their own terms rather than our own.

Finally, the large, systematic, regional-scale archaeological collections and computerized data sets that are necessary to do thick prehistory, as well as the multifaceted analyses of such data and their reporting that are involved, practically require an archaeologist to have tremendous focus over the long-term on a past people, a talent for team research and harnessing the imaginations and labors of fellow workers toward a unified research goal, and extensive, stable fiscal and infrastructural support, especially if field excavation is involved (Struever 1968b, 2000, 2004; see also Carr and Case 2005c:Dedication to Stuart Struever). Foundational to all of these is the archaeologist's deep curiosity about a past people, and a passion to come to know and experience their lives and motives in rich detail – the goal of doing thick prehistory.

THIS BOOK AND OHIO HOPEWELL PEOPLES

It is within the understanding, above, of how one comes to know another, with all its archaeological entailments when concerned with people in the past, that this book emerges. Our aspirations here are to write, for the first time, a holistic description of Scioto Hopewell cultural life, and then to provide detailed, regional-scale, empirical documentation of the bioarchaeological record of the Scioto Hopewell and neighboring Hopewell peoples in Ohio. Our documentation, we hope, will allow other researchers to add to the thick prehistory of Scioto Hopewell life that we present here and to explore the similar yet differing lifeways and beliefs of other Ohio Hopewellian societies in their own individual terms. We hope that both our description of Scioto Hopewell cultural life and the rich data that we offer will create opportunities for archaeologists to situate themselves in the midst of the social and personal worlds of Hopewell peoples, to experience their lives in greater detail and depth than might otherwise be possible, and to become more sensitive to their actions, beliefs, and motivations in Hopewellian cultural terms.

In Ohio, Hopewellian peoples lived in a suite of communities in parts of primarily the Scioto, Paint Creek, Muskingum, Little Miami and Great Miami valleys in the southern half of the state (Figures 1.3, and 1.4). As hunter-gatherers and swidden agriculturalists (Wymer 1996, 1997), the households of a community were dispersed over the landscape rather than concentrated within villages (Figure 1.5).

In the Scioto valley, people of a community were held together and regulated socially, and multiple communities were sometimes integrated, through ties of kinship and marriage, membership in sodalities that crosscut kinship and residence, complementarity in leadership roles, gender role distinctions to a degree, and participation together in ceremonies of multiple

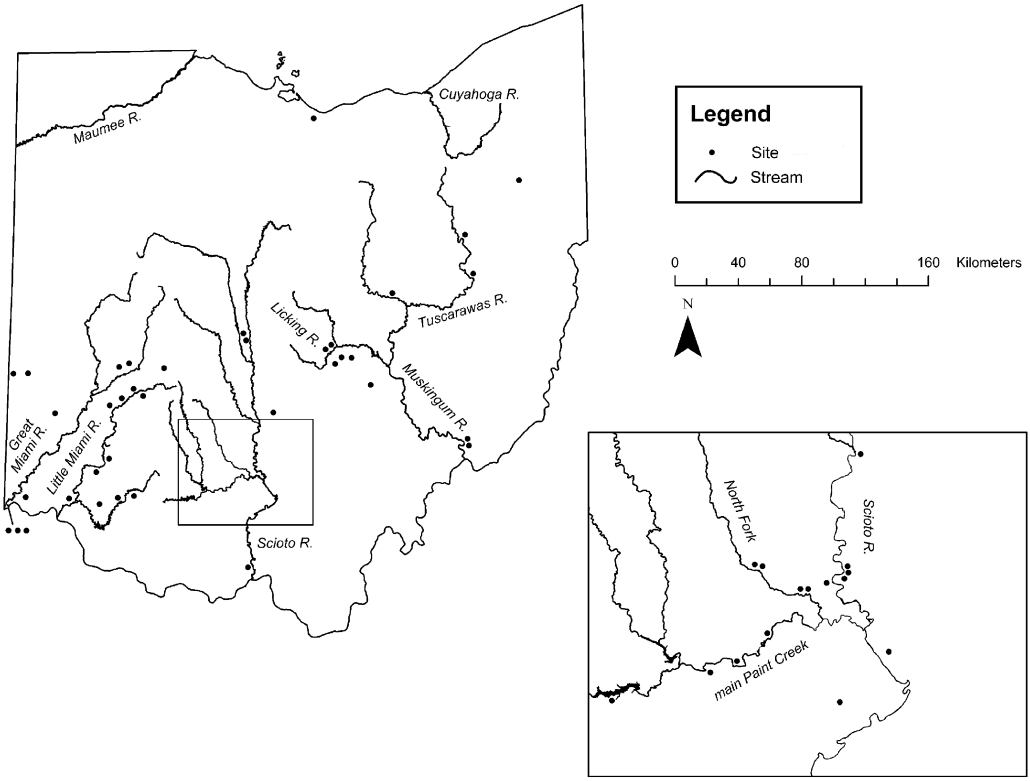


Figure 1.3. Ohio Hopewellian mound and earthen enclosure ceremonial centers that are reported in this book.

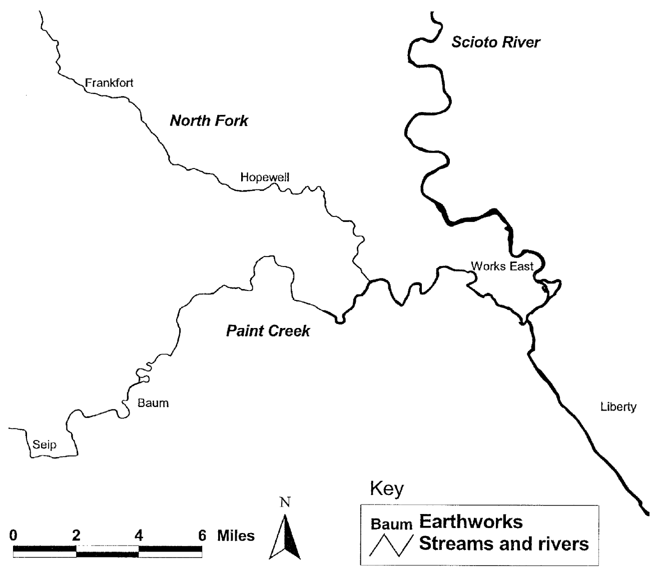


Figure 1.4. The Scioto-Paint Creek area with selected mound and earthen enclosure ceremonial centers.

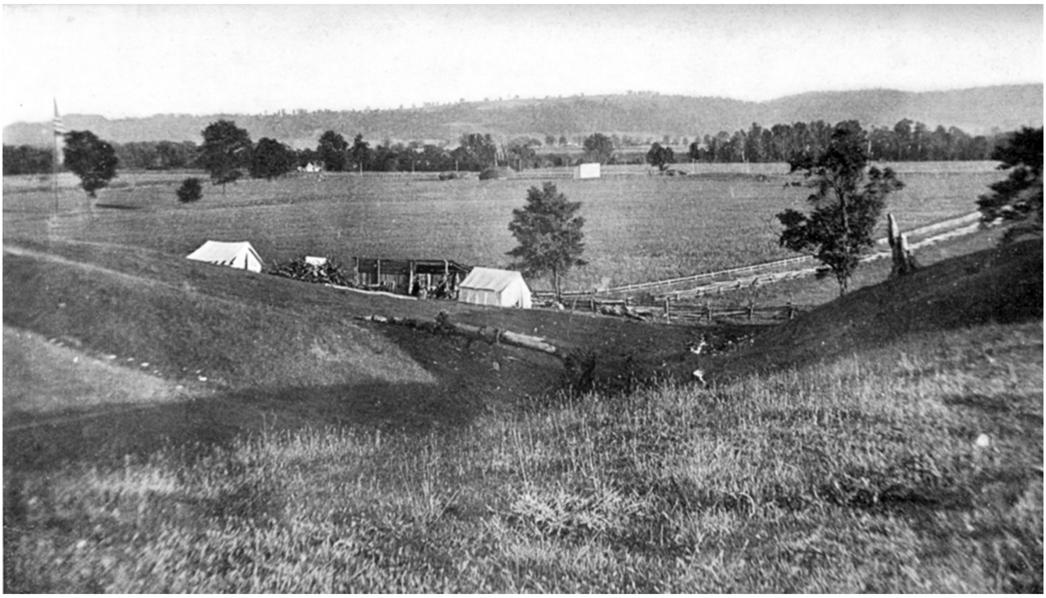


Figure 1.5. The misty Scioto valley in 1891. View of the terrace upon which the Hopewell earthwork was built, with Warren King Moorehead's field camp in the foreground. See credits.

kinds held within ceremonial centers (Carr 2005a; Ruby et al. 2005). Some ceremonial centers were places of burial, where select persons from one or more communities were laid to rest within mortuary buildings under earthen mounds (Figures 1.6A–D; Prufer 1964a:74; Carr 2005a:278–280). Other centers lack cemeteries and were presumably the locations of gatherings for different purposes (Figure 1.7). Burial ceremonies and burial together of the deceased from one or more communities helped a spatially dispersed community or communities to cohere, to remain orderly, and to meet various social needs. The deceased were often laid to rest with markers of certain of their social roles. Frequently, these items were also very elaborate and refined artworks (Figure 1.8). Also buried within some earthen mounds were segregated deposits of ceremonial paraphernalia and role markers, sometimes in great quantities, that were purposefully broken, cremated, and/or placed intact as a part of the collective rituals of specialized ceremonial societies, ritual dramas, the periodic decommissioning of social and ceremonial items, and/or cemetery closing ceremonies (Figure 1.9). Many of the raw materials from which the ceremonial paraphernalia and role markers were made, such as copper, mica, silver, meteoric iron, obsidian, and hornstone, were obtained from sources that were many hundreds to several thousands of water and land miles away, round trip (Brose 1990; Carr and Sears 1985; Goad 1978, 1979; Hughes 2006; Spence and Fryer 2005; Vickery 1983; Walthall 1981; Walthall et al. 1979).

Although the elaborate archaeological record of Hopewell peoples who lived in the Scioto valley, specifically, has fascinated antiquarians, academic archaeologists, and the public for three centuries, a coherent synthesis of the whole of their life has yet to be written. The first half of this book attempts to fill this need. It describes:

- the natural environment, the opportunities it offered for material sustenance, and the conceptual models it provided Hopewell peoples for their social relationships;
- the natural environment as it would likely have been perceived and interpreted symbolically by Hopewellian peoples, given the many aspects of their world view that are known;

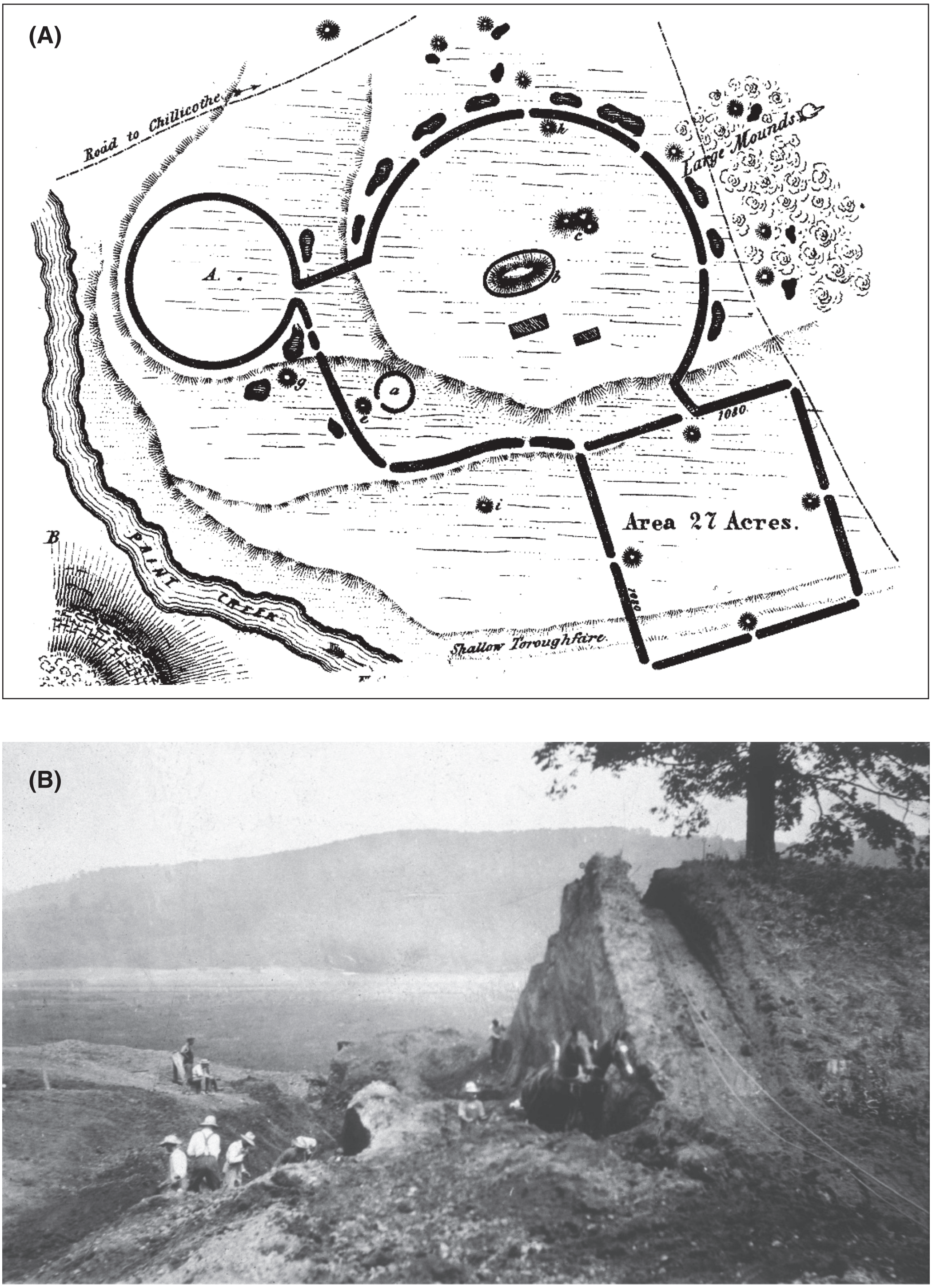


Figure 1.6. (A) The Scioto Hopewell ceremonial center, Seip, with geometrically shaped earthen embankments that enclosed burial mounds. (B) The Pricer mound under excavation at the Seip earthwork. (C) The charnel house enclosing tombs under the Pricer mound at Seip. (D) Model of a log tomb similar to those under the Seip-Pricer mound and some other Scioto Hopewell burial mounds. See credits.

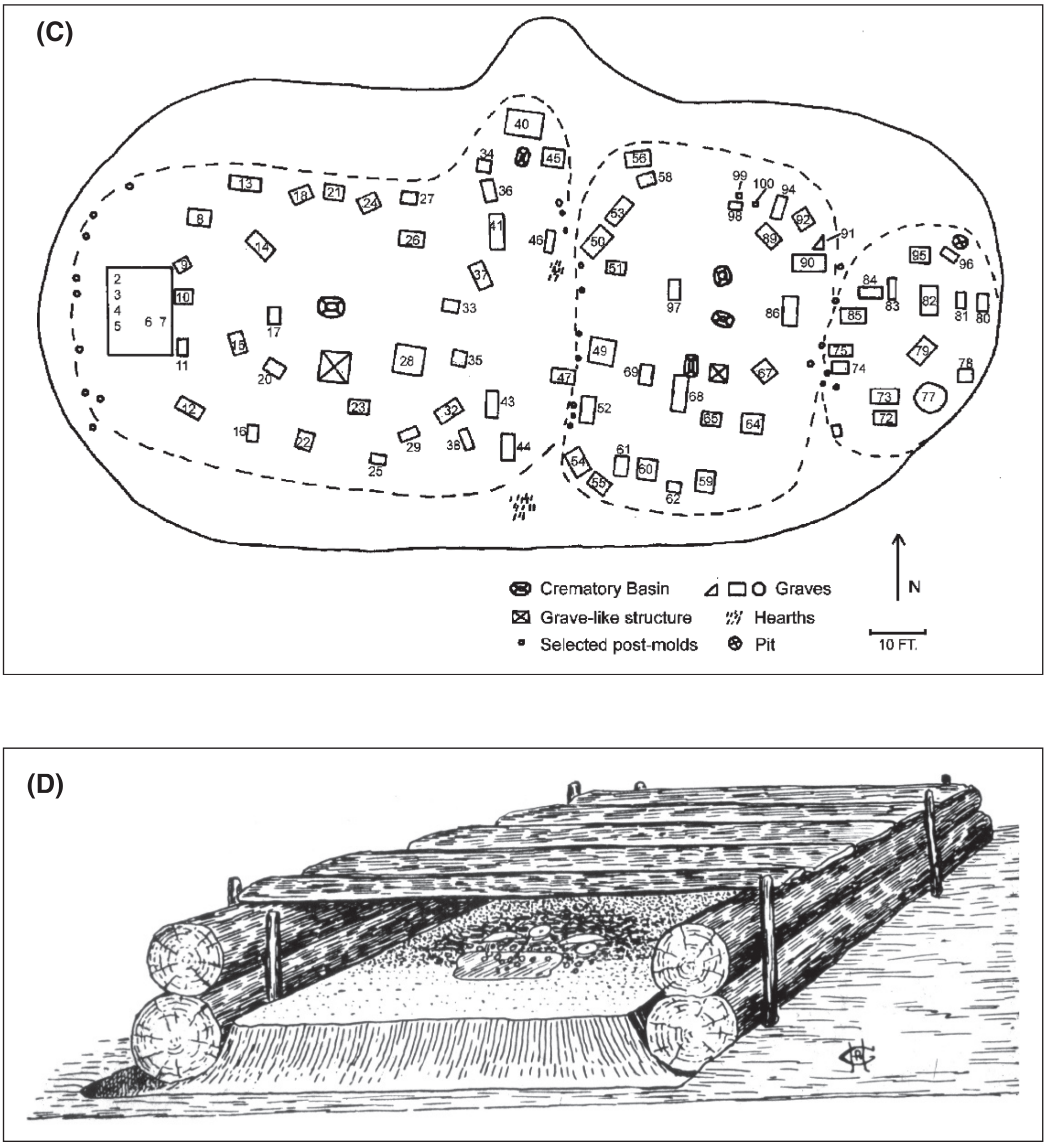


Figure 1.6. *(continued)*

- subsistence, settlement, and mobility patterns and decisions;
- community organization at several different spatial scales;
- many other aspects of social, political, and ritual organization such as clanship, leadership, and ceremonial societies;
- key elements of world view that were essential to the constitution, rise, and fall of Scioto Hopewellian society and life; and
- the history of changes in all of the above aspects of Scioto Hopewellian life.

For example, in the first half of this book, the reader is introduced to the various ceremonial societies of the Scioto Hopewell, their complementary ceremonial duties, whether their membership crosscut kinship and residence (sodalities) or not, the roots of some of these ceremonial societies in earlier Adena cultural organization, and the growth of ceremonial

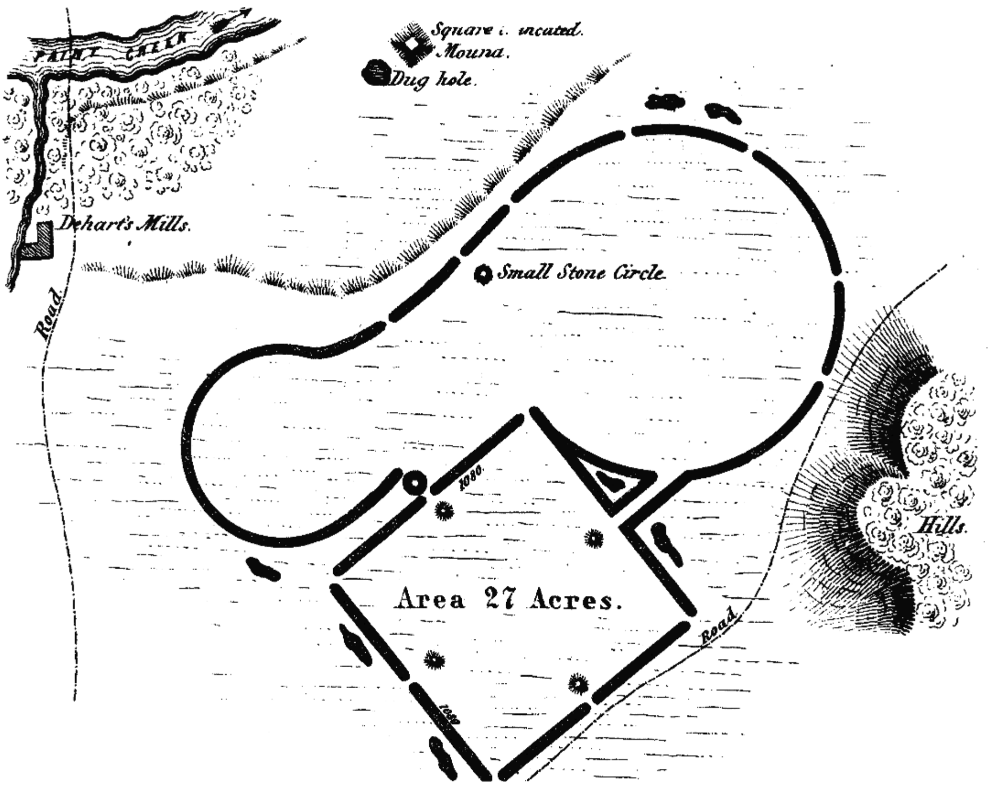


Figure 1.7. The Scioto Hopewell ceremonial center, Baum, is located 6.1 kilometers east of Seip within the same valley, is similar in layout to Seip, but lacks burial mounds. The two sites had complementary ritual functions and spiritual meanings. See credits.

societies over time in their kinds, sizes, and female memberships. The reader also learns how strategies for alliance among communities matured over time: from primarily economic and social exchange relations among individual commoners as dyads outside the context of ceremonial centers, to ritualized cooperative and/or competitive material displays focused on spiritual-social connections and orchestrated by leaders within ceremonial centers, to eventually the burial of members from multiple communities within the same charnel houses as an expression of the spiritual unification of the ancestors from those communities and their living descendants. An analysis of the faunal and paleoethnobotanical records of the Scioto Hopewell and their close neighbors, along with evidence from food processing equipment, storage facilities, art works, and gender roles, shows that Scioto Hopewell peoples were mixed forager-farmers, not agriculturalists. They obtained the greater portion of their annual caloric intake from wild resources that had been staple to the diets of midwestern-riverine groups for millennia, and continued to be so for centuries after. More general, pan-Eastern Woodlands models of Hopewell subsistence, which are derived from other geographic areas and pose that Hopewell peoples were primarily farmers of native Woodland cultigens, do not fit the evidence from the upper Ohio valley.

Our textual descriptions of Scioto Hopewell culture and life are made tangible to the reader through 195 photographs and line drawings of the landscape and material creations of Scioto Hopewell peoples. Many of the images and what they show have never been published before, and give a fresh, vibrant, and broader look at the Scioto Hopewell world. The valley, mountain, and till plain landscapes where Scioto peoples lived and

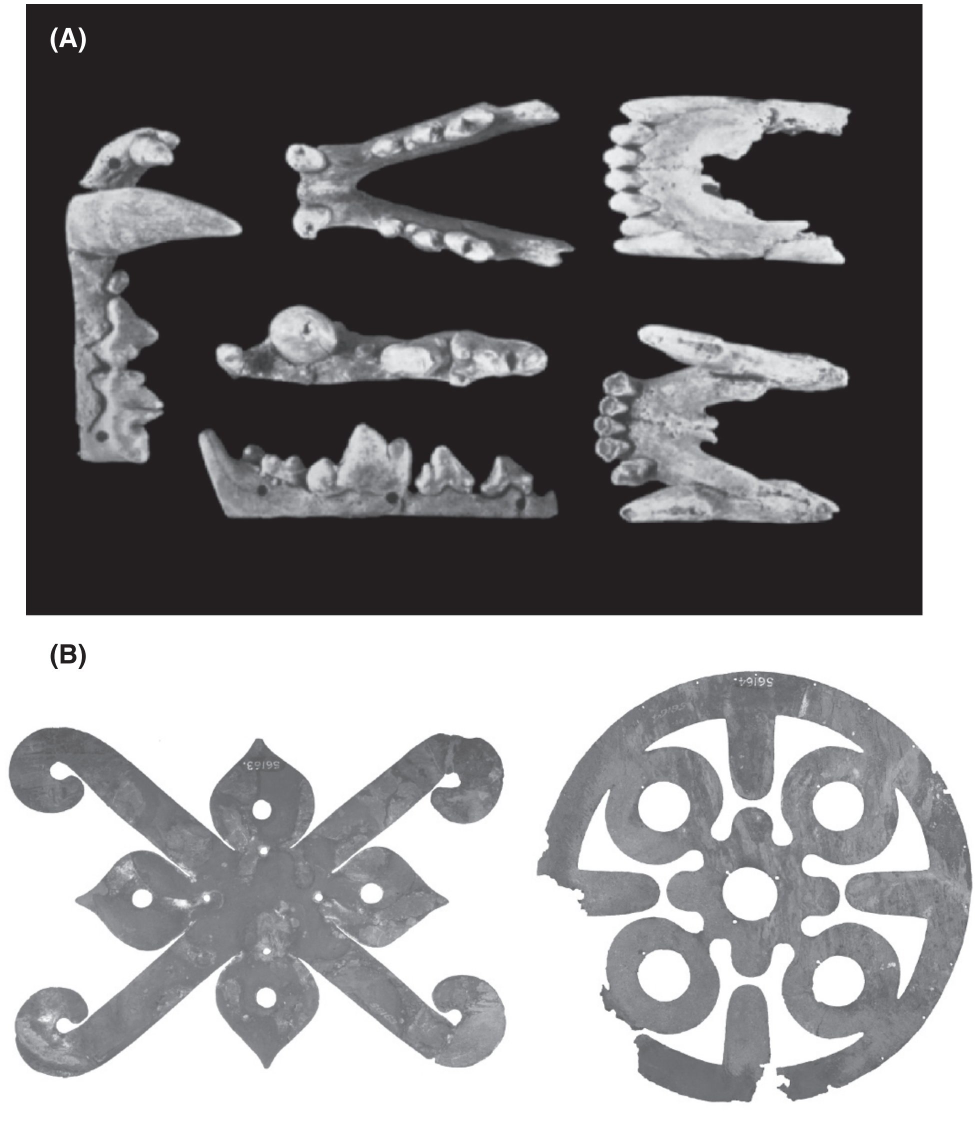


Figure 1.8. **(A) Bodily parts of animals that displayed their power, such as their jaws, teeth, claws, and talons, were used to represent the totems of clans and to identify clan members and leaders. Pendants made of the jaws of wolf, wild cat (bobcat?), and mountain lion, from the Hopewell Site, Mound 25. (B) Copper geometrics depicting the directions of the cosmos were possibly part of the costumes worn by shaman-like public ceremonial leaders whose roles focused on philosophical and practical knowledge about the cosmos. (*Left*) The four cardinal directions and four moon maximum north and south rise and set points. (*Right*) The eight cardinal and semicardinal directions. See credits.**

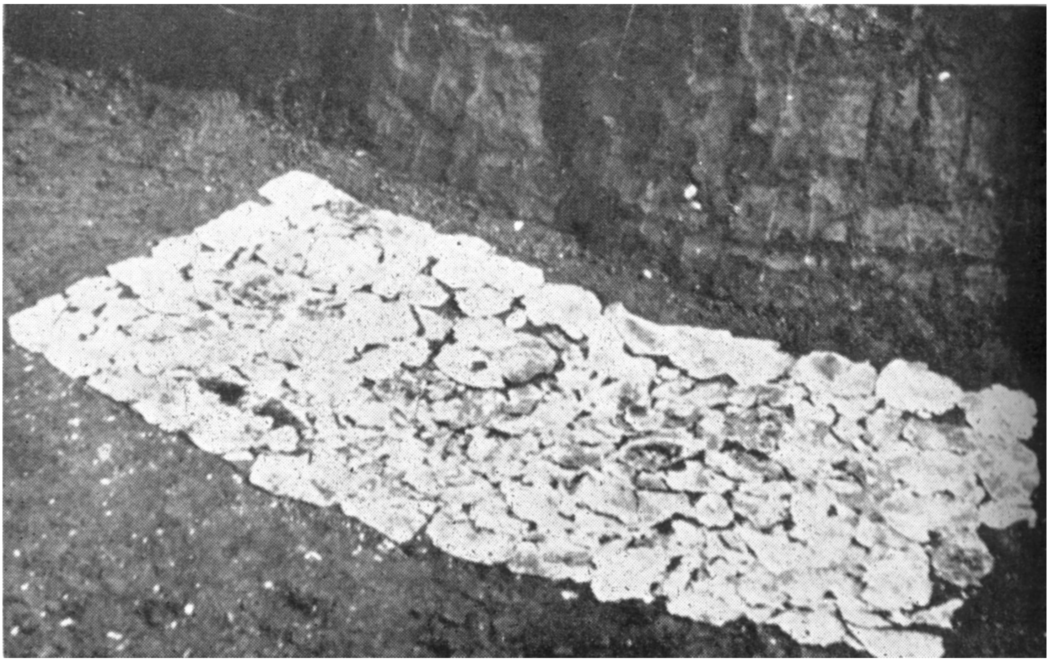


Figure 1.9. Deposit of 100+ mica mirrors, many similar in their round form and 10–12 inch diameter, placed systematically in a 4 foot by 8 foot pavement, overlapping one another like fish scales, in Mound 7, Mound City earthwork. The pavement possibly indicates a collective ritual of a ceremonial society concerned with divination using mica mirrors (Carr, Chapter 4, Sodalities and Ceremonial Societies). See credits.

foraged, the dense and dark virgin forests of the valley bottoms where they built their habitations and in which they carved spaces of light for their earthen ceremonial centers, and certain especially sacred geological formations in their landscape are each rendered in hardcopy photographs and on an accompanying CD. Ceremonial paraphernalia of many kinds are depicted, such as intricately carved wands used in small healing or magical rites, a sucking tube used in curing ceremonies, divination mirrors cut from mica in the forms of an eagle's head and a human-feline composite, and a whistle made of a human radius bone. Markers of social, political, and personal identities are also shown – for example, wolf and wild cat jaw pendants that distinguished certain clanspersons, the copper animal-effigy headgear of community leaders, and smoking pipes carved with the personal spirit-power animals of their owners. Hopewell earthworks, mounds, charnel houses, and artwork are well represented. All of these images are interpreted in cultural terms, to guide the reader through Scioto Hopewell life.

In attempting to write an integrated, descriptive synthesis of Scioto Hopewell life, our literary style is necessarily different from a journal article or dissertation that focuses on argumentation and testing of propositions. Like an ethnography of a people, we present reconstructions of the various aspects of the lives of Scioto Hopewel peoples – their environment, communities, ceremonial life, etc. – in a straightforward, descriptive manner. Empirical support and archaeological argumentation for our descriptive statements are referenced to previous, detailed empirical analyses made in *Gathering Hopewell* (Carr and Case 2005c) and many other works, placed in endnotes, and/or presented in summaries following the descriptions. Although we present tabular data, maps, graphs and photographs, these are offered more commonly to fill out our descriptions than to prove or disprove a point. There is a difference between presenting a people and presenting problems to be solved and analyses. This book does primarily the former; *Gathering Hopewell* and other works do mainly the latter, empirically supporting the integrative summaries that we make here.

The second half of this book presents and documents four massive data bases stored on the book's CD-ROM. These are the data that have allowed the unusually detailed reconstruction of Scioto Hopewell life that we give here. The data bases describe: (1) the tombs, grave goods, and human remains from all Ohio Hopewell cemeteries that have been excavated and reported – published and not – as far as we and other Ohio archaeologists know; (2) the intrasite layouts of most of those cemeteries and of the earthwork ceremonial centers that contain them; (3) the geographic locations of the excavated cemeteries and ceremonial centers, along with the locations of unexplored ones, on a suite of detailed-scale county maps; and (4) the ceremonial functions, symbolic meanings, and social role associations of a wide range of historic Woodland Native American ceremonial paraphernalia that are analogous to those used by the Ohio Hopewell and other prehistoric peoples across the Eastern US. These four data bases will give other researchers the opportunity to immerse themselves much more systematically, deeply, and interpretively in the remains of Ohio Hopewell lives than would otherwise be possible, and to gain for themselves an understanding of Hopewell peoples. In line with our hope that other researchers will use these data to extend our cultural studies of Ohio Hopewell peoples, we begin each chapter or suite of chapters devoted to a data base by describing its significance to anthropological reconstructions of Ohio Hopewell lifeways, thus guiding the researcher toward anthropologically relevant analyses.

The Bioarchaeological Data Base

This data base inventories the material cultural and human skeletal remains excavated from many of the mortuary-ceremonial centers of Hopewell peoples in the Scioto and neighboring valleys in Ohio. The data base, called HOPEBIOARCH, includes information on:

- 1,052+ individuals buried in 126 earthen mounds and burial areas in 52 ceremonial centers across Ohio;
- the social, religious, and personal artifacts that accompanied them in their graves, encompassing 125 classes of items;
- the positions of the artifacts relative to the bodies in the graves;
- the architectural characteristics of the individuals' tombs;
- modern biological estimates of the ages and sexes of many of the individuals;
- the general spatial locations of the individuals relative to each other and mortuary features within the sites; and
- the approximately 15,000 ceremonial items that were decommissioned and buried in 77 special deposits at 19 of the sites, and that reveal the sizes, social compositions, and functional variation of ceremonial gatherings.

The artifacts include symbols that marked detailed social roles, such as shaman-like and nonshamanic community-wide leaders of several kinds, clan leaders and members, ceremonial societies (sodalities) of three to possibly five kinds, clan-based ceremonial society members, hunt diviners, healers, mortuary specialists, and cosmologists. Identification of these roles was accomplished through much ethnographic and archaeological-contextual research (see below).

The bioarchaeological data base encompasses all recorded Ohio Hopewell burials and ceremonial deposits in the published literature and in unpublished documents in museums and historical societies in Ohio and elsewhere, as far as we and other Ohio archaeologists know. It was assembled through 27 months of grant-funded archival research on documents, artifacts, and skeletons at the Peabody Museum of Archaeology and Ethnology at Harvard University, the Chicago Field Museum of Natural History, the Ohio Historical Society, and smaller public and private collections. The archival work was followed by eight continuous years of computer coding and verification by the authors and by graduate students who worked half-time.

The data are presented in three forms on the book's CD-ROM. Individual pages, one per grave or ceremonial deposit, record all extant, assembled information on a grave or deposit as a Word text file in a standardized format. These descriptions are excellent for overviewing a particular provenience. An EXCEL data base codes this information for each individual and deposit in a spreadsheet format that is more amenable to pattern searching. The EXCEL data base has also been exported into a tab-delineated format that allows its easy porting to various statistical packages.

Most of the chapters in the second half of the book document the bioarchaeological data base, assess the quality of its osteological and archaeological information, and report fundamental mortuary patterns within it. The later, pre-analyses prepare researchers for making more complex analyses of the kinds made today by anthropological archaeologists and bioarchaeologists when studying mortuary remains to infer social, political, ritual, and religious life. Documentary chapters are devoted to the organizational format of the bioarchaeological data base, descriptive overviews of each site within it in order to contextualize the data, and defining the mortuary variables and variables states in the data base. Chapters on osteology evaluate the accuracy of the ages and sexes assigned by previous researchers to human remains and tell how a best estimate was derived for each buried individual's sex and age at death. Also described are the complex statistical procedures used to estimate the ages and sexes of human remains from the Hopewell site. One chapter considers the reproducibility and accuracy of the archaeological and osteological information in the data base by comparing it to two smaller data bases previously constructed by other mortuary archaeologists. The chapters on preanalyses contextualize each mortuary variable (e.g., grave good class, tomb trait) by summarizing its global and site-specific distributions among individuals of different age and sex categories, whether it tends to occur in burials or ceremonial deposits, and whether it tends to occur alone or in consistent numbers or in aggregates of varying sizes across burials. The chapters also contextualize select classes of ritual paraphernalia and artifactual symbols of social roles by summarizing their global and site-specific patterns of association and dissociation with one another. These patterns are useful for identifying and confirming the social and ritual functions of the artifact classes, and for defining basic social roles pertinent to the operations of Hopewellian communities.

The Data Base of Intrasite Layouts

The second data base presented in this book includes 84 digitized maps of the spatial layouts of burials and ceremonial deposits of artifacts on the floors under 50 mounds, and the spatial organization of the mounds, embankments, and other constructions that comprise 10 earthen enclosure ceremonial centers. All of these Ohio Hopewell mounds and centers contained individuals and/or ceremonial deposits described in the bioarchaeological data base. The maps allow these burials and ceremonial deposits in the bioarchaeological data base, which is largely nonspatial, to be related to one another in space, providing essential sociological and historical information. Some of the maps have been published previously, some not. Alternative maps are provided for some published ones now known to be inaccurate. Original field maps have been cleaned up or redrawn to make them legible. Sources of publication or curation are given for all the maps.

The Regional Geographic Data Base

A third data base plots the locations of 3,691 earthen-mound and earthen-enclosure ceremonial centers on 53 Ohio county maps of the Adena and Ohio Hopewell homelands. Earlier, Adena ceremonial centers can be distinguished to a fair degree from later Hopewell ones on the maps. The maps provide researchers with information necessary to studying population distributions and relative densities, settlement location choices, subsistence catchments, community organizations, and changes in these over time. The maps are reproduced from W.C. Mills' now hard to obtain *Archaeological Atlas of Ohio* (1914). They are invaluable because the mound and earthwork locations were plotted between the early 1870s and 1914, prior to the destruction of many mounds and enclosures. The site locations shown on the maps correlate well with modern site survey information for those sites that still exist.

The Ethnohistoric Data Base

The fourth data base gathers and systematizes dispersed ethnohistoric accounts of the ceremonial functions, religious and symbolic meanings, and social role associations of many kinds of paraphernalia and raw materials that were used in ceremonies by historic Woodland Native Americans. The paraphernalia are equivalent or similar in form to those used earlier by Ohio Hopewell peoples, and provide a basis for interpreting their mortuary artifactual records. The artifact functions, religious meanings, and role associations that are documented were crucial to our making the detailed cultural reconstruction of Scioto Hopewell life presented in the first half of the book, and will be equally useful to other Woodland archaeologists and ethnologists who extend our work on the Ohio Hopewell or other prehistoric or historic Woodland Native American groups. It is fair to say that many Woodland archaeologists have a limited understanding of the ceremonial, social, and meaningful nature of such artifacts, and that this lacuna has been a formidable barrier to documenting and studying the social and ritual organization and the knowledge systems of past Woodlands peoples.

The data base helps to remedy the situation by providing more than 1,000 verbatim ethnohistoric descriptions of the nature of 51 kinds of ceremonial paraphernalia and raw materials, with bibliographic citations. A few examples of the kinds of paraphernalia and raw materials that are surveyed include: conch shell cups, shark teeth, mirrors, stone hemispheres, whistles, gem projectile points, copper, galena, mica, and meteoric iron. The descriptions were found through a search of all publications on nine Woodland tribes in the electronic Human Relations Area Files, using 146 keywords. Because most of the nine tribes resided historically in the northern Woodlands, additional coverage on southern Woodlands tribes was sought from comprehensive ethnohistoric source books by J. R. Swanton (1928, 1946), J. Mooney (1891a, 1900a), and H. Schoolcraft (1851). The quotations and bibliography total 5.61 MB. Two summary tables of the list of paraphernalia and raw materials, their functions, religious and symbolic meanings, and social role associations, as well as bibliographic citations to these, make the information easily accessible to researchers.

The book ends by coming full circle, back to Ohio Hopewell culture and lifeways. In the last chapter, researchers are guided to many key anthropological topics on Ohio Hopewell peoples that remain to be investigated. Some of these topics can be addressed with the data bases provided in this book; other topics require additional field or laboratory work.

EMPIRICAL SIGNIFICANCE OF THE DATA BASES: PREVIOUS PROBLEMS THAT THEY REDRESS

The data bases that we present in this book are significant, in part, as records of the hard evidence for the Hopewellian ways of life that we have reconstructed here and in *Gathering Hopewell* and that others may wish to extend later. The data provide the means for scientifically verifying these interpretations.

In addition, the data bases are important because they overcome five serious obstacles that previously have discouraged substantial anthropological reconstructions of Ohio Hopewellian societies and life, making way for such studies. These obstacles are: (1) the multiple and widely scattered locations of curation of the sources of primary data –

even for single sites and single burial mounds; (2) the diverse kinds of documents that commonly must be consulted and integrated to compile a reasonably complete and accurate picture of a ceremonial center, a mound, or a burial; (3) the unstandardized and sometimes cumbersome formats used by most excavators prior to 1930 to report information about Ohio Hopewell ceremonial sites; (4) the varying artifact classifications and terminologies used by different excavators and over time; and (5) simply the lack of knowledge of archaeologists from outside the region of the many small to moderately sized burial sites that have been excavated and reported and that, along with larger, better known sites, were integral components of the mortuary programs of Ohio Hopewell peoples. Each of these obstacles we now discuss.

Scattered Archaeological Collections

An overwhelming deterrent to broad-scale, anthropological reconstruction of Ohio Hopewell cultural life has been the wide dispersion of primary data among many curatorial institutions. The unpublished data reported here were obtained from records and collections curated at *seven* separate institutions in three states: the Ohio Historical Society in Columbus, Ohio; Hopewell Culture National Historical Park, in Chillicothe, Ohio; the Clark County Historical Society in Springfield, Ohio; the Boonshaft Museum of Discovery in Dayton, Ohio; the Ohio State University in Columbus, Ohio; the Field Museum of Natural History in Chicago, Illinois; and the Peabody Museum of Archaeology and Ethnology at Harvard University, Boston, Massachusetts. In some cases, information on a single site or mound is stored separately at different institutions in different states. This is the case for the Hopewell earthwork, the very important Mound 25 within the Hopewell earthwork, the Liberty earthwork, and to a lesser degree the Mound City earthwork. We addressed the problem of the dispersed locations of information by visiting and studying almost all extant collections of Ohio Hopewell archaeological remains and documents in the eastern United States.[5]

Diverse Required Sources of Information

Equally daunting, many different data sources of many kinds commonly have to be consulted in order to assemble the total picture of a site's or mound's content and layout – to the extent knowable – and sometimes a burial's content and layout. The sources that we used to do so include published literature, extant artifact collections, museum accession records, catalogs, original photographs of excavations and artifacts, field notes and maps, newspaper clippings, and letters written by museum staff and laypersons. A number of critical archaeological sites lack overarching archaeological reports because they were dug and reported by multiple excavators in different decades, which required us to examine a great diversity of records. This is true for the Hopewell earthwork (Moorehead 1897a, 1922; Shetrone 1926a; Squier and Davis 1848), the Liberty earthwork (Metz and Putnam 1886; Mills 1907; Moorehead 1897b; Putnam 1886b, 1973; Seeman and Soday 1980; Squier and Davis 1848), the Mound City earthwork (Mills 1922; Squier and Davis 1848), the Seip earthwork (Mills 1909; Shetrone and Greenman 1931), and others. Also, modern osteological identifications of the ages at death and the sexes of individuals buried in Ohio Hopewell sites (Cadiente 1998; Giesen 1992; Johnston 1997a, b, c, 2002; Konigsberg 1985; Pickering 1987; Reichs 1975; Sciulli n.d.) had to be gathered and compared to each other and to premodern osteological observations made by original excavators, doctors, or paraprofessionals in order to determine best estimates of the probable ages at death and sexes of individuals.

We also relied on previous, similar attempts to integrate archaeological information, which have been made for a few sites by other researchers. Greber's (1976, 1979a, b, 1983; Greber and Ruhl 1989) reconstructions of the floor plans of the Seip-Pricer, Seip-Conjoined, Edwin Harness, and Hopewell

25 mounds were used largely unmodified in our work. Greber's (1976, 1979a, b, 1983; Greber and Ruhl 1989) inventory of the burial assemblages of the Seip-Pricer, Seip-Conjoined, Edwin Harness, and Hopewell 25 mounds, and Brown's (1994) synthesis of the burial assemblages at the Mound City site, on the other hand, were used primarily to verify our own findings.[6] In all, the previous compilations made by Greber and Brown cover only a fraction of the burials, mounds, and sites that are documented here.

Reporting Formats

A third obstacle to substantial anthropological reconstruction of Ohio Hopewellian life has been the unstandardized formats used by archaeologists of the 1830s through the 1920s to report Ohio Hopewellian remains and, related, the lack of organization of archaeological information in some excavators' documents in a manner that allows their coding and analysis fairly directly. Formats differ considerably among researchers and changed over time. Some researchers, such as Shetrone (1926a) at the Hopewell site, documented the contents of individual graves fairly thoroughly in their textual descriptions; photographs or line drawings served to illustrate things described in the text. Other researchers, such as Moorehead (1897a, 1922) at the Hopewell site, gave only partial inventories of the contents of graves in their written texts, and relied on photographs or line drawings – sometimes separated by many pages from the textual descriptions of the graves – to fill out their written descriptions. The larger picture of each grave and its content had to be reassembled. Further, Moorehead (1897a, 1922) commonly presented information on his excavations of Mound 25 and some other mounds at the Hopewell site in the form of daily log entries, rather than directly by grave and location within the mound. Field notes for the many Ohio Hopewell sites that have been excavated but not written up, or written up only briefly, present the same problem. The large and important excavations of the Ater mound and the Esch mound group, with 60 and 49 individuals, respectively, are examples.

These kinds of difficulties in data recording formats were overcome here by our taking the time to familiarize ourselves with the recording habits and styles of various excavators as we worked in depth with their notes and publications. Gathering useful data also required us to sift through problematic publications or field notes for relevant information on each grave, compare the information to museum accession lists and catalogs to cross-verify it, and then compile a composite list of the contents, tomb form, and other characteristics of each grave. At times, information on burials, mounds, and sites had to be reconstructed in a forensics-like manner, before it could be integrated into the data base and analyzed to reconstruct past Ohio Hopewellian life. Our approach to the data in all these regards was similar to that used by Greber (Greber and Ruhl 1989) to assemble a coherent picture of the material remains within Mound 25 at the Hopewell site.

Artifact Classifications and Terminologies

A fourth difficulty that the archaeological records of Ohio Hopewell peoples pose and that had to be overcome is the varying artifact classifications and terminologies used by different excavators and over the course of the 1830s through 1950s. For example, the terms "spear point", "ceremonial point", "ceremonial knife", "curved knife", "blade", and possibly "knife" were all used to indicate the same kind of artifact: odd-shaped or asymmetrical bifaces. Different excavators (Shetrone, Moorehead, Mills) used different terms, and sometimes the same excavator used different terms at different sites (e.g., Shetrone at Hopewell and Seip-Pricer) or even the same site (e.g. Shetrone at Seip-Pricer). These taxonomic problems were considerably ameliorated by creating charts of the distinct terms used to refer to the same kinds of artifacts or mortuary features, and of the same terms used to refer to different kinds of artifacts or mortuary features (Chapter 8). Terminological equivalencies were then systematically defined.

Limited Distribution of Essential Information

A fifth obstacle that has discouraged substantial archaeological reconstruction of Ohio Hopewellian society and life has been simply the lack of general knowledge among archaeologists from outside the area of the many small to moderately sized burial sites that have been excavated and for which information is available and reasonable for analysis. Descriptions of the Ohio Hopewell archaeological record in professional and popular overviews of midwestern, Eastern Woodlands, and North American archaeology (Fagan 1995:411, 418–422; Fiedel 1992:242–244; Milner 2004:61–66; Prufer 1964b:90–92; Struever 1965:212–213; Struever and Houart 1972: 53–56, 68–77; but see Griffin 1967:183) have emphasized the large earthwork ceremonial centers in Ohio and their large mounds with large burial populations.[7] Greber's (1976, 1979a, b) analyses of five large burial mounds separate from each other and without complementary information from smaller, neighboring mounds within the same ceremonial centers or their vicinities have helped to solidify this general picture of the Ohio Hopewell ceremonial landscape. So, too, have Prufer's (1964a, b) vacant ceremonial center-dispersed agricultural hamlet model of Ohio Hopewell community organization, and Dancey and Pacheco's (1997a) dispersed sedentary community model. These models focus on large earthworks with large burial populations and the individual households that were dispersed around the works. However, large, Ohio Hopewell mounds and their burial populations constituted only a portion of the regional and multi-site mortuary programs of Ohio Hopewellian peoples (Carr 2005a, b; Ruby et al. 2005). Small and moderately sized mounds, within earthworks and/or outside of them, were used in conjunction with the larger ones, with different segments of a community having been buried in these different sized mounds (Carr 2005a, b; Carr et al. 2005). In order to reconstruct the roles and organization of an Ohio Hopewellian society in an unbiased manner, it is necessary to analyze this broader set of mounds and persons. This was not done in studies of Ohio Hopewell social organization made prior to those included in *Gathering Hopewell* (Carr and Case 2005c). The bioarchaeological data base presented in this book redresses the problem by making explicit the very large number of small to moderately sized burial mounds that dotted the Ohio Hopewell ritual landscape and by documenting their graves, artifacts, and human remains.

Missing Data

One difficulty to analysis and interpretation that we encountered fairly frequently, but could not correct, is missing data in various forms. First is missing information on the proveniences of all or most artifacts and human remains within certain excavated mounds. Especially significant are two large mounds: Liberty earthwork's Edwin Harness mound, with 176 individuals on the charnel house floor, and the Seip earthwork's Conjoined mound, with 43 individuals on the charnel house floor (Greber 1979b:34). Published reports of the major excavations of the Edwin Harness mound (Mills 1907; Metz and Putnam 1886; Moorehead 1897b; Putnam 1886, 1973), and Mills' (1903) diary, provide little information on the intra-mound proveniences of artifacts and human remains there. Accession records for Mill's collection at the Ohio Historical Society do not distinguish internal proveniences. Only estimates of the counts of individuals and some artifact classes grossly associated with the three lobes of the mound and its charnel house are available, as reconstructed by Greber (1976, 1979a:32, 34) from several unpublished sources. Mill's (1909) report of his work at Seip's Conjoined mound also lacks internal provenience information, and his field notes for the excavations are lost, if they once existed (Greber 1979a:34). Eight smaller sites also lack internal provenience information in reports and museum records of them (Chapter 7, Table 7.4). We found no way to overcome these problems, and had to omit the majority of burials from the Edwin Harness mound, and all of those from the Seip-Conjoined mound and the eight smaller mounds, from the primary data base.

Missing data also took the form of human remains that were not removed from the field during excavation, that were deaccessioned from curatorial institutions, that were dissociated into their different skeletal elements and could not be reassembled, and/or that could no longer be tied to the graves from which they had been excavated as a result of record problems. These situations have prevented modern assessment of the ages at death and the sexes of these individuals. Also, the cremated state of many Ohio Hopewellian burials, and their commingling at the site of Tremper and some others, have discouraged the identification of the ages, sexes, and numbers of individuals within some tombs.

For example, of the 112 cremations excavated by Mills (1922) from the Mound City earthwork, only 4–6 (ca. 4%) are extant, currently curated at Hopewell Culture National Historical Park.[8] The remains of 108 (77%) of the 140 individuals excavated by Moorehead (1897a, 1922) from the Hopewell site could not be located in the Chicago Field Museum of Natural History's collections from his expedition (Chapter 10, Appendix 10.1). A primary factor that contributed to the problem with Moorehead's collection from Hopewell was the dissociation of skeletons into their different elements and their storage as collections of elements of like kind – for example, femora, tibiae, or humeri – rather than as individuals (C. Johnston, personal communication). Of the 91 individuals, mostly inhumations, reported to have been uncovered from the Turner site through expeditions by Harvard's Peabody Museum of Ethnology and Archaeology (Metz 1882, n.d.; Putnam 1885; Saville 1889, 1890; Volk 1905; Willoughby and Hooton 1922), a search through the Turner collection at the Peabody by Rodrigues (2005) with the help of P. Drooker and N. Greber provided her a sample of only 19 individuals (21%) that could be identified to grave, aged and/or sexed, and evaluated for musculoskeletal stress markers. Factors responsible for the missing information from the Turner series include skeletons that were not collected in the field due to poor preservation, collected skeletons that were deaccessioned, skeletons from Turner that records apparently attribute instead to the Madisonville site (the reverse is clearly true), skeletons with no or ambiguous provenience labels, and some instances of curated remains with poor physical preservation (Rodrigues, personal communication, 2005). It is possible that some of the above cases of missing osteological data can be redressed in the future by detailed work with osteological collections and museum records, especially those from Turner and regarding the Turner-Madisonville mix-up (Rodrigues, personal communication, 2005).

A final variant of the problem of missing data is the previous, unsystematic collecting of kinds of information that would standardly be recorded today in the field and lab (e.g., the age and sex of skeletons, the exact counts of artifacts in a grave). For excavations done between the 1830s and 1920s, before the advent of modern field archaeology, some important forms of data were noted differentially, depending on the excavator and the interests of the excavator at the moment.

Missing data in the form of notes that lack internal site provenience information, lost notes, lost osteological and artifact collections, and unsystematic data recording are problems that are not unique to the Ohio Hopewell mortuary record or the curating institutions involved. They stem from approaches taken to archaeology in the United States generally, prior to about 1940, during the antiquarian, descriptive, and historical-chronological periods (Willey and Sabloff 1980:12–129, 146–149). For a description of yet more pervasive problems of missing data in the Early and Middle Woodland records of the Hocking valley in Ohio, see Blazier et al. (2005:99–104).

In sum, the four electronic data bases presented in this book overcome many of the obstacles that have hampered archaeologists from making anthropological reconstructions of the cultural lives of Ohio Hopewell people. To hurdle these obstacles and complete the bioarchaeological data base, alone, took eight years of work. With this overhead removed and the four data bases in hand, it should be possible for the professional archaeological community to progress much more quickly in making regional-scale studies of a detailed, personalized, and contextualized nature for Hopewellian societies in Ohio.

CHAPTERS THAT FOLLOW: EXTENDED ABSTRACTS

This book is divided into four parts. Part I, comprised of this chapter, sets the paradigmatic view, empirical scope, and goals of the book. Part II systematically summarizes what is now known about Hopewellian life in the Scioto-Paint Creek area of Ohio. Four chapters describe the natural and symbolic environment there, subsistence, settlement and mobility patterns and decisions, community organization, many dimensions of social and ritual organization, aspects of world view that are key to understanding changes in these cultural matters over time in the area, and the history of changes, themselves. The four chapters take a personalizing and locally contextualizing approach to the archaeological and environmental data, and are an attempt to begin to write an encompassing thick prehistory of Scioto Hopewell people and their lives. Part III, consisting of nine chapters, presents the bioarchaeological, intrasite, regional geographic, and ethnohistoric data bases. For the bioarchaeological data base, the methods used to estimate the ages and sexes of human remains are described, the estimates are evaluated for their reliability, the integrity of the tomb form and grave goods data is assessed, and core patterns in the data base that are culturally and sociologically significant are revealed and inventoried. Part IV, comprised of the last chapter, suggests topics for future anthropological research that can be achieved with the data bases offered in this book or with complementary archaeological field work, laboratory analyses, or museum studies. These research projects would help us to come to know Ohio Hopewell peoples, their cultures, and their lives in greater depth.

In Part II, Chapter 2 introduces the reader to the great physiographic, geological, and biological diversity and the advantaged climate of the Scioto-Paint Creek area. These natural environmental characteristics are then related first to their symbolic interpretation and use by Hopewellian peoples, secondly to the history of demographic aggregation in the area over the Middle Woodland period, and thirdly to the mixed subsistence base of Hopewellian peoples there and their expansion of horticulture. The natural environment is shown to have served as a medium for the creative expression of Hopewellian peoples' beliefs and practices, and to have encouraged their development along certain broad lines: places of perceived power in the landscape, which guided the selection of locations for building some ceremonial centers, elevation differences that were associated with a tiered cosmos and that also influenced the places where ceremonial centers were constructed, and animal species that were held to distinguish clans, afford leaders with transformative powers, bless individuals with personal spiritual power, and aid people in passing to an afterlife.

The natural floral and faunal richness of the Scioto-Paint Creek ecotone, reinforced by productive horticulture on the unusually broad and alluvially rich valley bottoms and terraces in the area, facilitated the aggregation of peoples there from the larger Scioto drainage and from surrounding upland settings during the Middle Woodland period. Population aggregation, rather than regional population growth, is shown to have been essential to the development of Hopewellian sociopolitical and ritual complexity in the Scioto-Paint creek area. Reasons for aggregation were social and religious rather than climatic or demographic – a point expanded in Chapter 5.

The subsistence base of Scioto Hopewellian societies is documented, from diverse lines of paleoethnobotanical, zooarchaeological, artifactual, artistic, and gender-based evidence, to have been primarily hunted and collected foods, supplemented by grown ones. The Scioto Hopewell were mixed forager-farmers, with apparently about three-quarters of their caloric diet comprised approximately equally of collected nuts (especially hickory), hunted deer and other mammals, and gathered mollusks, along with some taken fish, turtles, and fowl. Swidden grown Eastern Agricultural complex starchy and oily seeds made up the remaining approximately one-quarter of their caloric diet. Temporal paleoethnobotanical data, both specific to the upper Ohio valley basin and spanning the broader midwestern and midsouthern United States, suggest that valley-bottom swidden gardening was intensified to this level quickly, over several generations in the last fifty years or so B.C.

Chapter 3 describes the organization of Scioto Hopewell peoples into three kinds of communities of differing scale: residential, local symbolic, and sustainable communities. Examples of each kind of community are presented. In the Scioto-Paint creek area, a residential community was a corporate, self-identifying, decision making unit comprised of the members of one or two extended families who interacted face-to-face regularly and lived in one or a few spatially clustered habitations. Habitations were built on the flood plain and lower and middle terraces of the valleys, and tend to cluster around earthworks. Habitations were moved to new sites every few years to a decade or two, and sometimes these sites were reoccupied two to three hundred years later, probably in response to swidden horticultural cycles, as evidenced by ceramic assemblage sizes, multimodality in radiocarbon dates, and historic Woodland Native American analogs. Upland logistical sites and seasonal base camps show that some or all of a family left their valley homesteads some portions of the year for hunting and/or gathering logistical trips and longer stays. The degree of annual logistical mobility and annual residential mobility, and the use or not of seasonally inhabited base camps away from the main valleys, appear to have varied up and down the Scioto drainage according to the diversity and richness of food resources in different locales.

A local symbolic community in the Scioto-Paint Creek area was a corporate, self-identifying, decision making unit that was composed of multiple residential communities dispersed from one another over a landscape catchment of about 6–10 kilometers in diameter. Dispersed residential units were integrated by jointly building ceremonial centers, by participating together there in burial rites and other ceremonies, and by many other social ties described in Chapter 4. A spatial analysis shows that, commonly, a local symbolic community in the Scioto-Paint creek area would build and use several ceremonial centers of differentiated functions simultaneously. Local symbolic communities varied in their valley locations over time. They were not closely packed together.

A sustainable community in the Scioto-Paint Creek area was a suite of allied, local symbolic communities that formed a corporate decision making unit within which labor, mates, and probably food and other material resources were exchanged, buffering each local symbolic community from its local demographic and subsistence variations. Local symbolic communities strengthened their ties of cooperation by building social-ritual alliances through burying some of their dead together in one or more shared cemeteries. Communities thus sanctified their social relations, much like the historic Algonkian and Huron nations did in their Feasts of the Dead, although on a smaller geographic scale. In the last third of the Middle Woodland period, local symbolic communities may have also been integrated through an annual ceremonial calendar, which involved them joining together in earthworks in each other's lands sequentially at different seasons for ceremonies of varying purposes. Local symbolic communities were never integrated through one strong centralized leadership position of authority, although leaders with some intercommunity roles and power arose by the end of the Middle Woodland period and are documented in Chapter 4.

Ties of alliance among local symbolic communities in the Scioto-Paint Creek area are identified in Chapter 3 in several corroborating ways. These include: analysis of the spacings of ceremonial centers, the spatial distributions of styles of fabrics, the shared morphologies and celestial orientations of earthworks in different local symbolic communities, and striking similarities in the shapes and sizes of some charnel houses in different local symbolic communities.

Chapter 4 summarizes the social, sociopolitical, and ritual organizations of Scioto Hopewell peoples, including forms of leadership, clan organization, sodalities and ceremonial societies, gender relations, kinship structure, and ritual gatherings and alliances. These aspects of Scioto Hopewell life are revealed through a number of analyses of the frequencies and distributions of role markers among the graves of deceased persons of various ages, sexes, and community affiliations, by the correlations of role markers with one another, and by works of art that depict leaders.

Leaders in Scioto Hopewell societies are found to have been primarily shaman-like practitioners who drew their powers from nature yet, unlike classic shaman, employed trance states other than soul-flight and were very specialized in the social roles that they each filled. Less common were leaders whose role markers imply either their having used the basic, community-shared, shamanic world view of Scioto Hopewell peoples but not having practiced classic shamanic tasks, or their having achieved power through secular means, possibly through success in physical conflict. Leadership was decentralized, in that there were many kinds of specialized leaders with complementary roles and arenas of action. Over time, the numbers of kinds of leaders and their specialization increased. Positions were institutionalized only moderately. Their domains of power were limited largely to within the local symbolic community, until the tail end of the Middle Woodland period, when two positions with supralocal responsibilities arose. However, neither position was always drawn from the same local symbolic community, clan, or sodality, and social power was thus not solidified within any single social unit.

Nine clans with animal eponyms or totems are identified in the Scioto-Paint Creek area by the pendants that their members wore. The ornaments are made of the claws, talons, teeth, and jaws of animals of various species. The nine clans and their animal eponyms or totems are a reasonable reconstruction, given the number and names of clans known for historic Native American tribes in the Eastern Woodlands. Scioto Hopewell clans were localized to a degree. Most were roughly similar in size and wealth, and had fairly equal access to social roles of importance of one kind or another. Different suites of multiple clans were recruited into different social, political, and religious roles, and most clans filled many different roles. Within this broad equality, the scope of a clan's power depended most fundamentally on its wealth and the richness of its social linkages through sodalities rather than its size.

Sodalities were probably less common than clans, but perhaps more numerous and important than they were among historic Great Lakes-Riverine Native Americans. Three sodalities, marked by metallic earspools, copper breastplates, and platform smoking pipes, are documented with strong probability. Two others, marked by mica mirrors and galena cubes, may have existed and comprised the professional societies of specialized, shaman-like practitioners. These three to five sodalities each drew members from different residential communities and clans, and overlapped in their memberships, helping to integrate each Scioto Hopewell local symbolic community. Whether sodalities spanned multiple local symbolic communities is unknown. However, on rare occasions, sodalities did join together in complementary roles to perform a ceremony involving people from an entire sustainable community. Sodalities were a part of Scioto Hopewell life from its very beginning, and grew more diverse and larger in size over the Middle Woodland period.

Beyond these sodalities, there was a ceremonial society that was specific to the Bear clan and that appears to have been responsible for mortuary rites and/or doctoring. Other clan-specific societies that drew members exclusively from the Canine, Fox, Elk, or Raccoon clans may have operated.

Scioto Hopewell people recognized a masculine and a feminine gender, tied to sex, and possibly a third, culturally constructed, transitional, rare gender associated with certain shaman-like activities, as shaman tend to be classified, crossculturally. Men dominated the arena of social leadership. They exclusively or largely filled most specialized, shaman-like positions and comprised the great majority of high achievers or members in the two most common sodalities marked by earspools and breastplates. Women were recruited more equally into two important community-wide and/or public ceremonial positions marked respectively by copper celts and conch shell dippers, as well as two divination roles, following the crosscultural pattern for women in societies of middling complexity to be shaman-like specialists, and diviners specifically. That Scioto Hopewell women sometimes filled some very important social positions indicates that they were not depreciated. The overall moderately small contribution of women to roles of social and ritual leadership and power remained the case over much of the Middle Woodland period, with some increases in female contributions over this time span, followed by a marked decline at the tail end of the period. This long-term pattern of male dominance in leadership suggests a male-focused ethic consistent with the reckoning of kinship patrilineally.

Ritual gatherings within Scioto-Hopewell ceremonial centers were quite varied in their sizes, the spectra of social roles of their participants, and functions. Their nature depended on whether a particular ceremonial center served only a few residential communities or multiple, larger local symbolic communities, whether the center was a burial place for much of a community or only very select, important individuals, and temporal changes in mechanisms of social alliance and in the numbers of local symbolic communities that were allied. All of these relationships are traced out in Chapter 4, and a typology of ritual gatherings is presented.

Surprisingly, most ritual gatherings were small, ranging from a few to 25 gift givers. Only a handful of gatherings over the entire Middle Woodland period included more than 90 gift givers, and only one modestly approached the size of historic Huron and Algonkian Feasts of the Dead, which drew 1,000–1,600 persons. Most gatherings were predominated by gift givers of one or a few kinds of social roles, such as specialized shaman-like practitioners of a kind, nonshamanic leaders of a kind, members of a particular sodality, or members of one kind of clan-specific ceremonial society. Socially homogeneous gatherings of a sodality or clan-specific society were likely collective rites of professional integration and initiation. Gatherings with gift givers of a wide diversity of social roles were always large. They, and gatherings with moderate to large numbers of gift givers in leadership roles of mainly one kind, indicate the alliance-making and maintaining efforts of multiple, whole local symbolic communities.

The proportions of gift givers who were leaders, in contrast to individuals in personal roles, systematically increases with the sizes of gatherings, reflecting the greater need for organization with larger crowds. The proportion of nonshamanic to shaman-like leaders who gave gifts is similar for most gatherings, excepting the largest. At these, an increased balance of nonshamanic leaders indicates the need to control large assemblies with forms of leadership that were more institutionalized and predictable in their ways than were shaman-like ones.

Over the course of the Middle Woodland period, both the average numbers of gift givers at gatherings and the proportions of gift givers who were leaders compared to individuals in personal roles increased and then decreased. These changes relate to changing strategies of alliance making over time: from primarily economic and social relations among individual commoners as dyads who met primarily outside of ceremonial centers to ritualized cooperative and/or competitive material displays focused on spiritual connections and orchestrated by leaders within centers, followed by a moderate reversion. The absolute number of attendees, in contrast to gift givers, at gatherings probably increased continuously over the Middle Woodland period until very near its end, given increases over time in the sizes of earthen-enclosure ceremonial centers and in the sizes/visibility of earspools that important persons displayed.

In all, Scioto Hopewell social and ritual organization is found to have emphasized horizontal equality among complementary kinds of leaders, social groups, and forms of recruitment rather than vertical relationships of domination, ranking, and centralization of power in the hands of a few individuals or social groups. Regional integration of local symbolic communities was institutionalized ritually much more so than through overarching leadership positions.

Chapter 5 integrates the environmental, subsistence, settlement, and social and ritual organizational information presented in Chapters 2 through 4 into a diachronic framework that explains the beginning and end of Scioto Hopewellian social and ceremonial life, and their archaeological manifestations. The model of change that is assembled does not pose the intensification of farming Eastern Agricultural Complex crops as ultimately causal of the beginnings of Hopewellian social and ritual lifeways, in contrast to previous interpretations that have focused on farming. Horticultural intensification is not given this primary position because it began abruptly in the area, around 50 B.C., and was coincident with rather than preceded the crystallization of Hopewellian social and ritual life, and because hunted and gathered foods remained central to the diets of Hopewellian people throughout the Middle Woodland period. Social competition arising from documented increases in local population density in the Scioto-Paint Creek area is rejected as an ultimate cause of the rise of Scioto Hopewellian social and ritual practices because local symbolic communities can be shown through geographic analysis to have been well separated from one another; also because Scioto Hopewell peoples did not exploit a wide diversity of easy and hard-to-gather plants which might indicate population packing and competition; and because there is little or no evidence of interpersonal or inter-community violence, which social competition might produce.

Instead of horticultural intensification and population growth, the rapid development of a new world view by peoples of the Scioto-Paint Creek area is found empirically to have led to the rise of Hopewellian social and ritual life. The new world view emphasized horizontal relationships of local social groups with spirits, the dead, and one another on the earth-disk, in contrast to vertical relationships among living humans on the earth-disk and spirits and the dead in Above and Below realms - relationships that had been central to Late Adena (Robbins complex) world view in the region. Eight expressions of the new world view are summarized: The form of trance used by shaman-like practitioners changed from vertical soul flight to horizontal merging with spirits. The Late Adena reinterpretation of the axis mundi as a horizontal water barrier to ghosts, in addition to a vertical axis of soul travel, was emphasized through its representation by mica, pearls, shells, water-worn cobbles, and other water-associated materials. The shape of burial mounds was relaxed from conical forms identified with the vertical axis mundi to also include low, loaf-shaped mounds that covered large charnel houses used by multiple local symbolic communities spread horizontally across the region. The location where burial mound centers were built was shifted from upland valley-edges with their natural, conical hillocks associated with the Upper realms to middle-elevation, flat terraces associated with the earth-disk. The shape of earthworks and the design of their walls were modified from circular shapes that symbolized the vertical axis mundi in cross section to shapes with linear sides or major and minor axes that could be oriented to key horizontal directions of the earth-disk, from ditch-and-embankment wall forms that emphasized the vertical and were identified with the axis mundi to embankments that lacked ditches and did not emphasize the vertical, and from embankment walls that were uniform in the colors of their soils to ones that were horizontally differentiated in the colors of their interior and exterior soils. The features and internal layout of cemeteries were reconfigured from a few log crypts separated vertically and/or horizontally from one another to the interment of many persons from multiple local symbolic communities placed on a single horizontal burial floor. The practice of burying individuals largely separately from one another was augmented with mixing together the cremations of many people from multiple local symbolic communities at the very early Hopewellian Tremper site. A new practice was begun, whereby large numbers of ceremonial artifacts were decommissioned in deposits within charnel houses during collective ceremonies of new professional societies that integrated people from multiple local symbolic communities.

The new world view encouraged people of the Scioto-Paint Creek area to move their settlements and ceremonial grounds from small tributaries and the edges of the Scioto and Paint Creek valleys to the middle terraces and flood plains of those valleys. Nonlocalized clans and incipient sodalities, already in existence, as well as the natural floral and faunal productivity of the valley bottoms, rivers, and terraces, made this settlement transition socially and physically feasible. There in the valleys, with rich horticultural land close at hand, the people began to invest more efforts in horticulture. As spiritual thought and practices developed in the Scioto-Paint Creek area, it gained in reputation and additional people from outside the area moved into it. Increases in population and social interaction provided a creative milieu for further innovations in ritual and belief, encouraged new forms of social integration, leadership, and intercommunity alliance as described in Chapter 4, augmented the sizes of ritual gatherings, and encouraged the building of larger ceremonial centers for holding bigger gatherings.

The end of Scioto Hopewellian social and ritual organization, like its beginning, was abrupt, and is shown to have resulted from neither subsistence nor demographic change, nor from climatic deterioration. Instead, a unique historical event led to the falling apart of an alliance among three local symbolic communities in the area and the discontinuing of most Hopewellian ritual practices. The event probably involved a perceived spiritual difficulty central to Scioto Hopewell world view a rather than a social problem. This appears to have been the case because the Hopewellian practices that were abandoned encompassed most of the fabric of Scioto Hopewellian spiritual, ceremonial, and symbolic life, including both ones that had directly supported the alliance and others that had different social and religious purposes. Also, there is no evidence for increased social competition and unrest over time in the area.

Part III of the book, comprised of the next nine chapters, presents the four data bases, evaluates the human biological and archaeological aspects of the bioarchaeological data base, and summarizes essential, socioculturally significant patterns within it.

Chapter 6 introduces the electronic bioarchaeological data base, the categories of information it documents, its layout, its formatting in EXCEL and a tab-delineated form, and other technical details. The EXCEL and tab-delineated versions of the data base are given in Appendices 6.1A–D. Also presented is Appendix 6.2, which compiles much of the same information, but outlined in English rather than coded, and organized by burial or ceremonial deposit sequentially rather than as a two-dimensional matrix. Appendix 6.2 allows the researcher to easily overview the nature of an individual burial at a glance, and to do search-and-find operations on key words, in a way that the coded data matrix does not. Appendix 6.2 was our intermediary step in organizing the data, between collecting the raw documentation and coding these data as matrices.

Chapter 7 describes each of the 52 archaeological sites in the bioarchaeological data base and gives a bibliography of the published and unpublished sources of information for each site. Each site is described for the major and minor river drainages in which it occurs; its township location and location on a state map (Figure 7.1); the form and size of any earthen enclosure(s) it includes; the number of mounds, inhumations, and/or cremations within the site; the dimensions of each mound where known; the extent and locations of excavation (i.e., sampling) within each mound, where known; the detail and reliability of reporting of the horizontal and stratigraphic positions of burials; the amount and quality of information on the ages and sexes of inhumed persons; the amount of information provided on the positioning of artifacts within graves; the location(s) of curation of artifacts, human remains, excavation notes, maps, and other records for the site; and the archaeologist(s) who dug and/or published reports on the site's excavation.

As part of the description of each archaeological site, Chapter 7 also introduces the intrasite and regional geographic data bases. Maps of the internal spatial layouts of those 50 mounds and 10 ceremonial enclosures from which burials or ceremonial deposits have been excavated, and for which maps exist, are presented in digitized form in Appendix 7.2. Ohio county maps of the locations of 3,691 mound and/or enclosure ceremonial centers, largely Early and Middle Woodland in date, are given in digitized form in Appendix 7.3.

Chapter 8 presents the 545 variables used in the bioarchaeological data base to characterize each of its 1052+ individuals, 936 graves, and 77 ceremonial deposits. Each variable and the states it can take are defined, and the codes for the states in the data base are listed. The variables broadly document information about each individual's or deposit's location and associated kinds and numbers of artifacts, and for an individual, their age and sex, the form of the tomb, body treatment, grave orientation, and the positions of artifacts relative to the body within the grave. Photographs in Chapters 2 through 5, which show many of the kinds of grave goods recorded in the data base, are cited to help familiarize researchers with the artifact classes. Also presented is the general approach we have taken to artifact classification; the specific terminological system we used for large bifaces, projectile point/knife forms, and prismatic blades; the equivalencies between our terms for these artifact classes and various terms used over the last century by ten archaeologists in 17 publications; and the mutual exclusivity of variables in their definitions and exceptions to this.

Chapter 9 examines the age and sex determinations made by various researchers on Ohio Hopewell inhumations and cremations over the past 100 and more years. These determinations include assessments made in the field by excavators between the 1880s and early 1930s, laboratory assessments made between the 1920s and 1970s using methods that are not usually specified, and assessments from the 1980s onward, for which the methods used are usually known. The chapter considers aging and sexing methods in a historical context in an attempt to better define the techniques that would have been available to researchers working at various times over the last century, and the implications for data accuracy. After reconstructing the methods available during different periods, the age and sex determinations that were made by different researchers for the same skeletons are compared for their consistency and assessed for their probable reliability, based on the comparisons and the quality of the methods that the researchers most likely used. The most reliable age estimate and sex estimate for each individual are then recorded in the data base. Less reliable age and sex estimates are reported in the appendices to the chapter. The skeletal series considered in these assessments include those from the Hopewell, Seip, and Turner earthworks, and from several smaller or less-well studied sites. Sex identifications are found to be reasonably consistent across researchers and time, whether the assessments were made in the field or in a laboratory setting. Age identifications show greater variability. Age assessments of subadults should be considered reliable regardless of when they were made, so long as the skeletons are placed into broad age categories (e.g. infant, child, adolescent). For adults, age estimates made using pelvic indicators should be favored over those from the skull. Those that include the Suchey-Brooks system should be treated as most reliable, as they seem to provide a more reasonable age-at-death distribution for Hopewell sites than do other pelvic techniques.

Chapter 10 describes a reassessment of the ages and sexes of skeletons from the Hopewell earthwork using a wide variety of methods, both individually and in combination. The goal of the project was to increase the amount of reliable age and sex data available on burials from the Hopewell site. The study included standard aging and sexing techniques applied to the skull and pelvis, as well as some less commonly used approaches such as seriation of skulls for sexing and seriation of the dentition, pubic symphyses, and pelvic auricular surfaces for aging. Multifactorial methods were also applied to improve both age and sex estimates. Specifically, principle components analysis of the results from several of the individual aging methods was used to age skeletons, and discriminant functions created from the dental measurements were used to sex individuals. Application of these additional techniques substantially increased the number of skeletons from the Hopewell site with reliable age and sex information. It also led to some refinement of ages and sexes that had been estimated previously using then more common methods of age and sex determination.

The chapter also includes two Appendices, 10.3 and 10.4, which summarize current knowledge about each of the skeletons encountered by Shetrone and Moorehead at the Hopewell site. Information for these appendices was drawn from museum collections, published site reports, and unpublished field notes. The appendices include detailed information about which skeletons were collected or not in the field, which skeletons were curated and where they currently reside, which bones exhibit cutmarks and copper staining, as well as detailed descriptions of culturally modified human remains from the site. The appendices are an invaluable resource for anyone wishing to understand the research potential of this skeletal assemblage.

Chapter 11 documents the possible ceremonial and utilitarian functions, symbolic meanings, and social role associations of 51 kinds of Ohio Hopewellian ritual paraphernalia and raw materials that are recorded in the bioarchaeological data base. The possible uses, meanings, and role associations of the artifact classes are inferred from a systematic survey of ethnohistorical literature on analogous items used by Native American tribes of the Eastern Woodlands and eastern Plains. Identifying the specific uses, meanings, and role associations of the Ohio Hopewellian artifact classes is essential to personalizing the Ohio Middle Woodland period with people in active social roles having specific domains and forms of action oriented toward specific purposes.

Six bodies of ethnohistoric information were surveyed and are summarized in the chapter: the *eHRAF* (1997) *Collection of Ethnography* for nine Woodland and Plains Native American tribes belonging to six language families, H. R. Schoolcraft's (1860) *Archives of Aboriginal Knowledge* in a searchable electronic form and covering 16 Woodland and Plains tribes, J. R. Swanton's (1946, 1928) *Indians of the Southeastern United States* and *Religious Beliefs and Medical Practices of the Creek Indians*, which cover 177 tribes from seven language families, and J. Mooney's (1891a, 1900a) *Sacred Formulas of the Cherokees* and *Myths of the Cherokee*, which are derived from extended interviews with 15 Cherokee informants. Together, these six collections provided wide and deep ethnohistorical coverage of the northern and southeastern Woodland Native American tribes and select tribes of the Plains. The 51 classes of artifacts for which ethnohistoric analogs were sought include almost all those in the bioarchaeological data base that we thought were used in shamanic or shaman-like ceremonies, and most classes that we thought represented leadership in communities, leadership or membership in ceremonial societies, and/or high prestige.

The results the survey are presented in six appendices of quotations and photographs that were obtained from the surveyed sources and that reveal the uses, meanings, and role associations for the 51 kinds of paraphernalia and raw materials (Appendices 11.2–11.7). A summary table of the information found for each artifact class is presented in the chapter's text.

Chapters 12 and 13 summarize five socioculturally significant kinds of empirical patterns that occur within the bioarchaeological data base. Each tomb form and artifact class is characterized, by site, for its sex distribution and age distribution. Each artifact class is also characterized, by site, for whether it tends to occur in burials or ceremonial deposits that lack human remains, and whether it tends to occur alone or in consistent numbers or in larger aggregates of variable size across burials. Finally, artifact classes that were ritual paraphernalia and/or symbols of social roles are described for the patterns of association and dissociation among them across burials from multiple ceremonial centers combined, and then across burials from select, single ceremonial centers. The summaries of patterns are determined using data from the majority but not all of the sites in the data base – specifically, those coded for analyses published in *Gathering Hopewell* (Carr and Case 2005c).

The five kinds of summaries of empirical patterning are preanalyses that place the tomb forms and artifact classes in archaeological context and lay the groundwork critical for more complex analyses aimed at reconstructing facets of Ohio Hopewell social organization and lifeways. Some of the preanalyses are standard in the strategies of contemporary mortuary analysis (e.g., Brown 1981; Peebles 1971), whereas others are more innovative or specific to the nature of Ohio Hopewell mortuary records. The patterns that are presented in the two chapters have many analytical and interpretive uses. Some dozen and a half uses are discussed in the two chapters. Examples include: to archaeologically identify and distinguish achieved prestige, social ranking, achieved leadership, leadership ascribed by rank, and wealth; to archaeologically identify communities, ethnic groups, sodalities, and kinship structure; to reveal archaeologically the cultural value placed on children and the elderly and the timing of transition to adulthood and other age-related rites of passage; to define archaeologically the collective rites of a sodality, a clan-based ceremonial society, or other professional group; to archaeologically distinguish items that were owned individually from those owned collectively; to archaeologically investigate notions of the power and personhood of artifact classes; to determine archaeologically the social and ritual functions of the artifact classes; and to define social roles.

Our aim in presenting the empirical patterns revealed by the five kinds of preanalyses is to remove for other researchers the burden of having to find the patterns. A researcher can now proceed directly to interpreting them socioculturally and applying them in more complex sociocultural studies than we have previously made.

Chapter 14 examines the comparability of our bioarchaeological data base to ones created by N. Greber (1976) for the sites of Seip, Ater, and Turner, and to one built by T. Lloyd (personal communication) for the Hopewell site. The comparisons show close correspondences among the cell values of the data bases for almost all variables, to the extent that the variables were defined similarly, and despite the different goals of the researchers, the possibility of their different interpretations of field notes and other primary documents, and the varying degrees to which they consulted the artifact collections in addition to written documents. This suggests the reproducibility and accuracy of all the data bases. For Seip, Ater, and Turner, comparisons are made on an individual-by-individual basis for similarities or differences in assessments of their age, sex, body treatment, grave orientation, tomb form, the presence-absence of 32 kinds of artifact forms and their materials, and the counts of the 32 kinds of artifacts. For the Hopewell site, comparisons are made more broadly, for the numbers of individuals within a mound, the numbers of individuals of given age and sex categories, and the numbers of individuals with certain kinds of body treatments, in tombs of certain forms, and with certain of 43 kinds of grave goods.

The last chapter of the book guides the profession to a very wide diversity of seminal and contemporary research topics about Ohio Hopewell people and their ways that warrant investigation. Some of the projects would help to flesh out our understanding of the social and ritual lives and religious beliefs of Hopewell peoples. Other projects have more general applicability to the evaluation and building of general anthropological theory about societies of middling complexity. The topics vary in scope, some being ideal for individual researchers such as masters and doctoral students, others requiring team research. The projects involve further analyses of data presented in this book and/or additional field and museum work to gather new data.

Seven broad arenas for exploration are laid out: chronology, subsistence and mobility, community organization, ritual organization and alliances, other aspects of social organization, economic organization and its implications for sociopolitical relations, and the reconstruction of many facets of Hopewellian life in southwestern Ohio and comparing of them to life in the Scioto drainage. For each of these topics, current thought about them and extant relevant data are summarized, new kinds of data and methods that would be useful or necessary for investigating the topics are specified, and possible alternative interpretations and hunches about the situations are offered.

Key, new kinds of data and methods that are suggested include the following. Breastplates and platform pipes can be fine-seriated, analogous to what has been done with earspools (Ruhl 1996; Ruhl and Seeman 1998), in order to extend intersite and intrasite chronology. The Scioto, main Paint Creek, and North Fork of Paint Creek valley bottoms could be systematically surface surveyed and cored, with the goals of locating surface and buried habitation sites and modeling the alluvial landscape evolution of the valleys in order to predict locations of buried sites. Extant museum collections of Middle Woodland human remains could be analyzed for their AMS radiocarbon dates, their mtDNA signatures, their strontium and oxygen isotopic signatures, their nonmetric postcranial, cranial, and dental traits, their craniometrics of the face and skull base, and their musculoskeletal stress markers in order to address a very wide variety of topics. Specifically, human remains could be studied to: date mortuary events and sites; sex individuals in preparation for gender analyses; define communities; infer the community affiliations of specific leaders and important persons; estimate the fluidity of membership of communities; estimate rates and vectors of intermarriage among communities, clans, and prestige groups; determine post-marital residence patterns; record patterns of relocation of an individual or persons of particular social categories locally, regionally, or interregionally at various points in their life histories; assess the solidarity of alliances considering marriage, residence, and relocation patterns; and provide insights into the varying kinds of work, work loads, and qualities of life of individuals who differed by gender, age, social role, prestige, community, or other social categories.

Beyond the topics just mentioned in discussing new methods and data, other innovative and intriguing subjects, approachable with other kinds of data, are also discussed in the chapter. Among the more exciting subjects are: the geographic expansion of Hopewellian beliefs and rituals within the Scioto-Paint Creek area, possibly from south to north and up tributaries; the geographic areas and expanse from which persons came to participate in mortuary rituals at various ceremonial centers; the degree of social and ceremonial integration of the Newark community in the Licking valley with communities in the Scioto-Paint Creek area; the staging of ritual dramas in charnel houses, in contrast to strict sociological interpretations of mortuary variability; the very diverse purposes of suprahousehold mortuary rituals beyond world renewal, upon which Ohio and Illinois archaeologists have been stuck for over a decade; the particular economic and social means and material media used to build intercommunity alliances, beyond spiritual-religious means and artifacts; the degree to which communities, other social categories of persons, and individuals in the Scioto-Paint Creek area cooperated or competed with one another; the life histories of individuals who rose to be leaders and their power bases, activities, and quality of life relative to others; the problem of where in the archaeological record institutionalized social ranking might have been expressed, if it existed; the nature of Scioto Hopewell clans, such as whether they were descent groups, claimed descent from a totem, owned a stock of names, owned a sacred pack, controlled property, and/or determined residence; the geographic expanse of sodalities and their roles in the long-distance acquisition of fancy raw materials and the production of ceremonial paraphernalia; the range of categories of individuals and/or social groups who produced ceremonial paraphernalia; the economic issues of surplus and labor specialization; and the possible sociopolitical uses of economic relations of exchange of food, ceramics, lithics, mates, and/or rituals in order to generate prestige, power, or privilege, and to secure and retain leadership positions. The data and means necessary to address these topics are discussed in practical terms.

CONCLUSION

By systematizing and presenting large, regional-scale bodies of data on excavated Ohio Hopewellian mortuary contexts and skeletal remains, this book removes for archaeologists a heavy overhead for making broad and detailed, analytical inquiries into the societies, rituals, and religious concepts of Ohio Hopewellian peoples. It is our hope that in this new and expeditious milieu for research, other archaeologists will be encouraged to continue making the very detailed and anthropological kinds of explorations of Hopewellian life that we have initiated in this book and in *Gathering Hopewell* (Carr and Case 2005c) with these data. The bioarchaeological data base and contextual information provided here afford the opportunity for archaeologists to immerse themselves within and familiarize themselves with the Ohio Hopewellian archaeological record and its patterning to a depth that was not possible before. And that record is extraordinarily deep and expressive socially and culturally. By taking the time to envision and become aware of the lives, actions, responses, sensitivities, and motivations of Hopewell individuals and groups on their own material and cultural terms, as richly evidenced empirically, rather than presuming the basic nature of Hopewell life from one's own experience of Western life or from some one preferred sociological theory or ethnohistoric analog, the chance arises for the researcher to come to know Hopewellian people rather than to reconstruct them in the image of his or her own self or some other people. Such detailed, personalized observation of Hopewell people in their local context, and situating oneself to the extent possible in their midst, lay the groundwork for a deeper experience of them, and open the door to a truer humanistic appreciation of them and to more accurate comparative study and scientific understanding of them.

NOTES

1. Coming to know a person from another culture, past or present, is a matter of degree, and may involve more or fewer erroneous presuppositions. Because it is hard to imagine, a priori, experiences in cultures other than one's own, the success of an observer in overcoming his or her own cultural, personal, and paradigmatic filters depends not only on the richness of information available about the other person and culture, but also the amount and depth of experience that the observer has in different cultures generally. With greater cross-cultural experience – through living in different cultures, reading about them, or reading theory about cultural variation – comes an understanding of what things may vary and what things tend not to vary among cultures, the range of likely possibilities in the case at hand, and where one's own biases may lie. Deep understandings of a person from another culture (e.g., concepts of the self, how time, space, and the physical world are perceived) usually require fluency in the other person's language.
2. Here, we follow Goodenough's (1965: 312) and Nadel's (1957:28,29) concepts of the social role. The dynamic quality of a social role is similar to that of the concept of agency as a capacity for action (Giddens 1984:219), but at a level more encompassing than the individual and more commonly resolvable within the limits of archaeological records.

   For a key examples of the approach, which place individuals in active, sociocultural roles, see Carr and Case (2005b), Field et al. (2005), Rodrigues (2005), Thomas et al. (2005).
3. In the approach taken here, anthropological theories about culture, society, and people, crosscultural empirical generalizations about these without a causal paradigm, and close ethnohistoric analogs are all found useful for understanding another people, past or present. Such theoretical and empirical images can inspire insights into the culture-specific ways of the people of interest, or at least insightful questions to ask about them. Categorizing and subsuming a culture, society, or people under a general theory, crosscultural pattern, or ethnohistoric analog in order to "explain" it or them is not our goal, here.
4. The thick prehistory approach and its four aspects that Carr has defined to guide archaeologists toward understandings of past peoples is inspired by the philosophies and practices of both humanist and scientific anthropologists and others scholars. These influences include Robert Gardner's (1964) emic, personalized, local-focused, and richly descriptive rendering of the Dugum Dani of New Guinea in his film, *Dead Birds*; Roy Rappaport's (1968, 1971) distinction between cognized

and operational models, as well as his focus on local ecosystems; methodological aspects of Clifford Geertz's (1973) thick description approach to ethnography; Tukey's (1977, 1980; Hartwig and Dearing 1979; Tukey and Wilk 1970) concept of exploratory data analysis, analogous to thick description; Tukey's (1979:122; 1980:23–24; Tukey and Wilk 1970:371), Carr's (1985), and Whallon's (1984) concerns for revealing data structures in their own terms; and Hanson's (1972) discussion of the process of how insights are gained (i.e., abduction). Also influential to Carr's construction of the thick prehistory approach have been his training in the practices of active listening, staying present with another, and exploratory questioning, in the paraprofessional roles of counselor and hospice care-provider.

5. The Hey Foundation in New York City was closed at the time of our survey of museum collections. We also did not travel to London to the British Museum to study Squier and Davis' (1948) collection of pipes excavated from the Mound City earthwork. This assemblage is reasonably well documented in publications by Mills (1922:513–522) and Otto (1992).
6. The grave artifact information that Greber (1976) presented could not be incorporated directly into our bioarchaeological data base because her data commonly lumps together distinct kinds of artifacts that we distinguish and that are necessary to keep separate analytically when making social role analyses.
7. Seeman's (1979a) compendium of Hopewell sites in Ohio and the Eastern Woodlands, and Fischer's (1974) compilation for Ohio list both large and small Hopewellian mounds, but does not list the number of burials at each or other internal provenience information.
8. Of the 19 cremations excavated by Brown and Baby (1966; Brown 1994) from the Mound City site, 11 are extant, curated at Hopewell Culture National Historical Park. All eight of the inhumans excavated by Baby and Brown are extant and curated at the Park.

Part II

The Scioto Hopewell: Land, People, Culture, and History

Part II

The Scioto Hopewell: Land, People, Culture, and History

Christopher Carr

Within the Scioto and Paint Creek valleys in south-central Ohio, two millennia ago, Native American communities that we call "Hopewell" created a vibrant culture and inspiring material record. Multiple communities gathered together to build truly monumental, earthen ceremonial grounds of many tens of acres and of complex geometric shapes for their rituals of life, death, renewal, and continuity, and in which to bury their honored dead (Carr 2005b; Ruby et al. 2005; Weets et al. 2005). Scioto Hopewell people developed a formal geometry, which underwrote the designs of their ceremonial centers (Marshall 1980, 1987, 1996; Romain 2000), and had an astronomy that allowed them to precisely align these places to the solstices, equinox, and rising and setting moon (Hively and Horn 1982, 1984; Romain 2004, 2005). The Hopewell masterfully shaped shining metals and stones, acquired through long and dangerous journeys afar, into graceful items for use in their rituals, to express their religious beliefs, and to symbolize their social identities: copper panpipes sheathed in silver, smoking pipes sculpted with creatures that provided personal connections to power, and copper breastplates and celts patinated in vivid colors with images of elite persons, to name a few (e.g., Figures 4.4, 4.8L; see also Figure 4.8K; Carr 2000d, 2005e; Carr and Lydecker 1998; Carr et al. 2002). To obtain these and other materials, Hopewell people traveled in the four directions from their verdant valleys as far as North Carolina, the Gulf Coast, western Wyoming and Idaho, and northern Ontario and Lake Superior. Within their charnel houses, which in instances approached two-thirds the size of a football field, Hopewell community leaders, sodality members, and shaman-like diviners and healers from multiple valleys filled the oaken tombs of certain of their deceased and their cremation basins with dozens to hundreds of gifts of copper axes, copper breastplates, quartz crystal and obsidian points, or galena cubes. The Scioto Hopewell individuals and communities, and their neighbors across the Eastern Woodlands, enjoyed a centuries-long period of peaceful relations among themselves, without bioarchaeological evidence of the kinds of interpersonal and intercommunity violence found in both earlier and later societies in the Scioto and the Woodlands (Buikstra 1977:80; Hall 1977:504–505; C. A. Johnston 2002:112; Mensforth 2001; Milner 1995:232, 234–235, 1999:120–122).

By all accounts, the Scioto Hopewell were remarkable people. Woodland Indians fifteen hundred years later across the Eastern United

States recounted in their oral histories of origin, migration, and tradition the grand ceremonial grounds in the Scioto area (Mann 2003). The rich material legacy of the Scioto Hopewell fired the curiosity of the earliest travelers and settlers in Ohio, was a primary impetus for large scale archaeological expeditions to there in the nineteenth and twentieth Centuries, and motivated the development of American archaeology as a discipline intellectually and methodologically (e.g., Shetrone 1936:1–25; Thomas 1894; Willey and Sabloff 1980:20–24, 30–31, 35–43). The elaborate artistry, architecture, burial practices, and travels of Scioto Hopewell peoples have given them a central place in all textbooks of North American and New World archaeology (Fagan 1995; Jennings 1978; Fiedel 1992; Milner 2004) and Native American art (Brose et al. 1985; Gardner 2005:403–404; Skokstad 2005:421–424; Townsend and Sharp 2004). Indeed, Scioto Hopewell Native Americans have been seen by archaeologists as "core" to the development of one of two "cultural climaxes" in the Eastern Woodlands before Contact (Griffin 1967; Hall 1973, 1980).

Despite the richness and reputation of the culture, deeds, and material record of Scioto Hopewell peoples, and for all the excavations that have been made of Scioto Hopewell ceremonial centers and burial mounds, remarkably little had been revealed with empirical certainty about Scioto Hopewell society, those who constituted it, and their social, ritual, and religious lives, until the appearance of the large sociological data sets and analyses in *Gathering Hopewell* (Carr and Case 2005c). Artistic representations of Hopewell elite (e.g., Dragoo and Wray 1964; Fowke 1902:592; Moorehead 1922:128; Shetrone 1936:122; Willoughby and Hooton 1922:plate 15) were described individually, but not as a whole corpus to create an integrated picture of the social personae, roles, and groups within Scioto Hopewellian communities. Mortuary analyses (Greber 1976, 1979a; Greber and Ruhl 1989:54–62) focused on whether Scioto Hopewellian societies exhibited ranking, but did not consider such topics as the social roles of leaders, their power bases, means of recruitment, formality, and degree of centralization; whether clans, phratries, moieties, or sodalities existed; kinship structure; or the number of genders and their roles and relative prestige. Little was known about the nature of Scioto Hopewellian rituals beyond means for disposing of the dead (e.g., Baby 1954; Brown 1979; Magrath 1945; Mills 1916) and qualitative descriptions of the sizes of ritual gatherings (Greber 1996). The greatest strides in understanding Scioto Hopewell society were made in the realm of settlement and community organization (e.g., Dancey 1991; Dancey and Pacheco 1997b; Pacheco 1993, 1996), although within a static framework devoid of social actors.

If Scioto Hopewell people are to be known in their own cultural and meaningful terms and if their material accomplishments are to be understood in that light, rather than through the projection of a sociological theory, an enthohistoric analogy, or a Western view of life onto the Hopewellian material record (e.g. Byers 2004; DeBoer 1997: 234–236, 239), it is necessary to fill the Scioto-Paint Creek landscape with Hopewell people and to come to know the details of their social, political, ritual, and religious lives empirically (e.g., Greber 1996). The social and political organization of Scioto Hopewell people, and its expression through rituals, provided the means by which the labor and transgenerational enculturation of geographically dispersed individuals were harnessed and focused on building the architecture of the ceremonial centers, creating the artworks, and acquiring the exotic raw materials that we equate with Hopewell. The religious beliefs of Scioto Hopewell peoples, which are expressed vividly in their material accomplishments, provided the charter and some of the immediate motivations for these endeavors. It is through thickly describing the social, political, ritual, and religious lives of Scioto Hopewellian people that their material accomplishments can become more than a fascination and mystery for Westerners and more than a note of pride in ancestral histories for Woodlands Native Americans. Hopewell people and their lives can be known, and in terms closer to their own.

Part II of this book aims at doing precisely that – at thickly describing Scioto Hopewell people and their lives in a personalized, locally contextualized, and empirically based manner that is sensitive to their voices. Chapters 2 through 5 summarize and integrate the details of the natural and symbolic environments, subsistence, settlement, social and ritual organization, and beliefs of the Hopewellian peoples who lived in the Scioto-Paint Creek area, and the changes they created in their culture over time. The chapters tightly integrate the multiple, specifically sociological analyses and descriptions made in the book, *Gathering Hopewell* (Carr and Case 2005c), extend these through further analysis and interpretation, and place the resulting reconstruction of Scioto Hopewell social-ritual life within a larger cultural, natural, and historical context not previously presented. Much new information on the local natural and symbolic environments, subsistence practices, sodalities, world view, history of changes in Scioto Hopewellian life, and the causes of its origin and ending, is presented and integrated here.

This summary of Scioto Hopewell culture and lifeways is also provided in order to contextualize for the reader the HOPEBIOARCH electronic data base reported here – to give specifically Hopewellian cultural meaning to the aspects of the Scioto Hopewellian mortuary-material record that the data base describes. Further, the summary is meant to stimulate in the reader questions and topics about Scioto Hopewellian life that could be addressed in the future with the data base (see also Chapter 15). The chapters that follow in Part II assume that the reader has a basic working knowledge of the culture history and lifeways of Hopewellian peoples in Ohio and across the Eastern Woodlands. Broad introductions to Hopewell are presented by Bense (1994), Fagan (1995), Fiedel (1996), Griffin (1967), Milner (2004), Prufer (1964b), Struever (1965), Struever and Houart (1972), and Walthall (1980).

Part II of this book begins by describing the natural and symbolic environment of the Scioto and Paint Creek valleys, the settlement pattern and multi-scalar organization of communities within those valleys, and the relations of alliance that communities developed with one another over time. With an understanding the basic social units within the region, discussion proceeds to the topics of leadership, social ranking, clans and their organization, kinship structure, sodalities, and gender. Once the various social groups, identities, and roles of the Scioto Hopewell peoples have been introduced, their presence at ritual gatherings of varying functions within ceremonial centers is described, the differing sizes and social compositions of the gatherings are summarized, and changes in the size and compositions of the gatherings over time are correlated with changes in the nature of leadership and intercommunity alliance strategies. Part II ends with the history of change in Scioto Hopewellian lifeways and a reconstruction of the causes of their rise and fall.

One large picture that emerges from these summaries is that the grandeur of the archaeological record of the Scioto Hopewell, and the labor organization implied by it, was accomplished with only a moderate degree of social hierarchy among individuals and groups, only the barest beginnings of centralized leadership at the end of the era, and only moderately formal and institutionalized social positions. Scioto Hopewell society was comprised of complementary groups and positions that had complementary roles and that were tied together largely horizontally as approximate equals. In addition, the memberships of different social groups commonly crosscut each other. These characteristics align more closely to the ethnological ideal model of the mature tribe with sodalities, put forth by Service (1962), and to the ethnographic descriptions of Indian tribes of the historic Northeastern Woodlands and the American Southwest, than they do to sociologically vertical but simpler Big Man systems (Sahlins 1968, 1972) or to vertical and more complex social formations such as ritual chiefdoms and headships, kingdoms, redistributive chiefdoms, or city states (Earle 1997; Netting 1972; Peebles and Kus 1977; Frazer 1935, vol. 4; Huntington and Metcalf 1991:135–136, 180–188; Winkelman 1992:69–73). At the same time, there is evidence that through time, Scioto Hopewell society became somewhat more hierarchical in how individuals and groups related to one another, and a little more centralized in its leadership. It appears that two social positions analogous to the priest-chief, each with a domain of power over multiple communities in different valleys, were emerging by the end of the Middle Woodland period.

A second large picture that the chapters in Part II unveil is how Scioto Hopewellian social and ceremonial life originated and came to an end. Its beginning is traced to a new world view that emphasized horizontal relationships of local social groups with spirits, the dead, and one another on the earth-disk, and that supplanted to a degree the focus on vertical relationships between living humans on the earth-disk and spirits and the dead in Above and Below realms that had been central in the world view of Late Adena peoples. Population aggregation into the main Scioto and Paint Creek valleys, increases in local population density there, horticultural intensification, and increasing social complexity are all found to have been, initially, responses to this change in world view rather than causes of it. These historical relationships are documented empirically with artifactual, artistic, paleoethnobotanical, site survey, mound architectural, and mortuary data. The end of Scioto Hopewellian social and ceremonial life is documented to have resulted from the breakdown of an intercommunity spiritual-social alliance (a sociopolitical cause) that was most likely precipitated by a perceived spiritual event or problem of fundamental proportion (spiritual belief). Other, previously posed causes of the end of Hopewellian life, including the invention of the bow and arrow, increased social competition and unrest, subsistence change, and climatic cooling are shown empirically to be out of sync temporally with the cultural fall or to not have occurred. The abruptness and historical timing of both the beginning and the ending of Scioto Hopewellian social and ceremonial lifeways are among the key pieces of evidence that point to the causes of these cultural changes.

Chapter 2

Environmental Setting, Natural Symbols, and Subsistence

CHRISTOPHER CARR

The social and ceremonial lives of Scioto Hopewell peoples were richly interconnected with the natural, experiential, and culturally interpreted, symbolic qualities of the land in which they made their home. The Scioto-Paint Creek area was both a medium for the creative expression of Hopewellian beliefs and practices, and a setting that presented a limited range of experiences and various ecological restrictions, which encouraged Hopewellian thought, activities, and society to develop in certain broad directions. Places of extraordinary character in the Scioto and Paint Creek valleys were selected by Hopewell people as the locations of their ceremonial centers. Animal species of the area served as templates for leadership roles, clan identities, and clan organization, and as means for obtaining personal power and journeying to an afterlife. Natural qualities of the valleys also helped to mold the densities and spatial distributions Hopewellian people there, affecting the sizes and complexity of their societies and rituals.

The social and ceremonial organization of Scioto Hopewell peoples was also broadly constrained by their means of subsistence. Gathering, hunting, fishing, and swidden horticulture necessitated that Scioto Hopewellian residential communities be small, dispersed over the landscape, and move every few years to a decade or so, if people were to closely map onto sources of food. Over the course of a year, logistical moves, and seasonal residential moves in at least certain parts of the Scioto drainage, were required of some or all members of households to harvest staple foods. The spatial dispersion and isolation of households from one another that resulted from these conditions required households to gather together periodically for enculturation, to work out marriage arrangements, for rites of passage, for their spiritual well being, and possibly to exchange foods to buffer against temporal variations in local food availability, i.e., for personal, societal, cultural, and biological health and reproduction. Social and spiritual ceremonies at mound centers and within earthen enclosures were the cultural vehicles that ensured the needed gatherings and interactions among households.

This chapter overviews the environment and subsistence of Scioto Hopewell people as a context for understanding their social and ritual organization and culture history. The chapter begins with an experiential view of the natural environment in the Scioto and Paint Creek area, with sensitivity to how Hopewellian people might have perceived it through concepts of their own world view. Next, the physiographic, pedological, floral, and faunal elements of the natural environment and the swidden horticultural plots that Hopewell people cleared in it are described in modern Western terms. These features of the natural and constructed environment are then explored for the symbolic meanings that Scioto Hopewell people probably attributed to them, given what is known about Scioto Hopewellian cosmology. The ecology of the Scioto-Paint Creek area is discussed next. The topics addressed include a correlation between locales of high environmental diversity and the spatial distribution of Hopewell people and their ceremonial centers, the stable regional density of people in the Scioto drainage during the Early and Middle Woodland periods, the aggregation of people into the bottomlands and middle terraces of the Scioto-Paint Creek area from its upland settings and from other portions of the Scioto drainage during the Middle Woodland period, and the nevertheless mild degree of spatial packing of social groups in the area.

The second half of the chapter documents the subsistence base of Scioto Hopewell people. Wild animal and plant foods, with emphasis on deer and other mammals, nuts, and mollusks, are found to have comprised the bulk of the caloric diet of Scioto Hopewell people. These food resources were the long-time mainstays of Woodland peoples in the Midwest-Riverine area. Cultivated Eastern Agricultural Complex starchy and oily seeds provided supplementary sustenance constituting only about a quarter of the diet. This reconstruction of the balance of food resources used by Scioto Hopewell people is supported by seven diverse lines of paleoethnobotanical, zooarchaeological, artifactual, artistic, and gender-based evidence. Diachronic paleoethnobotanical data from the upper Ohio valley basin are discussed next. They indicate that horticulture was intensified to its significant but supplementary level quickly in the last half century B.C. and first decades A.D., and remained approximately stable in its contribution to subsistence for about eight centuries thereafter. The chapter ends with evidence that Scioto Hopewell people grew their crops by means of swidden horticulture with periodically shifted garden plots, and that households varied significantly among one another in the balance of species of crops that they cultivated.

In line with the intent of this book to thickly describe local Scioto Hopewell people for their own particular lifeways in their own cultural, historical, and natural settings, this chapter focuses on environmental and subsistence data specifically from the Scioto drainage and close regions. Broader and generalized Midwestern and Eastern United States environmental conditions and subsistence patterns and their change over time serve as a general backdrop for reconstructing the local scene described here, but local data are given precedence in this task. Introductions to the broader Midwestern and Eastern Woodlands picture, for readers not familiar with it, are presented elsewhere (e.g., Asch and Asch 1985; Delcourt and Delcourt 1987, 2004; Ford 1974, 1978; Styles 1981; Styles et al. 1983; Phillips and Brown 1983; Smith 1992, 1995).

NATURAL AND EXPERIENTIAL SETTING

Paddling a dugout canoe southward on the Scioto river or Paint Creek, from their upper reaches toward the great concentration of Hopewellian earthworks at the confluence of these streams (Figures 1.3 and 1.4), one can only be awestruck by the changing landscape. From the gently rolling hills of the Till Plain, where sunlight can abound, the mountains of the Allegheny Plateau suddenly emerge and rise to their heights (Figure 2.1A–D), creating a world of interfingering light and shadows, which can reversibly transformation into each other – a theme that also preoccupied much of Hopewellian thought, art, and culture of the area (Carr and Case 2005b:199–202; Greber 1996: 162–165, 168–169, figure 9.9; Greber and Ruhl 1989:276; Turff and Carr 2005:670–672). The canoeist leaves behind the thinner oak-hickory or oak-sugar maple forests of the Plains, with their openings of scrub and prairie, and enters a

(A)

(B)

Figure 2.1. Landscape change. (A) Flat to gently rolling Till Plain north of the Scioto-Paint Creek area, 5 miles west of Frankfort, Ohio, near the North Fork of Paint Creek. (B, C) Mountains of the Allegheny Plateau emerge from

(C)

(D)

Figure 2.1. ***(continued)*** **the Till Plain, 10 miles and 8 miles north of Chillicothe, Ohio, respectively, near the Scioto river. (D) Dissected Allegheny Plateau, nine miles east of the Scioto valley at Waverly, Ohio. See credits.**

denser and darker world of bottomland forests, surrounded by bluffs and mountains with yet deeper stands. Here the trees are giants in comparison to those on the Plains (Figures 2.2 and 2.3).[1] As one's canoe approaches the Plateau, its outstretching arms slowly engulf one and come to tower above, giving the canoeist the feeling of entering a cavern and accentuating the downward flow of the Scioto. It is an unnatural decent, where the stream falls rather than rises as one proceeds into the climbing mountain terrain. This is a sacred place of change, where above and below meet and interpenetrate, and where distinct landscapes in different directions interface, recalling the vertically and horizontally positioned and interacting realms of the Scioto Hopewellian cosmos– a structure likewise emphasized by Scioto Hopewell peoples in their thought, art, and burial practices (see below, Figures 2.8 and 2.9).

Among all historic Native Americans, certain places in nature were believed to be full with energy and power (Gill 1982:97) – for example, "where the Creator's heart beats more strongly" (Swan 1988:152). Waterfalls, springs, deep pools, caves, canyons, mountain passes, outcrops of fascinating minerals and pigments, and refuges of medicinal plants are common examples of natural settings that historic Eastern Woodlands Native Americans thought to have especial power (Hudson 1976:130–131, 145; Bacon 1993). The landscape around the

Figure 2.2. A wet prairie within the oak-hickory forests of the Till Plain province in Ohio. See credits.

Figure 2.3. Tall and dense hardwoods of the Allegheny Plateau province in Ohio; primarily poplars. See credits.

confluence of the Scioto river and Paint Creek has this quality.

The lower 40 kilometers of Paint Creek valley, and adjacent portions of the Scioto valley for about 30 kilometers north and south of the confluence, is a place of great physiographic, geological, and biological diversity and powerful features. Around the confluence of Paint Creek and the Scioto river meet three physiographic provinces: the glaciated Till Plains section of the Central Lowland physiographic province, and the glaciated and unglaciated regions of the Allegheny Plateaus section of the Appalachian Plateaus (Figure 2.4A). The Till Plains are flat to gently rolling ground morraine, whereas the unglaciated regions of the Allegheny Plateaus have a rugged profile and deep, steep-sided valleys. The angularity of the glaciated regions of the Allegheny Plateaus is somewhat more subdued (Figure 2.4B). These geomorphological variations in the Scioto-Paint Creek area are attributable to it having been a southern terminus of both the Illinoisan and Wisconsinan glaciations.

In the Allegheny Plateaus section, the Scioto and main Paint Creek valleys are distinctive from their tributary streams. The Scioto valley and Paint Creek valley are broad: 3–5 kilometers wide, and 1.5–2 miles wide, respectively, in the area of Chillicothe (Figure 2.5A, B). The Scioto and Paint Creek are greatly underfit streams, with valleys that were scoured out by much larger preglacial and glacial rivers. The Scioto river occupies the preglacial Teays valley immediately around Chillicothe, and farther south it flows through wide, Deep Stage, Illinoisan, and Wisconsinan valleys in its course to the Ohio river (Hansen 1987; Quinn 1974; ver Steeg 1946). In contrast, streams tributary to the Scioto and Paint Creek are commonly V-shaped, with little to no flood plain (Figure 2.5C; Brockman 2006; Fenneman 1938).

Both the Scioto and Paint Creek valleys have a complex morphology, with up to seven terraces of Illinoisan and Wisconsinan age (Kempton and Goldthwait [1959] in Maslowski and Seeman [1992]). Their pedology is diverse, with six distinct soil series, and an additional two series characterize the surrounding uplands. This geomorphological and pedological variation, in turn, has fostered the development of diverse biological communities in the area (Maslowski and Seeman 1992). It likely had the greatest diversity of

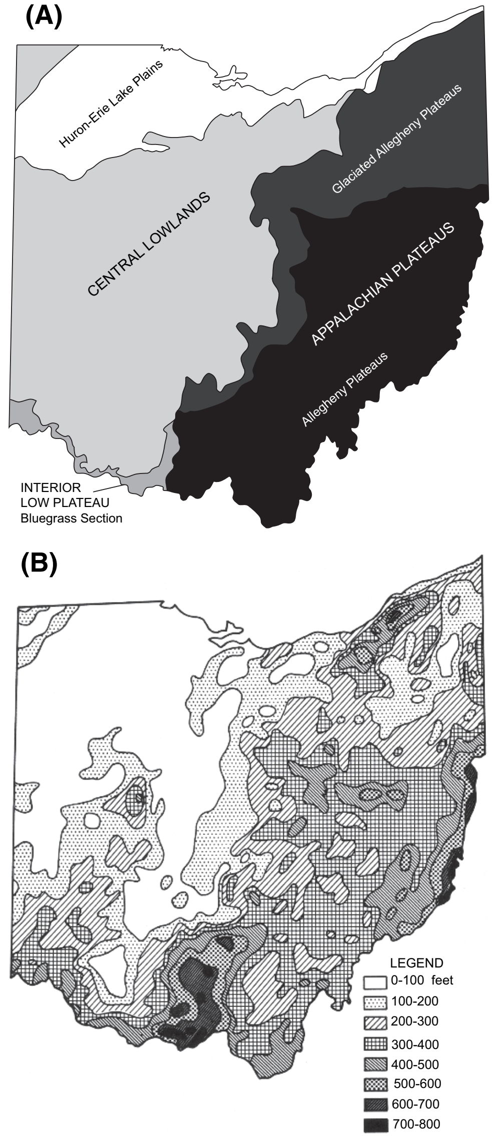


Figure 2.4. (A) Till plains, glaciated Allegheny Plateaus, and unglaciated Allegheny Plateaus of Ohio. (B) Relative topographic relief in Ohio. Note the region of maximal relief around the lower Scioto valley. See credits.

(A)

(B)

Figure 2.5. Comparison of the widths of the flood plains of the Scioto, main Paint Creek, and North Fork of Paint Creek valleys in the Chillicothe area. (A) The wide Scioto valley flood plain, looking bluff-to-bluff, one mile south of the Liberty earthwork. (B) The somewhat less wide, main Paint Creek valley flood plain,

(C)

Figure 2.5. ***(continued)*** **looking bluff-to-bluff, 2 miles east of the Seip earthwork. (C) The narrow North Fork of Paint Creek, one half mile west of the Hopewell earthwork, and between the Hopewell and Old Town (Frankfort) earthworks. See credits.**

microenvironments in areas of comparable size in the entire mid-Ohio valley (Gordon 1969; Crowl 1937; Quinn 1974 cited in Maslowski and Seeman 1992:11). The rivers and their open banks offered a variety of fish, especially buffalo, channel cat, redhorse, and drum; fresh-water mussels; turtles of the soft-shelled, box, snapping, and less common varieties; and fair-sized flocks of migrating ducks and geese (Parmalee 1965; Stansbery 1965; Bellrose 1976:20–23; Ruby et al. 2005:128, Table 4.1). In the Scioto valley near the mouth of Paint Creek valley (Figure 2.6), the shores of these two streams were lined with cottonwood, willow, and sycamore. Mixed hardwood forests of beech, white oak, sugar maple, red maple, elm, black walnut, ash, and/or yellow buckeye, with occasional small prairie openings, filled out the swampy flood plains. The higher and better drained Wisconsinan terraces supported mesophytic forests dominated by white oak and sugar maple, with small prairie openings. This community offered acorns, maple syrup, and edge-adapted animals such as deer and turkey as key food resources. Yet higher, Illinoisan terraces and slopes of the Allegheny Plateau were characterized by mixed mesophytic forests, including beech, sugar maple, tulip poplar, white basswood, chestnut, yellow buckeye, white oak, red oak, and small prairie openings. The uplands beyond the valley rim bore mixed mesophytic, mixed oak-hickory, and mixed oak-sugar maple forests. Hickory nuts, acorns, maple syrup, and deer would have been the primary foods of interest here. Paint Creek valley had different and less diverse vegetation. Cottonwood, willow, and sycamore grew at the stream's edge. The floodplain was dominated by beech trees with some maple and surrounded by mixed mesophytic forests. In their more western and northern reaches in Ross county, Paint Creek and its North Fork flowed through mixed oak and elm-ash swamp forests (Figure 2.7; Gordon 1966, 1969:37–44, 50, 70; Ohio Department of Natural Resources 2005; Maslowski and Seeman 1992:11). On

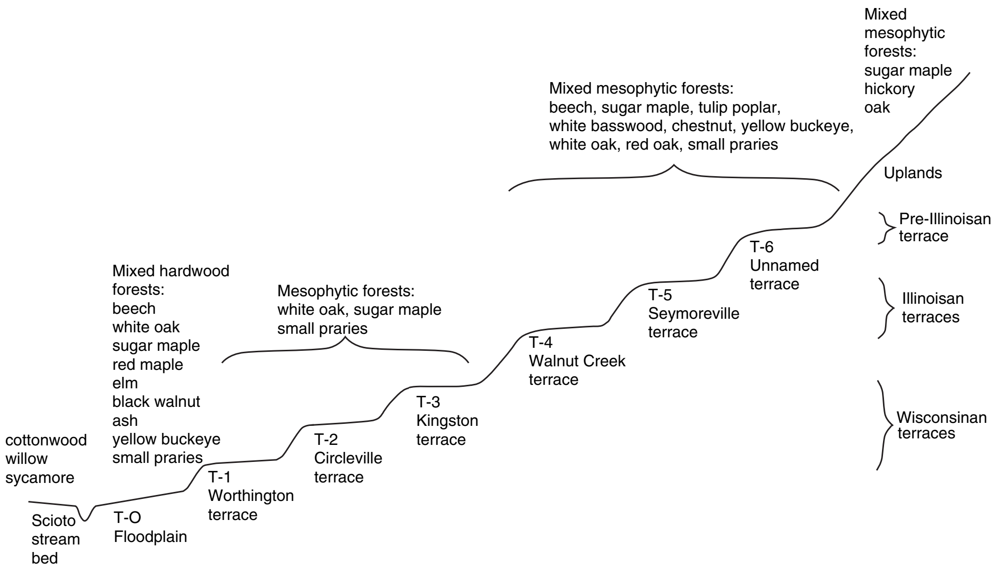


Figure 2.6. Relation of natural vegetation to physiography in the Scioto valley near the confluence of Paint Creek. Flood plain and terrace widths are not drawn to scale. See credits.

a grander geographic scale, the Scioto-Paint Creek area was the boundary between oak-hickory forests that dominated the Till Plains and chestnut, chestnut-oak, and poplar forests that dominated the landscape to the south (Fenneman 1938:669–670).

Swidden plots for growing Eastern Agricultural Complex crops (goosefoot, erect knotweed, sumpweed, sunflower, maygrass), with their associated forest-edge berries and nuts (raspberry, elderberry, hazelnut, honey locust) and deer and turkey, added to the natural floral and faunal diversity of the Scioto-Paint Creek area. Plots were probably cleared in the mesophytic forests of the valley terraces, piecing together archaeological and paleoethnobotanical evidence from the neighboring Licking drainage (Pacheco 1993:101–102, 110; Wymer 1997:157, 159; see also Romain 2000:167–188). The friable and fertile Fox loam soils of the Wisconsinan T-2 (Circleville) terrace would have been one setting well suited to swidden farming. Bottomland soils, which were annually renewed with nutrients by flood-brought alluvium, were another good setting for farming (Pacheco et al. 2005; Prufer et al. 1965). Historically, these soils grew outstanding corn crops, bringing the nickname, "Egypt", to the area, in reference to the fertility of the Nile valley (Gordon 1969:72 citing Marshall [1966]).

The Scioto-Paint Creek area is also advantaged in its climate, which complemented it's rich soils in making it agriculturally fruitful. Its growing season of 195 frost-free days is a full 20–30 days longer than immediately surrounding locations (Gordon 1969:80, Figure 22).

The power of the Scioto-Paint Creek area was demonstrated by the massive trees and dense forests that the fertile soils of its bottomlands and terraces, and its longer growing season, supported. Of the sizes of trees in the area during the early 1800s, it has been said: "It seems that the lower Scioto valley in that earlier day was a celebrated 'big tree' region." "The giant Scioto sycamore was . . . a forked hollow tree measuring 21 feet in diameter at its base and 42 feet in circumference at the height of five feet . . . . In June 1808, a party of 15 persons mounted on horseback advanced into the cavity . . . " "Another, near the town of Waverly, was used as a blacksmith shop, large enough, it was said, 'that a man could stand in the center of the hollow, balance a 10 foot pole, and describe a circle without striking the side.' National champion among living trees of the species is a giant sycamore measuring a little

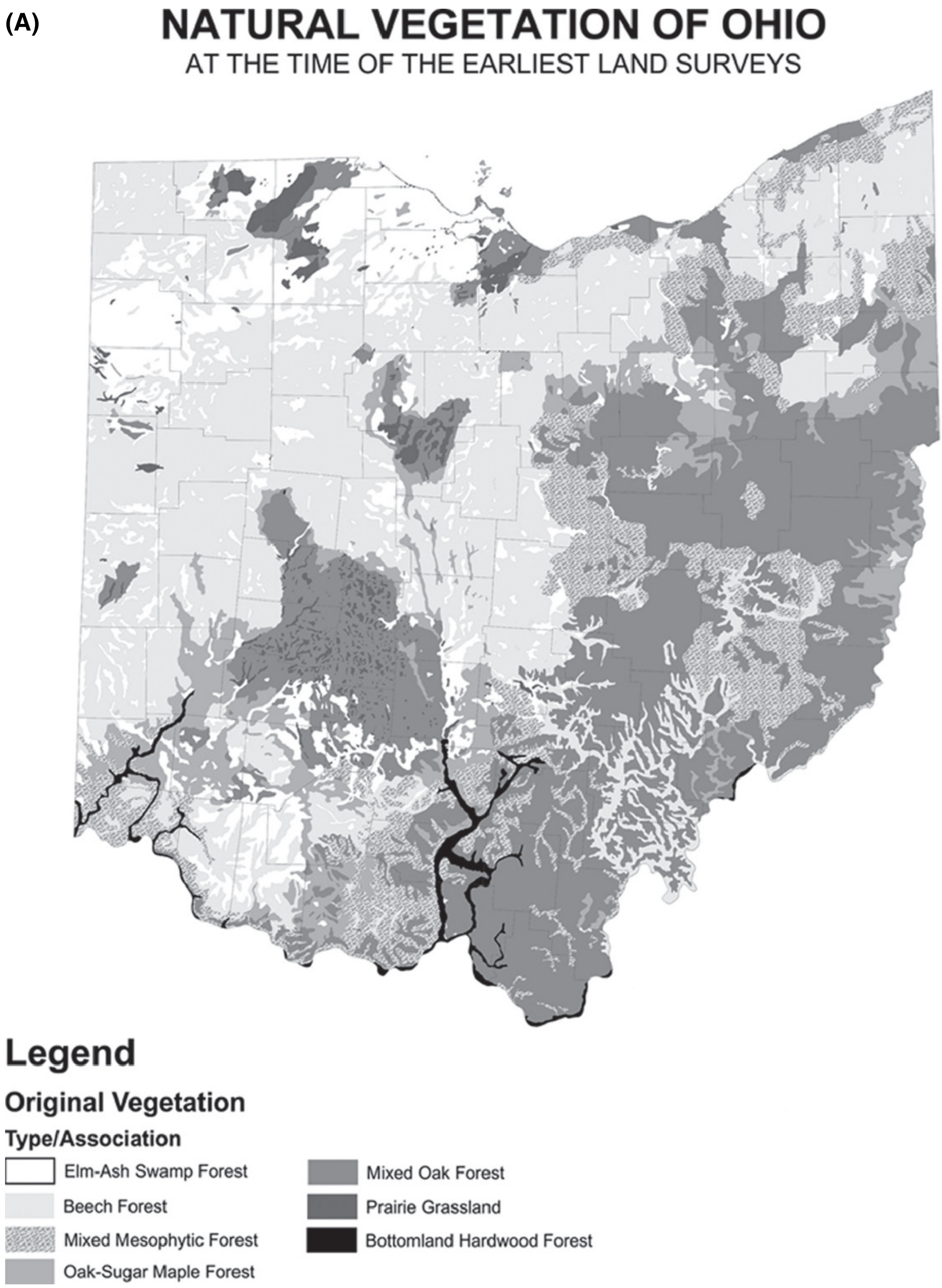


Figure 2.7. (A) Kinds of forests in Ohio. (B) Kinds of forests in the lower and central Scioto drainage. See credits.

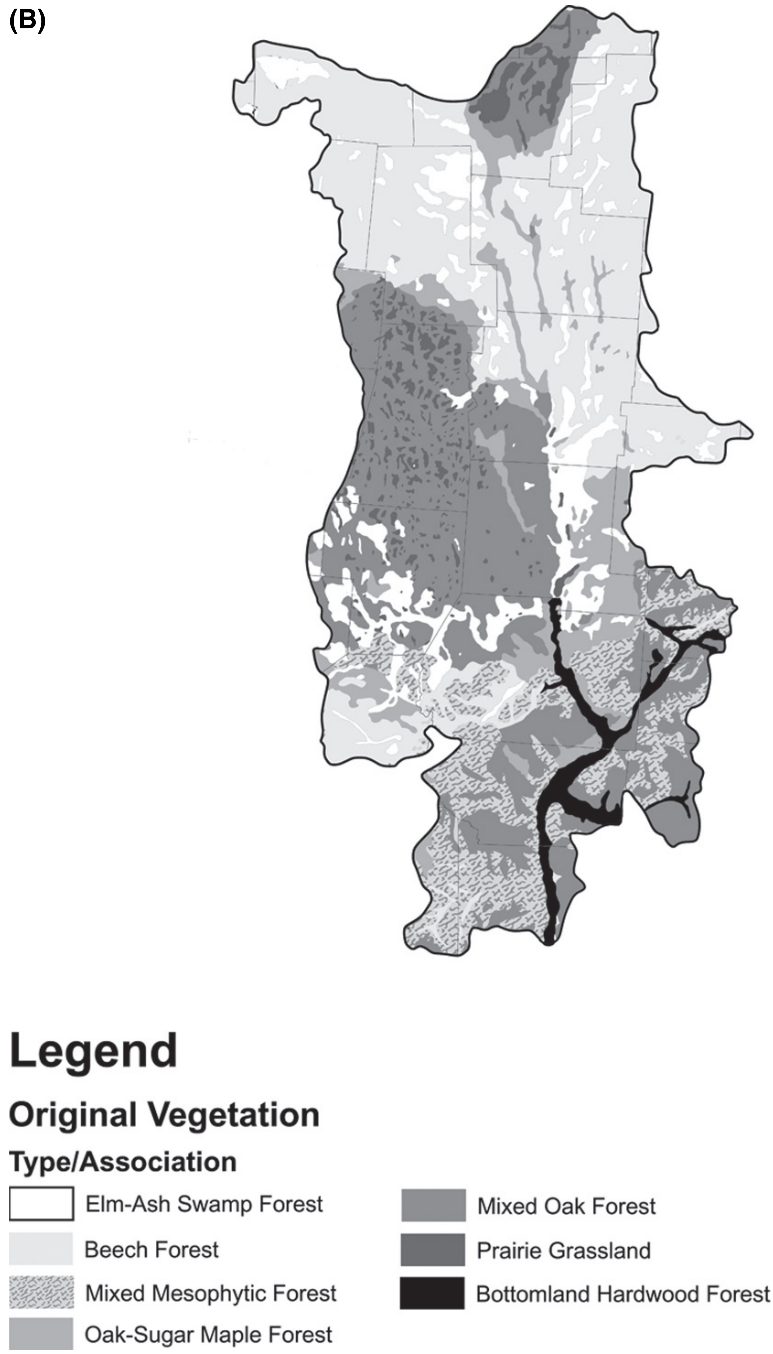


Figure 2.7. *(continued)*

short of 23 feet in circumference, standing 80 feet high, and with a spread of 102 feet, growing on river bottom land in Pickaway County" (Gordon 1969:72 citing Marshall [1966]). The massive forests of the Scioto-Paint Creek area stood in contrast to thinner and shorter forests in more northerly sections of the Scioto and Paint Creek valleys in the Till Plains (see Note 1).

The structure and the diverse and rich content of the natural environment of the Scioto-Paint Creek area provided both a ripe symbolic setting and a rich material-ecological context in which Hopewellian practices and beliefs were fostered, oriented, and flourished. Society, ritual, religion, and nature were closely interconnected here. This can be seen from both local and regional perspectives, which are presented in the following two sections.

SYMBOLIC SETTING

Taking a local and symbolic viewpoint first, one finds that Scioto Hopewellian peoples created from their natural surroundings a ceremonial landscape that expressed their cosmos and role in it. Scioto Hopewellian peoples appear, from artistic and mortuary remains, to have believed in a multidimensional and relational cosmos, with many realms whose beings commonly interacted. Sentient beings, who almost certainly were attributed personhood like that of humans (Hallowell 1960; Morrison 2000, 2002), resided in and traversed between several Above air realms, several Below earth-water realms, and places in the four Cardinal Directions and/or the Equinox Directions and its perpendiculars, in the four Semi-Cardinal Directions, in the four Solstice Directions, and in the four Moon maximum north and south Rise and Set Points. Different combinations of these realms and the meanings and beings that were associated with them were emphasized in different ceremonies, artworks, graves, and ritual deposits, but the balanced recognition of many if not all of them in any given act was also essential, as it was in Woodland and Plains Native American ritual historically and is today (e.g., Paper 1987:301, 303; J. E. Brown 1971:31–43; Mails 1991:48–60, 104–106). Focal to these different realms was the Center – a locus of relationship, interaction, mixing, conjoining, merging, transformation, complementarity, cooperation, conflict, and expression of differences among beings and elements from different realms. Historically in the Eastern Woodlands, as in many traditional settings around the world, each person, each house, each pipe, each ceremonial ground, and each village stood at the Center (DeBoer 1997:229–232; Eliade 1964:262, 264–265; Greber 1979b:28; 1983; Knight 1989:280; Mails 1991:104–106; Paper 1987: 300–301; Pearson and Richards 1994:12; Swanton 1931:10–11). At a yet broader scale, Turtle Island – the earth-disk and top surface of the Below realms – also was the Center, surrounded by the expansive primal waters told of in Woodland earth-diver lore (e.g., Barnouw 1977:68; Henricksen 1903: 181–182; Owen 1904:37; Trowbridge 1939: 60–64).[2]

Scioto Hopewell peoples expressed in their art, architecture, burial practices, and other rituals the balance of their relationship to beings associated with different realms in sets of 2, 4, 6, 7, and 8 minimally. Above and Below comprised a set. The four Cardinal or four Semi-Cardinal Directions or four Moon Rise and Set points were other sets. Above, Below, and the Four Directions, with and without the Center, were yet two other sets. The eight-fold combinations of the Cardinal and Semi-Cardinal Directions, or the Cardinal and Solstice Directions, or the Cardinal and Moon Rise and Set Directions filled out Scioto Hopewell people's modes of relating to realms of the cosmos and their beings. Three-fold organization and strongly emphasized verticality and hierarchy, which are deeply entrenched in Western thought and lifeways (Lakoff and Johnson 1980: 14–21), and which are popularly attributed nowadays to the cosmologies of historic and prehistoric Woodland peoples in the form a vertically structured, three-world universe (Dye 1989:322; 325, 333, 350; Hudson 1976:122; Lankford 2004:208; 2007:15; Penney 1985:180; Reilly 2004:127, figure 2; Townsend 2004:21) designed by Hudson (1976), were foreign to the cultural fabric and lifeways of Scioto Hopewell peoples.[3]

The multiple layers, directions, and center of the cosmos of Ohio Hopewell peoples are well evidenced in their representations of it in their architecture and art. The Pricer mound in the Seip earthwork was constructed as a three-dimensional model of the cosmos (Figure 2.8), including strata and features that represented multiple Below realms; the Center, Turtle Island, and the waters surrounding it and below it; multiple Above realms; a stony sky vault; the four Cardinal Directions of Turtle Island; and the place of humans in the cosmos.[4] Two human parietal rattles from the Central Altar of Mound 3 in the Turner earthwork (Figure 2.9A,B) were carved with a side view of the cosmos showing Turtle Island and the waters

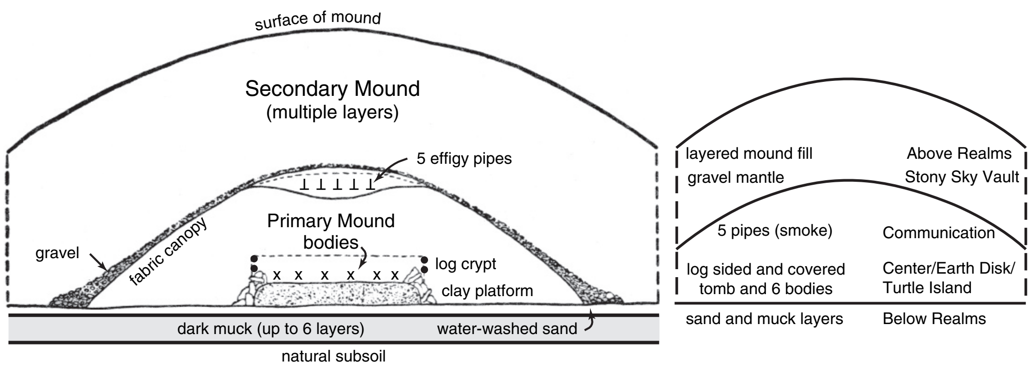
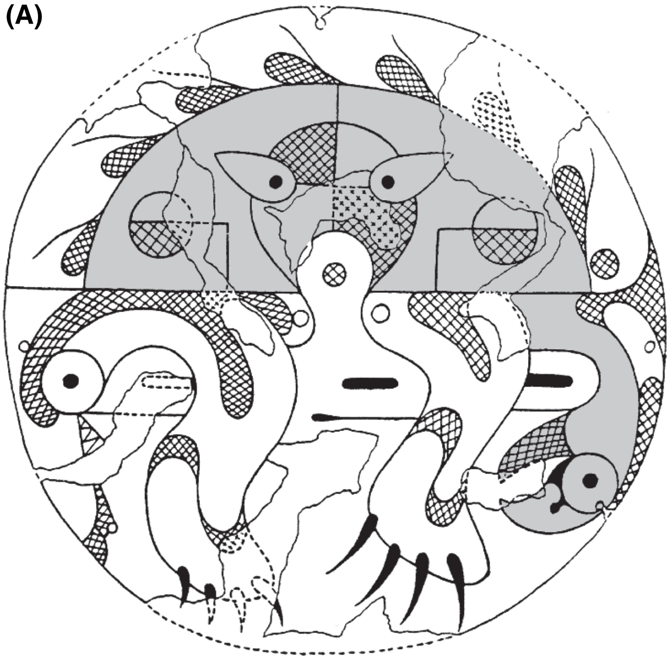


Figure 2.8. The Pricer mound of the Seip earthworks and the Great Multiple Burial within it (Shetrone and Greenman 1931:369–377) were constructed as a three-dimensional, hemispherical or spherical, symbolic model of the Scioto Hopewell cosmos, much like sweat lodges were later in the historic Woodlands and Plains (J. E. Brown 1971; Mails 1991:104–105; see also Paper 1987:301) and houses and ceremonial grounds in North America (Mails 1978:97–103, 129; Mindeleff 1898:421–422; Nabokov and Easton 1989:110–111, 138–140, 325–326). The mound was comprised of multiple layers that represented multiple Above realms, a Center, and multiple Below realms. The human skeletons and cremations of the Great Multiple Burial were natural symbols of the Center. The two pairs of males and females, in their twenties, and two infants perhaps constituted two families and represented family life in this life at the Center, on the earth-disk. The individuals were laid out on a raised, four-foot high platform that was almost square and was oriented north-south with its sides to the cardinal directions and corners to the semicardinal directions (depicted in Figures 1.8B, *right*, 4.17B). The platform possibly symbolized Turtle Island (also depicted in Figures 2.9A, E, and 2.10E, G), rising above the primal waters and floating on it. Historically among Woodland Indians, the square and its implied directions were one symbol used to depict the Earth realm (Mann 2003:197–200; Swanton 1928:477; 1946:772). Below the platform was the charnel house floor comprised of a thin layer of water-washed sand, and below that a thick layer of dark muck-clay, in turn comprised in places of up to six layers separated by vegetable matter (Shetrone and Greenman 1931:363–365). The water-washed sand layer likely represented the primal waters and the muck clay the primal muck underneath, which in widespread historic Woodland earth-diver myths was brought to the surface by a creature and grew to create Turtle Island (Hall 1979:259–261; 1997:17–23). The layers of muck topped with vegetation may have represented multiple Below realms similar to this one and found in the lore of some historic Woodland Indian tribes (Chaudhuri and Chaudhuri 2001:15; Mooney 1900a:240; Swanton 1928:480; Swanton 1946:773). A few feet above the skeletons was placed a cache of effigy smoking pipes. The pipe, rising smoke from a pipe, or a ceremonial fire was widely associated with the Above realms and/or its beings and with communication with them via rising smoke by historic Woodland and Plains Indians (e.g., J. E. Brown 1971:5, 7, 8; Mails 1978:101; Morgan 1954:190–197). For the Oglala Sioux holy man, Black Elk, the pipe, itself, represented more generally the axis mundi joining sky and earth, but its smoke or offering was sent in all six directions to all relatives (J. E. Brown 1971:5, 7; Paper 1987:301). The arcs that comprised the primary mound and multiple secondary mound layers above the burials, and the thick gravel layer over the primary mound (Greber 1979a:41; Shetrone and Greenman 1931:357–360, figures 3, 4, 6) may have represented multiple, stacked Above realms and the stone sky vault, respectively, like those in historic Woodland Indian beliefs (see Note 4). The significance of the gravel retaining wall that extended only half way up the exterior of the secondary mound is unclear relative to historic Woodland knowledge. The whole burial assemblage suggests a ritual drama, given its many rare qualities: the large number of individuals and combination of individuals of specific ages and sexes buried together, the very high raised platform, and the pipes placed above the burials.

(A)



(B)

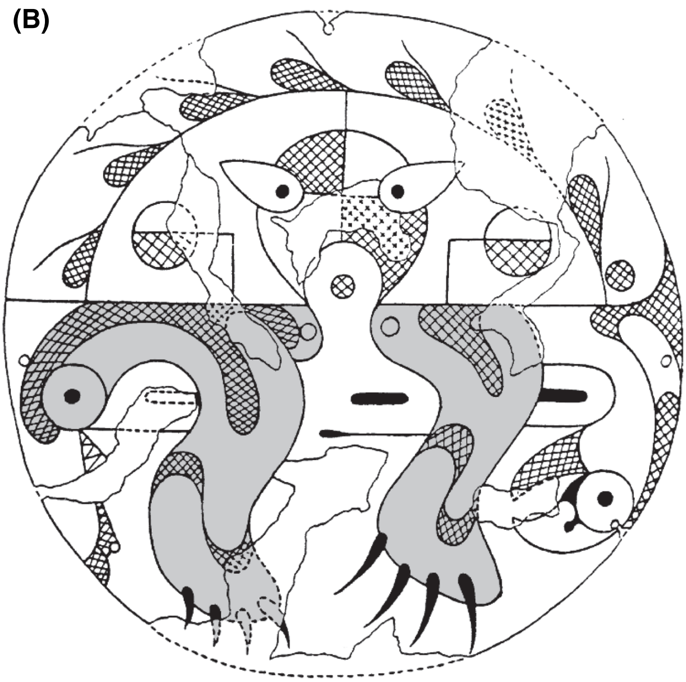


Figure 2.9. Artifacts depicting the Ohio Hopewell cosmos, from the side, from above, and in three dimensions. (A, B) One of a pair of carved human parietal (skull bone) rattles. From the Turner earthwork, Mound 3, Central Altar. Each parietal depicts, from the side, the layered cosmos of Ohio Hopewellian peoples. (A) Central to the composition, shaded in grey, is an emydid – a pond turtle – with its characteristically round head and its

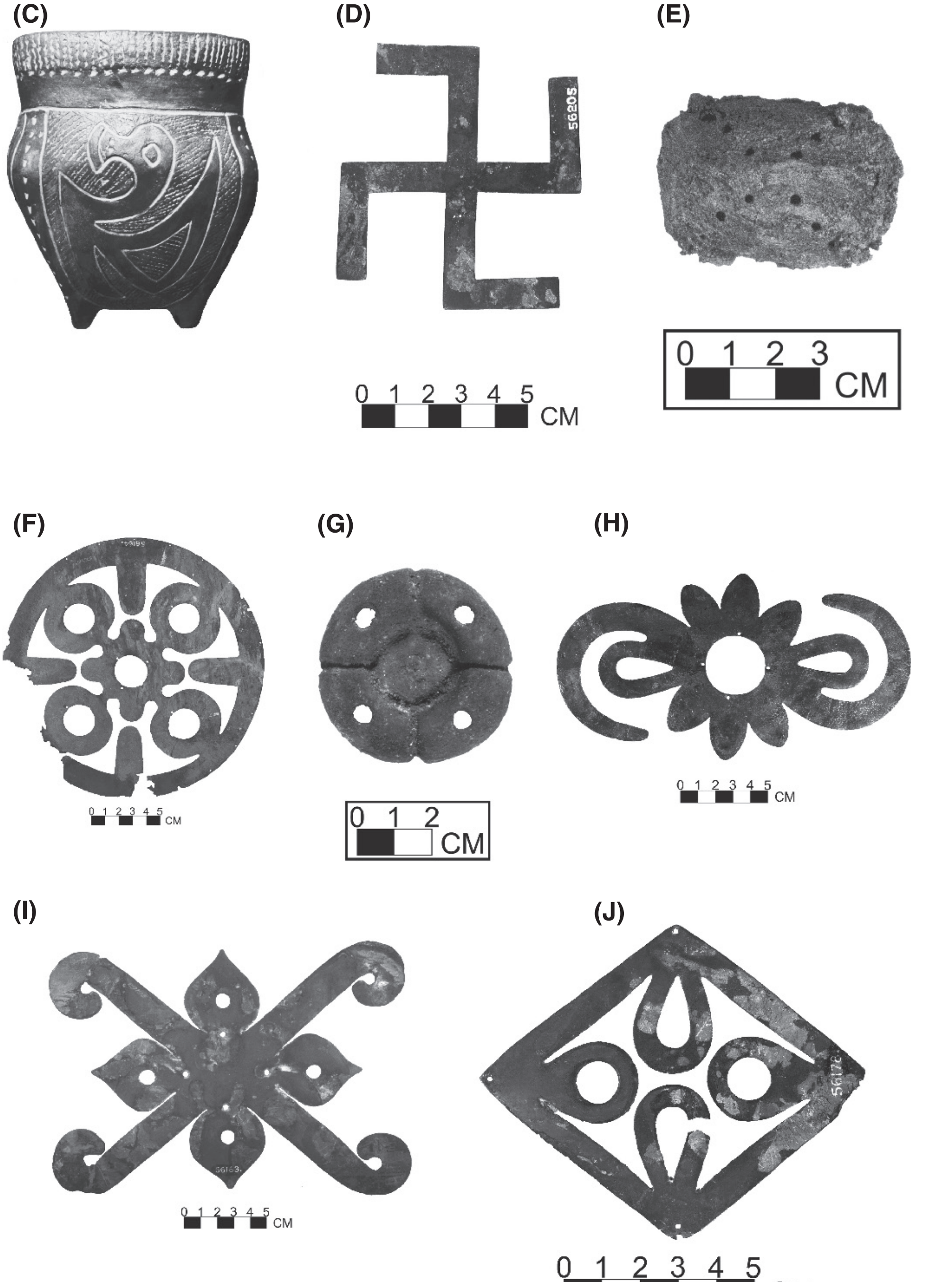
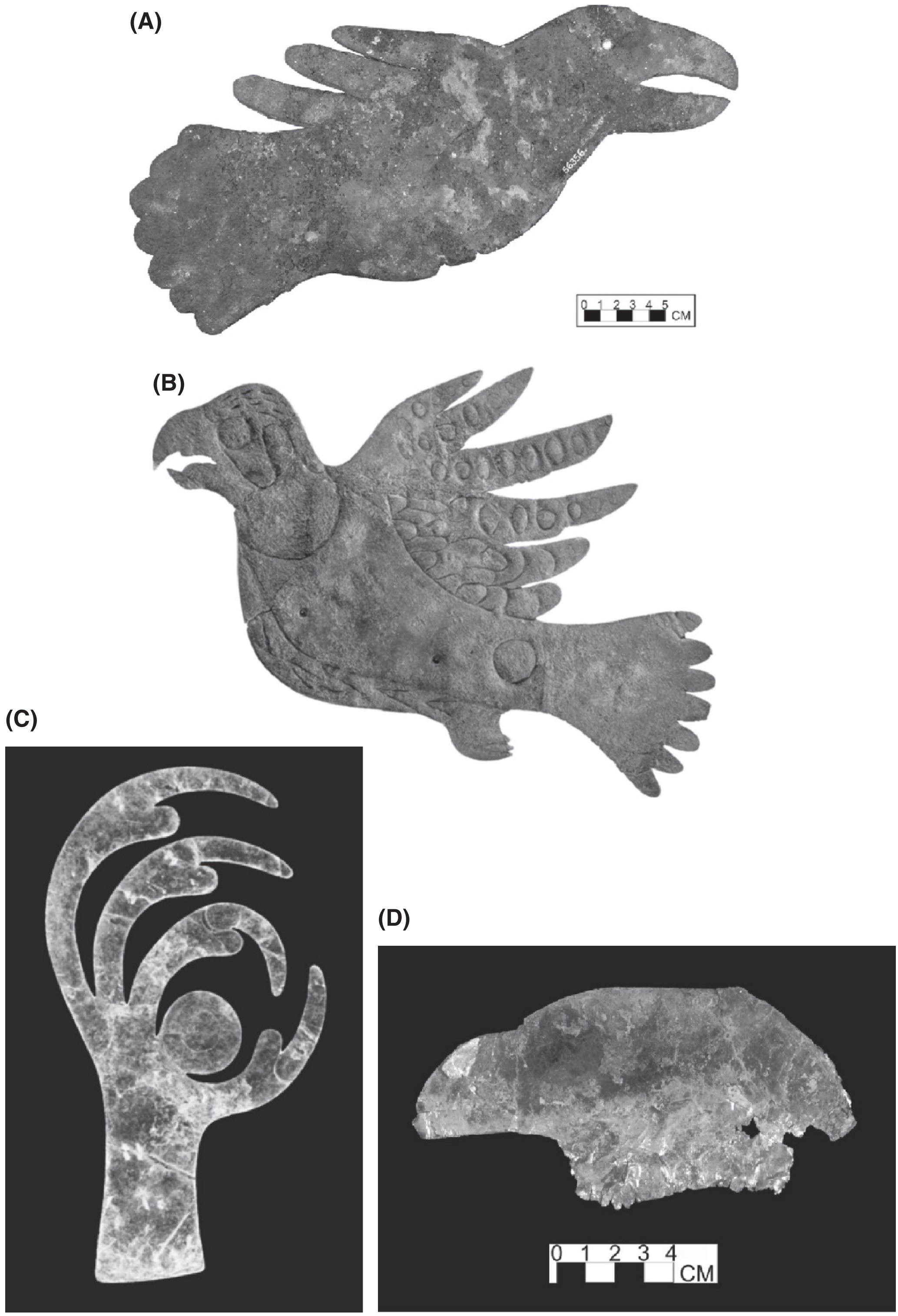


Figure 2.9. ***(continued)*** **sharp beak below the water line. The cylinder-like tail and cloaca (*dot*), which extend beyond the back of the carapace, mark it as a male emydid. Above the carapace of the turtle is an arch with seven feather-like motifs. This zone probably represents the Above realms, which may have numbered seven, as in the case of the historic Cherokee cosmos (Mooney 1900a:240). The feathers may double as horn-shaped growths (mid-dorsal carina) on the crest of the carapace of a map turtle (*Graptemys*), one genera of emydids, also possibly depicted in Figure 2.10G. (B) Below the water line are**

surrounding it, the sky and perhaps its seven layers, and a Below realm perhaps inhabited by an Underground or Underwater Panther like that of historic Woodlands and Plains Native American lore (Hammel 1998; Howard 1960; Skinner 1923:47–48; see also Fitzgerald et al. 1998; Fox 2004; Sampson 1988). The multiple, stacked realms of the cosmos of Scioto Hopewell peoples were also vividly expressed by them in many artistic representations of the creatures and beings who tended to reside in one realm or another and were associated with them (Figure 2.10). The four Cardinal or Semicardinal Directions (Figure 2.9C–E), the eight Cardinal and Semicardinal Directions with the Center (Figure 2.9F–H), and the eight Cardinal and Moon maximum north and south Rise and Set points (Figure 2.9I,J) were depicted in the form of large copper cutout symbols worn on the clothes of ceremonial leaders and a pair of earspools recovered from a deposit on the floor of Mound 25 of the Hopewell earthwork, as well as a ceramic vessel and eighteen copper effigy turtle rattles from the Mound City site. The Seal earthwork was oriented to the Cardinal Directions and other earthworks to the Summer Solstice Set and Winter Solstice Rise, the Summer Solstice Rise and Winter Solstice Set, or Equinox Sunrise and Sunset (Romain 2005).

The vertical morphology of the Scioto and Paint Creek valleys, and the positions on the terraces where Scioto Hopewell peoples built their earthen ceremonial grounds, reiterated the peoples' multi-level cosmos and their place in it. Conical-shaped hillocks at valley edges referenced the Above realms, or the vertical axis mundi that led to them. Streams referenced the Below realms, or entrances to them. These are symbolic associations that were deeply embedded in Woodland Native American thought, and in world views across cultures generally (Bacon 1993; Eliade 1964:266–269, 492; Hudson 1976:130, 132, 145; but see nuances in McLachlan 1999:45, 49, 55). In between the upland prominences and valley-bottom streams, the multiple terraces of the valleys reinforced the image of a cosmos with many levels. Within this vertically structured landscape, Scioto Hopewell

Figure 2.9. two legs, shaded in grey. If viewed as the turtle's legs, the front foot has claws about twice as long as those of the hind foot, which is characteristic of a male emydid. The legs are, however, more robust than those of a turtle and give the general impression, with the long claws on their feet, of a carnivorous mammal. One possibility is a feline, which might reference the Underground or Underwater Panther of historic Woodlands and Plains Native American lore (Fitzgerald et al. 1998; Fox 2004; Hamell 1986/1987:79; 1987:76;1998; Howard 1960; Perino 1971; Sampson 1988; Skinner 1921:263; 1923). The entirety of each parietal was a circle, a primary symbol of the cosmos of historic Woodland Native Americans and viewed from above (J. E. Brown 1971; Mails 1978:99; Mann 2003:206–208; Neihardt 1979; Paper 1987:300–303). The depicting of the cosmos on a human parietal suggests the central role of humans in literally supporting and maintaining the cosmos and its order, and keeping it balanced through world renewal ceremonies and other rites (Table 4.11). (C) Pottery vessel depicting the four Cardinal or Semi-cardinal Directions of the Scioto Hopewell cosmos in three dimensions, by means of its subsquare orifice and four side panels, each swastika engraved with a spoonbill duck. From Burial 2, Mound 2, Mound City earthwork. (D) Copper cutout of a swastika, depicting the four Cardinal or Semi-cardinal Directions of the cosmos, plus its spin, but without its Center. From the Hopewell earthwork, Mound 25, Copper Deposit of symbols. (E) Copper effigy turtle carapace rattle, one of eighteen sewn on a leather belt, each with twelve holes and depicting Turtle Island and the four Semicardinal Directions. From the Mound City earthwork, Mound 7, Burial 12. (F, G) Copper cutout and copper earspool, each depicting the circular cosmos, its eight Cardinal and Semi-cardinal Directions, and its Center. From the Hopewell earthwork, Mound 25, Copper Deposit of symbols. (H) Copper cutout depicting the circular cosmos, its eight Cardinal and Semi-cardinal Directions, its Center, and the spin of the cosmos by raptors, which are symbolized by two raptor claws and claw bulbs. From the Turner earthwork, Central Altar, Mound 3. (I, J) Copper cutouts, each depicting the four Cardinal Directions and four Moon maximum north and south Rise and Set Points of the cosmos, but without its Center. The swing angle of 76°.92 between moon maximum north and south rise and set points is rendered very closely (within one degree) by the acute angle between the long arms of copper cutout "I" and by the acute angle between the sides of copper cutout "J". Cutout "J" also may depict in its interior four raptor claw bulbs. From the Hopewell earthwork, Mound 25, Copper Deposit of symbols. See credits.



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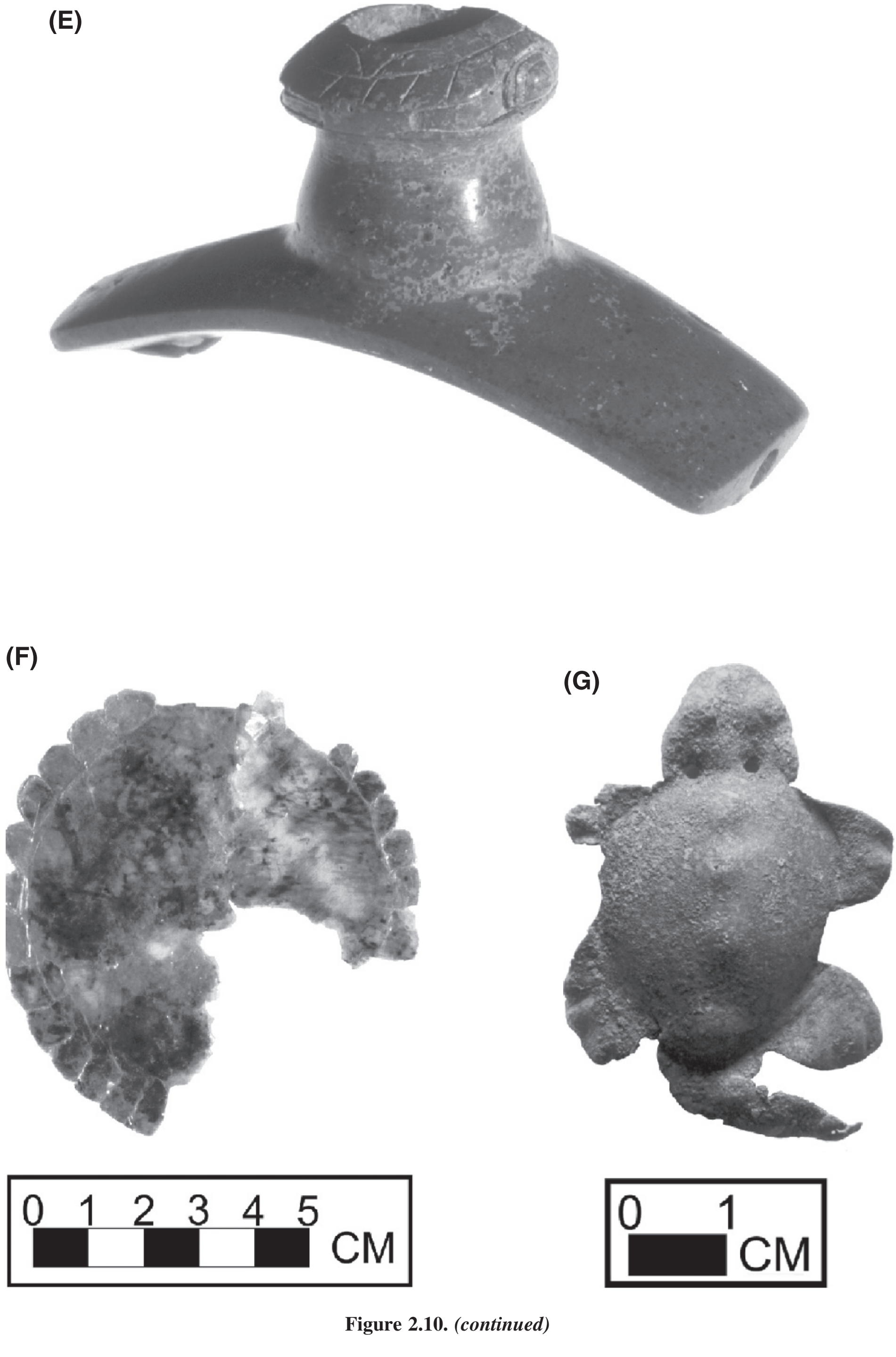

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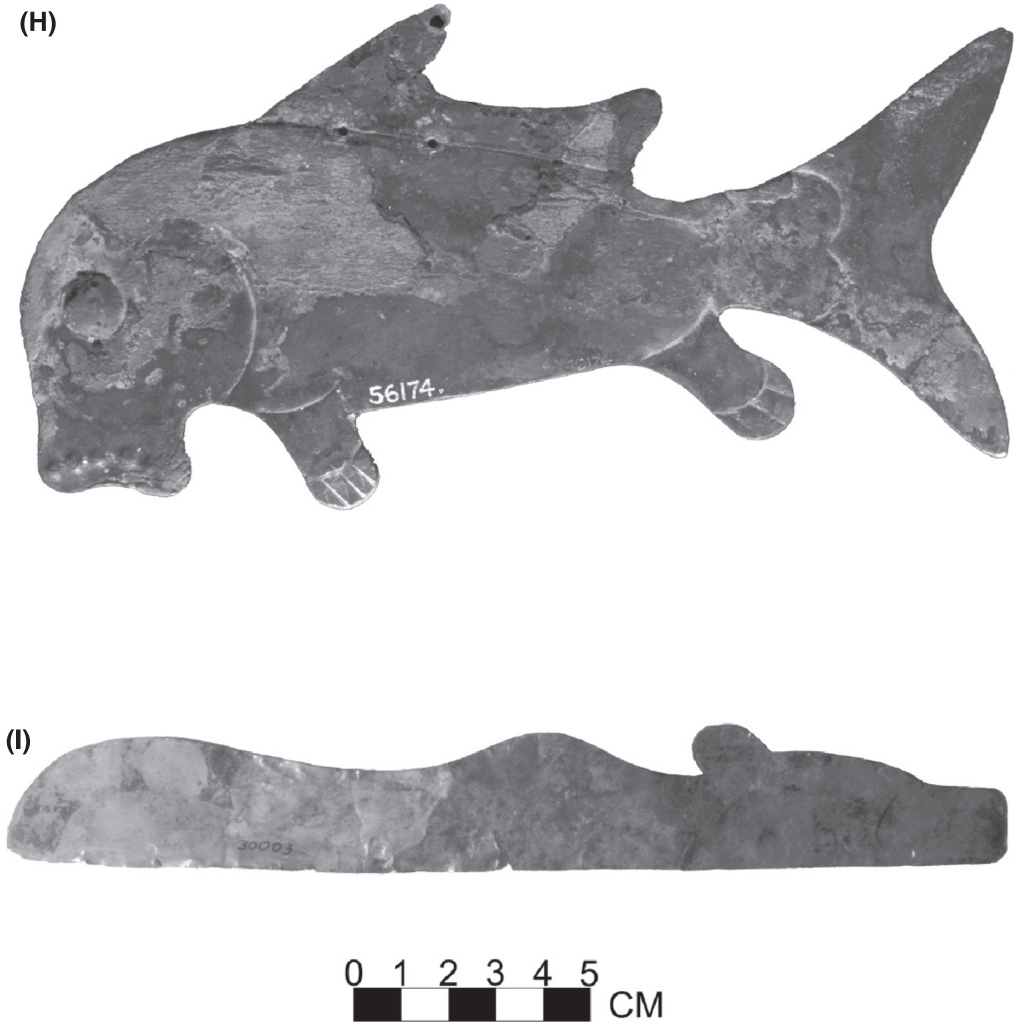


Figure 2.10. Beings and creatures that tended to reside in and be associated with the Above and Below realms of the cosmos and its Center, as envisioned by Ohio Hopewell peoples, are well represented in their art. (A) Copper cutout of probably a raven or crow. (B) Copper cutout of a raptor, probably peregrine falcon, associated with the Above realms. From the Mound City earthwork, Mound 7, Burial 9. (C) Mica cutout of a raptor's talons. From the Hopewell earthwork, Mound 25, Burial 47B. Equivalent to a human body and head, with two arms over head and bending to the right; compare to Moorehead (1922:Plate 63). (D) Mica cutout of an eagle's head, with mica-altered dark circular eye and mica-altered ruffled neck feathers. Possibly a mica mirror decommissioned into this animal form. From the Hopewell earthwork. (E) Smoking pipe carved from pipestone with an effigy box turtle on its bowl and representing the Center of the cosmos, Turtle Island. From the Tremper mound, Great Cache. (F) Mica cutout of a turtle carapace. From the Edwin Harness mound. (G) Casual copper cutout of a turtle, one of a set of eight, this one with four dimples on its back. See Figure 2.9A,B for species identification. From the Mound City earthwork, Mound 13, Deposit 5. (H) Copper cutout effigy of probably a sucker fish of a kind. One of a set of four from the Copper Deposit, Mound 25, the Hopewell earthwork. Suckers are native to the Scioto river and were among the most frequent fish remains recovered from the Middle woodland McGraw site, Ohio. Some sucker species dwell and feed at the bottom of rivers (benthic fish) and might have been among the most of bottom-dwelling of animals in the Hopewell cosmos. (I) Mica effigy of a bear in water, applied with red hematite and white ground quartz paints. One of a set of five from the Turner earthwork, Mound 3, Central Altar. (J, K) Stone carving of a composite being associated with the Below realms, combining the body and horns of an ungulate, legs of apparently an aquatic

(J)

(K)

Figure 2.10. ***(continued)*** **mammal, and tail of a rattlesnake. These characteristics and the six-sided geometric on the creature's head, which may represent a quartz crystal, would suggest a creature analogous to the Uktenas of the historic Cherokee (Hudson 1976:131–132) – a not unlikely interpretation, give the greater Southeastern flavor of the archaeological record at the Turner earthwork than those at Scioto valley earthworks. From the Turner earthwork, Mound 4, Altar 1. (L, M) Smoking pipe carved from stone in the form of a composite being with snake-shaped head, teeth of an unknown animal (perhaps caiman), bird wings on the pipe bowl, and tail of a snake (not shown) on the body and block end of the pipe. From the Esch Mound Group, Mound 1. See credits.**

(L)

(M)

Figure 2.10. *(continued)*

peoples almost always built their geometric earthen ceremonial grounds on a broad middle terrace – a cosmic ground where humans lived and performed ceremonies to ensure their balanced and productive relationships with one another and other creatures and spirits at the Center, as well as with powerful spirit beings of the Above and Below realms and in the multiple horizontal Directions of the earth-disk. Of 12 Hopewellian enclosures in the Scioto-Paint

Creek area that were surveyed by Romain, ten are located mainly on Fox series soils (Romain 2000:0–25), which associate with the middling Wisconsinan T-2, Circleville terrace (Mas- lowski and Seeman 1992:11).

Earthen enclosures in the area are positioned and have formal designs that concretely express the relationships of Scioto Hopewell peoples in the cosmic Center to the Below realms. Most of the earthworks in the Scioto-Paint Creek area were built close to the waters of the Scioto or Paint Creek. Of 14 earthworks in the area that were surveyed by Romain (2000:18), 13 have an average distance from these streams of only 1,115 feet, or about 0.2 miles.[5] The site of Mound City, one of the earliest of the Hopewellian geometric earthworks built in the area and one that helped to set that tradition, is immediately adjacent to the Scioto River. It's sister and partially contemporary site across the river, Hopeton, has a set of parallel walls that lead from it to the terrace edge, to go down to the river. Three other ceremonial sites – Works East, Cedar Banks, and Seal – have earthen enclosures with square or circular elements that are incomplete, with their open side situated on the terrace edge leading directly down to the flood plain. The open sides of Works East and Cedar Banks lie directly above the Scioto river, which runs close to the terrace edges in both locations. The site of Portsmouth, at the confluence of the Scioto river with the Ohio, has long parallel embankments that join two of its circular elements on opposite sides of the Ohio. The embankments traverse the terraces on which the circular earthworks stand, run over the terrace edges, and down onto the flood plain all the way to, or very close to, the Ohio river. Outside of the immediate Scioto-Paint Creek area, the Marietta earthwork has a graded way that runs from the works down a terrace edge onto the flood plain and near to the banks of the Muskingum river. A burial mound group lies immediately across the river from the graded way. All of these spatial arrangements and features suggest a fundamental symbolic relationship between the earthworks, which Scioto Hopewell people built at the Center of their cosmos, and rivers, which historically in the Woodlands were considered to be one kind of entrance to the Below realms (Bacon 1993; Hudson 1976:130, 132, 145). The instances of open sides, graded ways, and parallel embankments suggest the movement of people between ceremonial centers and the rivers adjacent to them in the course of rituals. Rites of "mingling with water" or "blending into water" (Kilpatrick and Kilpatrick 1964:1388, 1390; see also Mooney 1900b:3), which anthropologists have assumingly labeled rites of "purification" (Churchill 2000; see also Hudson 2000:494, 497–498) and which were done by historic Eastern Woodlands Native Americans in the course of any of a broad range of ceremonies for various purposes (Hudson 1976:324–325), including but not exclusive to world renewal (busk-like) ceremonies (e.g., Hudson 1976:367, 374; Mooney 1900b:2; Swanton 1928:553, 564, 582, 600–601, 603, 606), are implied by the Scioto Hopewell earthwork arrangements and features (Chapter 15, Functions of Ceremonies, and Table 4.11).[6] Thus, Scioto Hopewellian peoples created from their natural environment a suite of ceremonial landscapes that symbolized their cosmos and constituted a medium for enacting relationships between the Center of their cosmos, including themselves, and Below realms.[7]

These symbolized and enacted relations between the Center and Below realms were balanced with attention to relations between the Center and the Above realms. Scioto Hopewell people built their earthen enclosure ceremonial grounds of the middle terraces so as to orient precisely where celestial bodies of the Above realms met the earth-disk: the sun and moon rise and set points listed previously, all within less than 1.8 degrees error (Romain 2004:104, 111). Undoubtedly, these celestial events were monitored as benchmarks for calibrating an annual calendar of the rituals (Greber 1996) and perhaps the myths that Scioto Hopewellian people observed, and for anticipating times to gather at the earthworks for ceremonies. In addition, it has been pointed out that most earthworks were built where their geometric layouts and ceremonial events might be viewed and appreciated from nearby higher terraces or hills (Seeman 2004: 67–68), closer to the Above realms.[8]

The central terrace position of Scioto Hopewell earthworks within their natural environment and the Scioto Hopewellian cosmos also directly expressed the fundamental concern of Scioto peoples for their horizontal spiritual and social relations at and radiating from the Center. Relationships with fellow community members, people in neighboring communities, animals, ghosts, and spirits all were important and were expressed materially – in the shape, location, features, and internal organization of their burial mounds, in their mortuary rituals, and in their art. These horizontal relationships and archaeological evidence of them are described in detail in Chapters 3 and 4 on community and social organization and on ritual, and in Chapter 5 on world view.

The locations that Scioto Hopewell people selected to build their ceremonial grounds also had unique qualities that pertained to specific rituals of their lives and that concerned power. The Seip earthwork, for example, is located immediately northwest of and across the valley from Copperas mountain, an anomalous 350-foot-high cliff of black shale (Figure 2.11A–F; Bingham et al. 1980; Carlson 1991:20–21). The cliff emerges dramatically, directly from the waters of Paint Creek, to its height which, along with its dark-colored yet shiny surface, would have associated it with both the Above and Below realms, their powerful beings, and transformation between the two realms. And powerful the cliff is: it weeps water, which precipitates abundant white florescences of alum (Figure 2.11G; Seeman

(A)

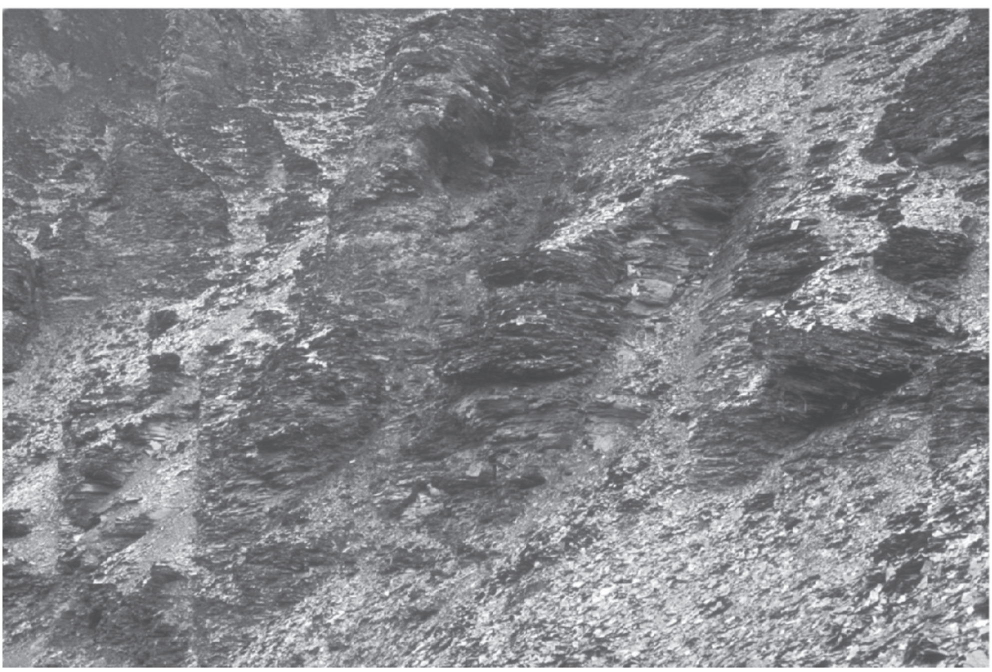
Figure 2.11. Copperas Mountain's shale cliff in Paint Creek valley, adjacent to the Seip earthwork. (A, B) The shale cliff. (C) The cliff emerges from the waters of Paint Creek. (D) The cliff has a dualistic dark-light quality, being dark in color but shiny from its wetness. (E) The cliff's thin shale layers have the look of mica books, and could have been thought of as a dark, natural complement to light mica. (F) The shale deposits contain large limestone concretions that range from 1 to 8 feet in diameter and that sometimes have a skin of fine crystalline or radiating pyrite. (G) The cliff weeps water, which precipitates abundant white florescences of alum. Six inch ballpoint pen for scale. See credits.

(B)

Figure 2.11. ***(continued)***

(C)

(D)



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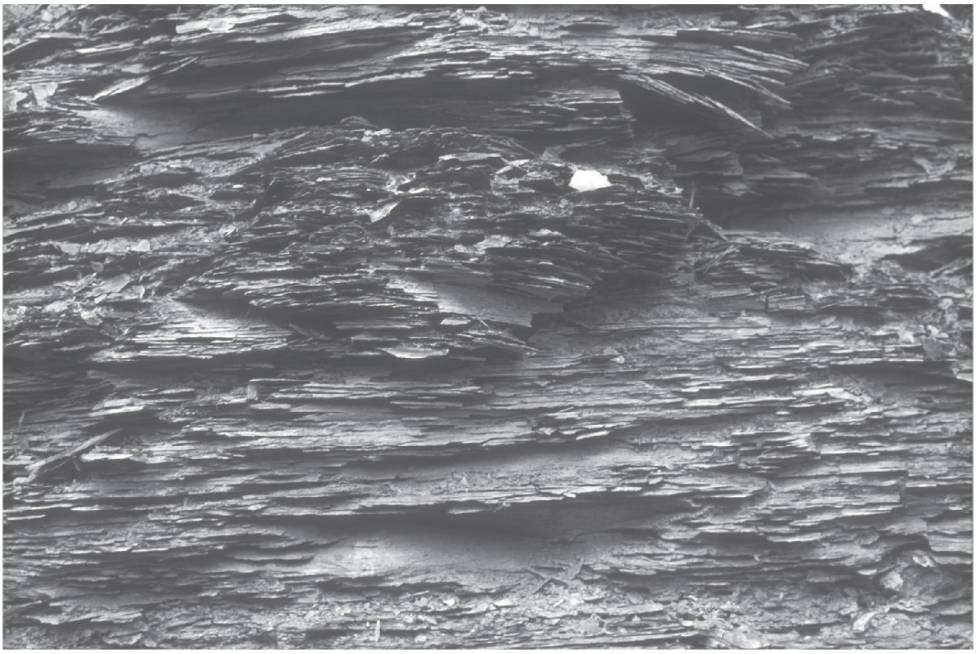
(E)



(F)

Figure 2.11. ***(continued)***

(G)

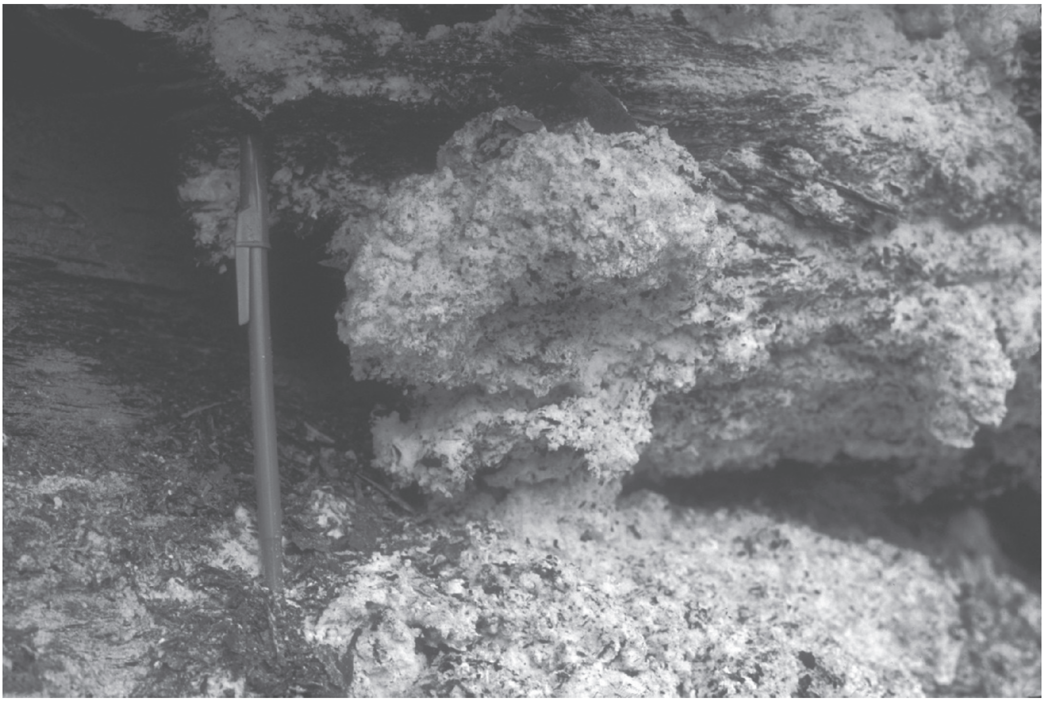


Figure 2.11. *(continued)*

and Branch 2006:114), an astringent useful for clotting blood and seeping tissues, as in healing ceremonies. The cliff is also a traditional nesting place for vultures (Seeman and Branch 2006:114), which probably played an important defleshing role in some mortuary ceremonies of the Scioto Hopewell and their Adena ancestors (Otto 1975:33; Webb and Baby 1957:100–101). The cliff's likely associations with healing and death may have been reasons for the use of its shale to form the tombs of certain individuals buried under the Pricer mound with the Seip earthwork.[9] Copperas mountain has several other special qualities that fit well with the cosmology of Scioto Hopewellian peoples, and to which they would likely have been attuned.[10] Seip is also very close to outcrops of red ocher (Romain 2000:29; see also Zeisberger 1910:170), which would have been useful in making paints for decorating ritual paraphernalia and the human body. The site is three miles downstream on Paint Creek from falls – features that historic Eastern Woodlands Native Americans considered to have purifying, healing, and other helpful qualities, but also to sometimes be the homes of harmful spiritual creatures (Bacon 1993:260–263). Tremper mound was located strategically across the Scioto valley from Feurt Hill and its quarries of pipestone (Mills 1916:265), which was used to manufacture some of the smoking pipes deposited in the mound (Emerson et al. 2002). Most of the pipes are sculpted with animal effigies and are analogous to pipes smoked historically in the Eastern Woodlands in order to produce trance states and commune with one's personal power-animal helper, whose effigy image faced the smoker (see below; von Gernet and Timmins 1987). The Hopewell site is located immediately adjacent to a series of springs that logically could have been used in "mingling with water", renewal, and healing ceremonies. The McKittrick earthwork is less than a half mile from brine springs used historically to make salt (the Old Scioto Salt Lick [Romain 2000:30]).

Beyond its nutritional value, salt was used by Scioto Hopewell artists to patinate ceremonial copper breastplates, celts, and headplates with pictures of animal impersonators, other fully human leaders in ceremonial garb, and a diversity of animals (Carr 2000c,d, 2005e; Carr and Lydecker 1998; Carr et al. 2002).[11]

Like the geomorphological and geological features of the Scioto-Paint Creek area, its biological communities provided media through which Hopewell people constructed their rituals and social life and expressed their beliefs. The diverse species of animals in the area served as models for leadership roles, templates for clan organization, means for achieving personal power, and sometimes vehicles for passing to an afterlife. The central place of animals in each of these matters was based on a fundamental Scioto Hopewellian belief that is well represented in the art and burial practices of Scioto Hopewell peoples: the ability of humans to transform into animals and vice versa (Chapter 4, Figure 4.8A–L; Carr and Case 2005b). Scioto Hopewell peoples also may have had other beliefs about animals that were widespread among historic Native Americans of the Eastern Woodlands, although direct evidence of these beliefs is wanting: the attribution of personhood and souls to animals (Hallowell 1960:23–40), their existence in societies parallel to and similar in organization and complexity to those of humans (Hudson 1976:157–159, 161–165; Lankford 1987), and their behaving like humans in grieving, taking pity, and participating in reciprocal exchanges (Hallowell 1960:47; Morrison 2000, 2002).

The power of some Scioto Hopewell societal leaders derived in part from their abilities to transform into animals. This is evidenced in their ceremonial costumery: copper effigy deer and elk antler and deer ear headdresses, a copper effigy bear headdress, a copper headplate in the shape of a feather, another with a cat paw cutout, and a human mandible with a deer tooth replacement for a human tooth, as well as representational art of bird, bear, and cat impersonators and a deer-rabbit, deer-hummingbird, or deer-snake impersonator (Figure 4.8A–L ; Carr and Case 2005b:198, table 5.2). The Mound City pipe of a flying being with a bird's body and a human head, and the Wray figurine of a man in the midst of transforming into a bear, from the Newark earthworks, depict classic shaman-leaders in the act of harnessing the powers of animals to make soul flights (Figures 4.6A,B; Carr and Case 2005b:192–193, figures 5.2A,B).

Similarly, Scioto Hopewell clans were distinguished by their animal eponyms and/or totems common to the geographic region: bear, canine, feline, raptor, raccoon, elk, beaver, nonraptorial bird, fox, and perhaps several others (Chapter 4, Clan Organization; Thomas et al. 2005:359, table 8.7). Leaders with various social responsibilities were often recruited from clans having eponym or totemic animals with characteristics natural to those tasks. For example, diviners who used mica mirrors, cones, hemispheres, and/or boatstones in their work, presumably to see into the past, future, a person's soul, and/or other dark and unknown domains, were recruited in high frequency from the Raccoon clan (Thomas et al. 2005:368–370). Raccoons have a sharp ability to see through the night.

Personal, spiritual power was commonly obtained by Scioto Hopewell people – at least early in the Middle Woodland period – with the help of guardian-tutelary spirits of the species of animals found in the area. A person likely communicated and merged with his or her power animal spirit by going into a trance facilitated by smoking and perhaps supplemented by other methods of induction. This practice can be inferred from the numerous, individually owned (Carr, Goldstein, et al. 2005:485) smoking pipes that Scioto Hopewell people sculpted with the images of animals that faced and thus interacted with the smoker, much like the method used in historic times in the Eastern Woodlands (von Gernet and Timmins 1987). The species of animal guardian-tutelary spirits evoked by Scioto Hopewell people were very diverse, like those in their natural environment. Twenty-nine categories at the species level or above are recorded for the sculpted pipes from the Mound City and Tremper sites (Otto 1984; 1992:5). The animals reside on river shorelines, in prairie patches, and in several different kinds of forests. The animals have characteristics that logically associate each with one of the realms of the Scioto Hopewell cosmos or as a "tranformer" that could mitigate between two or more realms. Over 137 animal effigy smoking pipes and 199 plain ones are known from the two sites, suggesting a widespread ritual of power animal communion.[12]

Passing to an afterlife was facilitated for at least some Scioto Hopewell individuals by birds of the region and their spirits. Vultures possibly were employed to deflesh some corpses prior to cremation or bundling for burial, but this does not seem to have been common at least at the sites of Mound City, Liberty, Seip, and Ater, to judge from experimental work by Baby (1954). Dismemberment followed by selection of some body parts and their cremation and burial, with other parts given over to nature, is one of several mortuary techniques more likely used at these sites (Carr 2005c:471).[13] At the same time, copper breastplates from Seip, Hopewell, and other sites commonly were patinated with vultures or vulture impersonators (Carr 2000c, d, 2005e; Carr and Lydecker 1998; Carr et al. 2002), which have analogs in the "bone pickers", "buzzard men", and "turkey-buzzard men" of the Choctaw and Chitimacha Indians of the Southeastern Woodlands (Swanton 1946:726, 729). Birds also may have been thought to help the soul of a deceased Hopewell person make its way to an afterlife. At the North Benton site in northeastern Ohio, two burials were placed tellingly below the wings of a huge stone raptor in flight, oriented to the east (Figure 2.12A,B) – occasionally a location of an afterlife of historic Woodlands Native Americans (e.g., Brain et al. 1996:592; Callender 1978a:639; Feest and Feest 1978:777; Swanton 1946:725, 729; see also Feest 1986:31). At the Hopewell site, a copper effigy of a head of a bird was placed under the head of one person (Moorehead 1922:110) or in place of the person's head.[14] Crossculturally, the head is commonly taken to be the place of residence of a soul, and/or where a soul exits the body, producing illness or death, enters the body at birth, and/or is reintroduced into the body during a curing (e.g, Furst 1995:180; Guiteras-Holmes 1961:298; Harner 1980:93, 107–108; Hultkrantz 1953:87, 176–178, 215–216, 222–224, 251; Ingerman 1991:71, 74–75; Lati and Hopkins 1985: 49; Nash 1970:131; Rose 1922; Swanton 1946:729).[15] A mortuary practice that may have been conceptually related to these is the occasional burial arrangement of the disarticulated skeletons of Scioto Hopewell people in the form of a bird's head, and of the leg and arm bones of articulated skeletons in the form of spread wings and tail feathers of a bird in flight (e.g., Chapter 15, Figure 15.3 A,B; Shetrone 1926:34, figure 9).

Over time, as social and ritual relations in the Scioto-Paint Creek area became more complex, people drew further upon the varied animal life of the area to symbolize, structure, and express those relations. Animal symbolism grew more coincident with the diversity of animal species there. Classic shaman or shaman-like leaders of earlier Adena peoples in the broader Ohio and Kentucky region impersonated a limited range of animals: ratorial birds, nonraptorial birds, cougar/puma, and wolf. Scioto Hopewellian animal impersonators spanned these species and more: additionally bear, deer, elk, and composite creatures (Carr and Case 2005b:193–196, 198, table 5.2; Webb and Baby 1957:61–71). Animal masks, animal effigy headdresses, and art work depicting animal impersonators evidence this broadening of animal symbolism. Moreover, over time, clans into which Scioto Hopewell peoples classified themselves, and their eponyms or totems, may have increased in number. The early Scioto Hopewell charnel house below the Tremper mound contained clan-symbolic ornamental animal parts of only bear, wolf/coyote, puma, and bobcat (Thew n.d.). Later charnel houses contained clan-symbolic ornamental animal parts of these species and additional ones, including raccoon, elk, beaver, nonraptorial bird, and fox (Chapter 4, Clan Organization, Table 4.7).

Plants of the many species found in the Scioto-Paint Creek area, unlike animals, do not appear to have been directly central to the thought, social life, and rituals of Hopewellian peoples there. Plants were almost never depicted in Scioto Hopewell representational art. The only two unequivocal examples are of mushrooms that could have been used to produce a trance state in which a person might communicate with an animal spirit, deceased person, and/or other spirit beings (see below, How Important Was Farming, Table 2.3; Figure 4.1GG, HH).

Indirectly, however, the darkness of the dense and tall forests of the Scioto-Paint Creek area (see above, Figure 2.3, and Note 1), augmented by the largely grey-skied days there, and in contrast to the light-filled swidden plots and ceremonial centers that had been cleared of their trees, provided a milieu that was very influential on the development of thought and culture

(A)

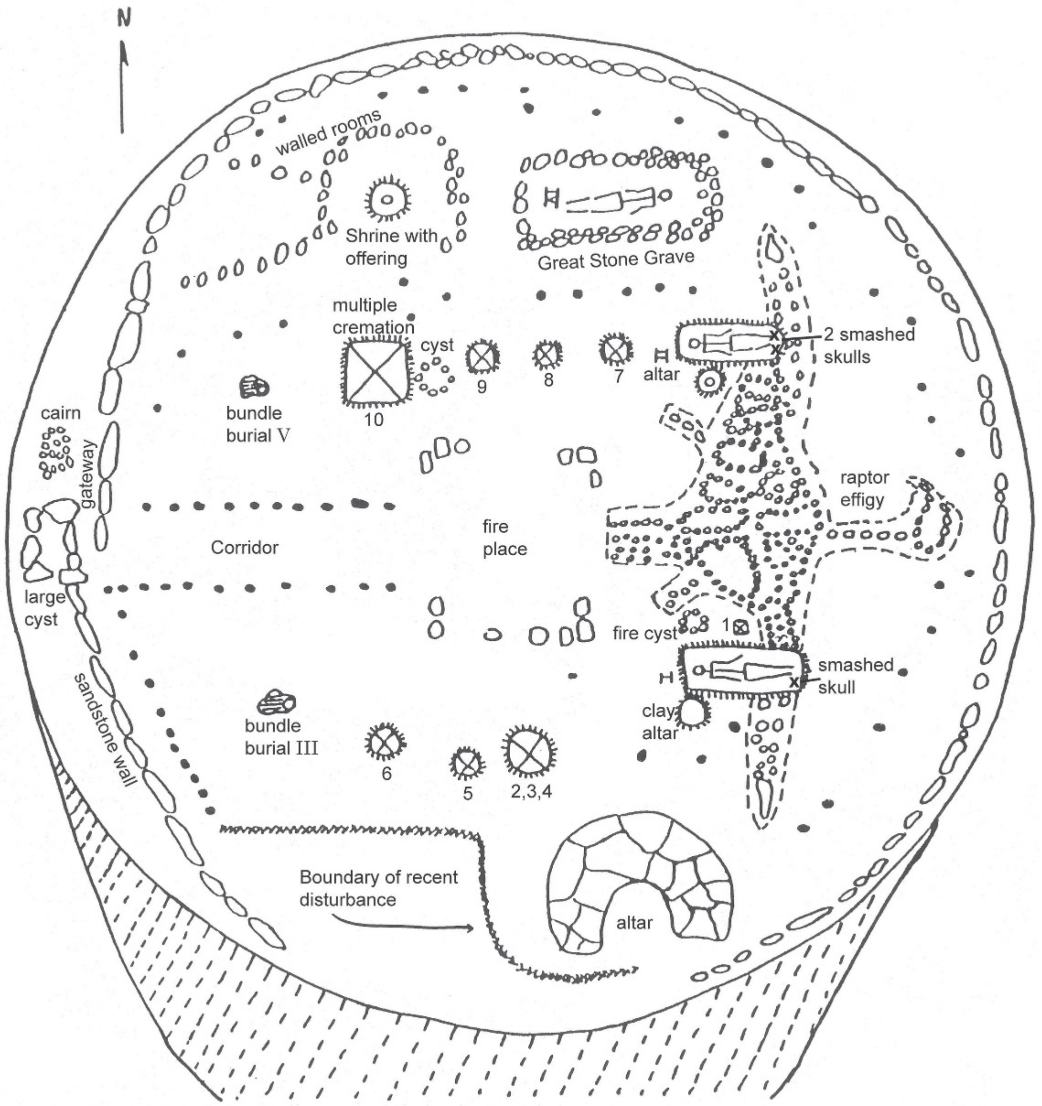


Figure 2.12. (A) Layout of the stone effigy raptor and burials under the North Benton mound in northeastern Ohio. (B) Photograph of the stone raptor effigy. See credits.

(B)

Figure 2.12. *(continued)*

of Scioto Hopewell peoples. Their ritual art, as an expression of their beliefs, is infused with their obsession over the contrast, interplay, and balance of darkness and light (Carr and Case 2005b:199–202; Greber and Ruhl 1989:78–84, 275–283; Turff and Carr 2005:670–672) – an accentuation of a general pattern found among Native North Americans (DeBoer 2005:70, 85). The raw materials from which the majority of Scioto Hopewell ceremonial paraphernalia and elite items were made can change from light and shiny to dark and dull, or simultaneously display both light/shiny and dark/dull qualities. Copper, silver, meteoric iron, mica, steatite, chlorite, clay for pottery, human bone, obsidian, shell, and pearls each have this magical personality (Carr and Case 2005b:199–201, table 5.3). Additionally, the "positive-negative play" of visually shifting foreground and background that characterizes Hopewell art on bone, ceramics, and copper is occasionally expressed in terms of dark and light in the Scioto tradition (Chapter 4, Figure 4.5H–J), and more frequently in ceramics of the Havana and Marksville traditions (Chapter 4, Figure 4.5E–G).

Summary

The natural environment in the Scioto-Paint Creek area, in both its structure and diverse content, was a creative medium that helped Scioto Hopewell people to both form and ritually express their beliefs and social life. The flood plain, terraces, and uplands of the Scioto drainage defined a space that was synonymous with the vertical layering and horizontal expanse of the multidimensional cosmos of Hopewellian knowledge. In that space, Hopewell people constructed a ritual landscape of earthen ceremonial grounds and causeways that manifested the place of

Hopewell people at the Center of their cosmos, their relations to earthy-watery Below realms and airy Above realms and many places in horizontal directions, their status in calendrical time, and their access to locations with much power and the raw materials for specific rituals. Animals of the area provided models for shaman-like leaders who derived their power and roles by transforming into animals, templates for defining the identity, roles, and organization of clans; means for achieving personal power; and sometimes vehicles for passing to an afterlife. The dark forests and light, open swidden plots and ceremonial centers encouraged and guided Hopewellian thought, ritual, and art in exploring the meaning of darkness, light, and their relationship. What we distinguish and call nature, society, ritual, and religion were intimately integrated in Scioto Hopewellian life.

ECOLOGICAL SETTING

A broader, regional ecological viewpoint, like the local symbolic one just presented, also reveals how the diverse content of the natural environment in the Scioto-Paint Creek area fostered Hopewellian lifeways. A well-known correlation at the scale of the Scioto drainage is that between the area of concentration of Scioto Hopewellian earthen enclosure ceremonial centers and the area of maximal environmental diversity in Ohio. Both occur in the vicinity of the Scioto-Paint Creek confluence (Webb and Snow 1974:132–133, Map 1; Seeman and Branch 2006), where the rolling Till Plain of the Wisconsinan glaciation gives way southward to the rugged, earlier-glaciated Appalachian Plateaus and then to the yet more angular, unglaciated portions of them (see above, Figure 2.5A,B). Few Hopewellian earthen enclosures in the Scioto and Paint Creek valleys occur outside of this ecotone, beyond about 22 miles distance from the Scioto-Paint Creek confluence, in either the open Till Plain or the unglaciated Appalachian Plateaus.[16]

This correlation is repeated across Ohio: concentrations of Hopewellian earthen enclosures are found along major streams in the vicinity of where they cross the terminus of the Wisconsinan glaciation and flow into preWisconsinan glaciated landscapes and/or unglaciated Appalachian Plateaus. Primary examples are the massive Newark site and the mound and earthwork centers in its neighborhood, in the Licking drainage (Pacheco 1996:24, figure 2.2); the grand Fort Ancient earthwork (Otto 2004:3) and the enclosures south of it in preWisconsinan glaciated country cut by the Little Miami valley (Riordon 2004a:226, figure 16.1); and the concentration of enclosures along the Great Miami valley in Butler County, where the Wisconsinan Till Plain transitions to a preWisconsinan glaciated landscape (Riordon 2004a:226, figure 16.1). Again, exceptions to these patterns of earthen enclosure locations within these drainages are few.[17]

The correlation between locations of Hopewellian earthen enclosures and natural settings of ecological diversity in the Scioto drainage, and across southern Ohio in general, can be understood to a degree in an ecological framework that involves population as an intervening variable. After all, the earthworks were places of gatherings of sometimes large numbers of people, in the hundreds (Carr, Goldstein, et al. 2005). In this view, the greater biomass and biological diversity in the ecotone settings mentioned above, like ecotones generally, offered more potential food resources to Hopewell people and their ancestors. People would have been attracted to the resources in these ecotones compared to the surrounding Till Plain and dissected uplands, fostering greater population sizes and densities in the ecotones. In addition, the greater residential sedentism that was possible in the ecotones than in surrounding lands could have encouraged greater birth rates, population sizes, and population densities in the ecotones. In turn, these demographic changes would have encouraged increases in social complexity – new means to integrate and regulate people – including the organization of people in building earthen enclosures and in performing ceremonies within them. The complexity and flamboyance of the Scioto Hopewell material record might be explained in part in this rough ecological-demographic manner, as it has been by several authors (e.g., Ford 1974:394, 402; see also Braun 1986:121; Caldwell 1958; Fagan 1995:415–416 for variants on this argument), although important qualifications are needed to bring it in line with archaeological data (see below, and Chapter 5).

An essential component of the ecological diversity in the Scioto and Paint Creek valleys near their confluence was their flood plains. They are broad and also very fertile (Romain 2000:15). Where Paint Creek and Salt Creek flow into the Scioto, the Scioto valley has extensive alluvial fans and bottom lands (Prufer 1967:274). These settings provided the conditions in which Eastern Agricultural Complex seed foods grew naturally (Smith 1995:194; Struever 1965:102–103) and could be enhanced for their harvest through cultivation and eventually through swidden techniques (Wymer 1996, 1997; see Wymer 1992:74, figure 9.9 for increasing sizes of sumpweed and sunflower seeds through time; see also Smith 1992:205–209, 269–271, 287–288; 1995:186–191). Indeed, current evidence from Early and Middle Woodland archaeological records in the mid Ohio valley suggest that increases in the production and consumption of Eastern Agricultural Complex seed foods were substantial at the initiation of the Middle Woodland period (Wymer 1992, 1996:40–41, 2003; see below, Subsistence) and were likely an important factor related to increases in social complexity in the Scioto drainage. However, it was the richness of the natural environmental ecotone in the Scioto-Paint Creek area specifically that was the more important foundation for Hopewellian development there. The Scioto valley is wide and fertile from several miles north of Chillicothe to its confluence with the Ohio river, yet Hopewellian earthen enclosures cluster in the Scioto-Paint Creek area around Chillicothe and are rare in the stretch of the river 5 miles south of Chillicothe to the Ohio river, where ecological diversity is considerably less (see Note 14).

The same conclusion about the more fundamental role of natural environmental diversity than farming and good farmland, per se, to Hopewellian development holds for other regions of the Eastern Woodlands, as well. In Illinois, Hopewellian ceramic styles, mortuary practices, and interaction goods are restricted in their distribution to broad river valleys with rich microenvironmental diversity, and are missing from narrower valleys (Struever 1965:98–99, 103–104).[18] Hopewellian ceremonialism was also found in regions of the Woodlands where people relied primarily or fully on the intensive harvest collecting of wild plants or mixed hunting-gathering, and had little or no commitment to farming: south-central Ontario, western New York, southern Michigan, Wisconsin, Louisiana, and northwest Georgia. Hopewellian development was not tied to farming, per se (Seeman 2004:59).

Regional population density in the Scioto-Paint Creek area, its trajectory over the Early and Middle Woodland, and its effect on the development of Adena and then Hopewellian social and ritual complexity, as posed in the above ecological framework, are difficult to assess. Estimates of absolute population density in the Scioto-Paint Creek area during the Middle Woodland are not feasible currently, for a number of reasons.[19] However, relative estimates for the Early and Middle Woodland are approachable. In a thorough literature and public records inventory of mounds in the Scioto drainage, Seeman and Branch (2006:116, 118) identified equal numbers of Adena and Hopewellian mounds ($n = 111$, 112 respectively). Adena and Hopewell mounds also were also found to be similar in their range and distribution of sizes – heights and diameters (Seeman and Branch 2006:figure 6.2), with implications for the construction labor expended and the numbers of people involved. However, Adena mounds were dispersed from one another and spread widely over the Scioto drainage basin, both north and south of the Scioto-Paint Creek confluence and ecotone, whereas Hopewell mounds clustered strongly in the vicinity of the confluence and ecotone. Also, Adena mounds were constructed in both the main valleys of the Scioto river and Paint Creek and up small tributary streams, whereas Hopewell mounds were built in concentration on the terrace systems of the main valleys. Taken at face value, these statistics and spatial patterns suggest no significant change in the numbers of people in the Scioto drainage at large from the Early Woodland to Middle Woodland period, but an aggregation of people into the Scioto-Paint Creek area, and specifically into the main valley trenches themselves, creating higher population densities there during the Middle Woodland. People probably aggregated into main valleys for habitation in general, but it is possible that they gathered there simply on occasion for rituals at earthworks, with their having inhabited lands spread more widely up and down the Scioto drainage and across it. Either form of interaction among greater numbers of individuals in the Scioto-Paint Creek area during the Middle Woodland period could have encouraged the development of social and ritual complexity there.

The magnitude of aggregation of people from along the Scioto drainage into the Scioto-Paint Creek area for habitation and/or participation in rituals at earthworks is unknown. The 223 mounds that Seeman could identify as Adena or Hopewell in the Scioto drainage are only a small portion of the total number of mounds there ($n = 952$ in Mills' [1914] *Archaeological Atlas of Ohio*), making uncertain the exact balance of Adena and Hopewell mounds throughout the drainage and in the Scioto-Paint Creek area specifically. However, an estimate of the maximum amount of aggregation can be gotten from Mills' (1914:XI, 21, 25, 65, 66, 71A, 73) maps and tables of all reported mounds and enclosures in the Scioto drainage (Figure 2.13; see below, Table 7.7 and Appendix 7.3). Almost all of these earthworks can be reasonably attributed to the Early and Middle Woodland periods; no mounds are known to have been constructed in the Scioto drainage before, and few were afterward. The maps and tables show that the number of Early and Middle Woodland mounds within the Till Plains of Pickaway, Franklin, and Delaware counties, north of the Appalachian Plateau-Till Plain ecotone in Ross county, and the number in Ross county, are nearly identical, at 366 and 370. This distribution translates into a potential for the number of people who interacted in Ross county to have doubled from the Early to Middle Woodland period through aggregation there for settlement and/or for participation in rituals. Adding in contributions of people to the Scioto-Paint Creek area from south of Ross county, where 91 mounds are reported from Pike and Scioto counties (Mills 1914:XI, 66, 73), reinforces this estimate of a doubling of interacting people in Ross county. A substantial increase over time in the numbers of people who participated in rituals in the earthworks in the Scioto-Paint Creek area is also implied by the steady and large increase in the areas of the earthworks over time (Chapter 4, Changes over Time in the Sizes and Social Compositions of Gatherings).

The tentative conclusion that regional population densities in the Scioto drainage at large did not increase significantly over the course of the Early through Middle Woodland, however shaky, does align with current evidence for a lack of increased population packing there and in neighboring areas. Geographic analysis of the areal sizes and spacings of local symbolic communities in the Scioto-Paint Creek area during the last century of the Middle Woodland period indicates that they were liberally separated from one another (Chapter 3, Sustainable Communities). In addition, in the neighboring Licking valley, where paleoethnobotanical data are available, Hopewellian peoples were selective in their use of plant foods, emphasizing those that were locally available and easily collected. Different specific kinds and amounts of plant foods were used at different sites (see below, Opportunism). This pattern is the reverse of what one would expect with significant population packing. With packing, some alternative food resources and/or alternative patches of a resource come to fall within the lands used by other local groups, local temporal variation in the productivity of resources and resource patches can no longer be ameliorated as well by using alternative resources and patches, and instead,

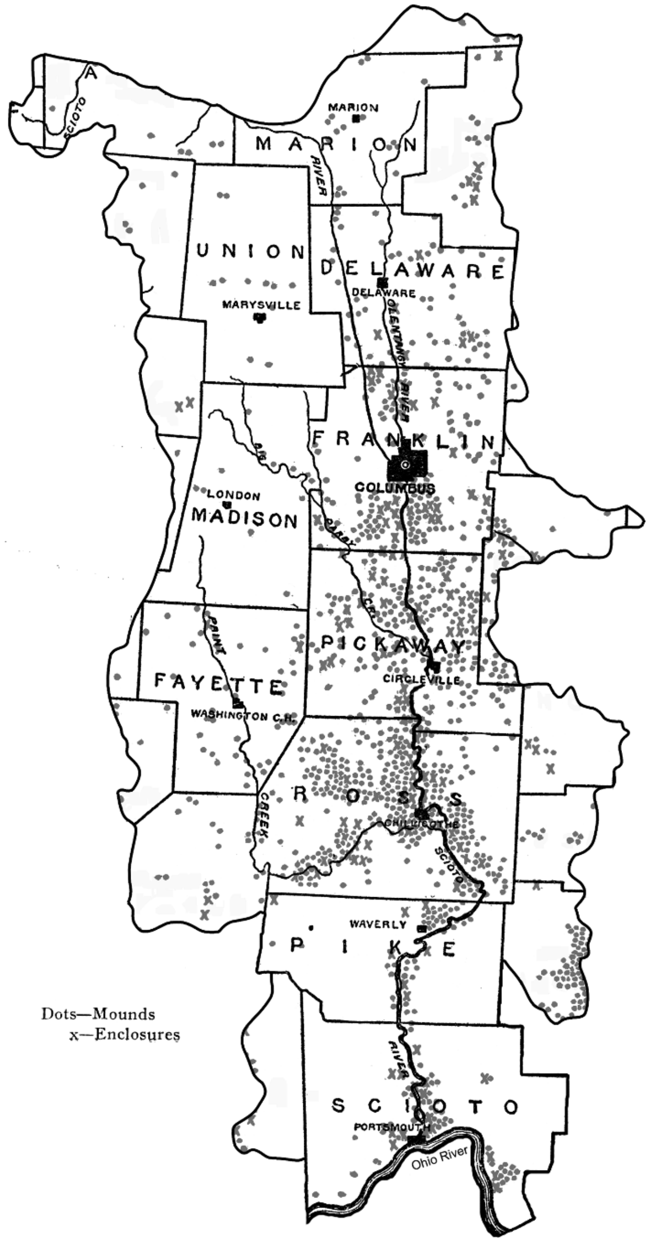


Figure 2.13. A section of Mills' (1914:XI) map of all reported earthen mounds and enclosures in Ohio, focusing on the Scioto drainage only. Almost all of the earthworks were probably built during the Early and Middle Woodland periods.

the diversity of food resources used must be broadened and will come to include less easily collected or processed foods. It was not until the Early Late Woodland period in the Scioto valley, when high densities of people came to lived in nucleated villages, that intensive use of a broader spectrum of foods, including less easily exploited ones, is evidenced and population packing might be implied (Wymer 1992:65, 73, figure 9.7; 1996: 42; Wymer and

Abrams 2003).[20] Finally, little packing of local symbolic communities in the Scioto drainage is suggested by the paucity of evidence for ancestor worship there (Chapter 4, The Question of Priest-Chiefs). Ancestor worship correlates crossculturally with territoriality and packing in societies of middle range complexity.

In all, then, the archaeological evidence from the Scioto-Paint Creek area and the broader Scioto drainage suggests that the increases in sociopolitical and ritual complexity and material flamboyance observed in the Scioto-Paint Creek area during the Middle Woodland period cannot be explained simply by a local ecological model that evokes the area's environmental richness, consequent sedentism and population increases there, and subsequent increases in cultural complexity. Population aggregation from the broader Scioto drainage into the Scioto-Paint Creek area for ceremony and probably settlement, and from secondary valley and main valley edge locations in the area to the terraces of the Scioto and Paint Creek valleys, also were significant causal factors. Further, the long, earlier history of ritualism in the Scioto-Paint Creek area, founded in Adena expressions in the Early Woodland period, and in yet older, Glacial Kame ceremonialism to the immediate northwest of the area, was key to the florescence of Hopewellian sociopolitics and ritual in the Scioto-Paint Creek area (Chapter 5). Finally, other social, religious, and/or other factors internal to the local culture, people, and their history may also have been critical to development there.[21]

The conclusion that a solely local-scale, ecological-demographic model is inadequate for explaining Hopewellian sociopolitical and ritual complexity in the Scioto-Paint Creek is reinforced by taking a comparative, interregional-scale perspective (Table 2.1). The lower Illinois valley, the lower Wabash-Ohio valley area in the vicinity of the Mann and Mount Vernon sites, and the Scioto-Paint Creek area were each regions of marked Hopewellian sociopolitical and ritual development during the Middle Woodland. These three areas vary in their natural food productivity, climatic potential for agriculture, their potential for population growth as a product of natural and agricultural food productivity, their circumscription of food resources, and the ease of local transportation and communication within them (Ruby et al. 2005:127–132) – all of which are factors that can encourage or discourage the development sociopolitical complexity. From these parameters, it is possible to qualitatively rank the three areas for their potential for sociopolitical development, assuming the logic of the above, local-scale, ecological-demographic model: specifically, natural and agricultural food productivity translate into sedentism with concomitant population increases, and these factors, along with circumscription of natural resources and at least some ease of transportation and social interaction, encourage social tensions and, thus, the development of sociopolitical and ritual cooperation and complexity to overcome such tensions. In this perspective, the region that has the optimum environmental potential for producing sociopolitical complexity is the lower Illinois valley. The lower Wabash-Ohio region and the Scioto-Paint Creek area follow in that order (see Note 20 for the specific reasons behind this ordering).[22] In contrast, Hopewellian material and ritual flamboyance, and sociopolitical complexity, were greatest in the Scioto-Paint Creek area by a strong measure, lesser in the lower Wabash-Ohio region, and least in the lower Illinois valley.[23] Thus, a local-scale, ecological-demographic model of sociopolitical and ritual development in the Scioto-Paint creek area is insufficient in and of itself to explain that development.

Summary

The geological and biologically diverse and biologically productive natural environment of the Scioto-Paint Creek area, in comparison to that of the Till Plain north of it and the dissected Appalachian Plateaus south of it, certainly fostered higher population densities and more complex sociopolitical and ritual organization there, from the Early through Middle Woodland periods. However, this simple, local ecological-demographic model

Table 2.1. Comparison of the Natural Environments of the Central Scioto, Lower Illinois, and Lower Wabash-Ohio Valleys for Their Potential to Encourage Demographically-Driven Socio-Political Development

Study Region	Spatial Scale	Natural Food Productivity	Agricultural Potential Relative to Climate	Total Population Potential	Circumscription of Food Resources	Connectedness, Ease of Transportation and Communication	Environmentally Encouraged Potential for Socio-political Development
Scioto valley	3	3	2	3	2	3	3
Lower Illinois valley	2	2	2	2	1	2	1
Lower Wabash-Ohio valley	1	1	1	1	3	1	2

[1] Rank order of 1 = biggest/most, 3 = smallest/least.

of increases in the complexity of sociopolitical and ritual organization in the Scioto-Paint Creek area during this time span is incomplete and must be qualified in three ways. Cultural developments in the area appear to have been a response more so to the aggregation of people there from the larger Scioto drainage than to increases in population densities throughout the drainage. Regional population levels do not appear to have changed much over the duration. Equally contributory to sociopolitical and ritual development in the Scioto-Paint Creek area was the redistribution of people from upland locations, small tributary stream settings, and the edges of the Scioto and Paint Creek valley trenches into the valley terraces and bottoms, themselves. Finally, Hopewellian sociopolitical and ritual complexity in the Scioto-Paint Creek area was much greater than one would expect from the moderate productivity and the structure of its natural environment, and its modest potential for population growth, compared to the lower Illinois valley and lower Wabash-Ohio region.

In light of these extensions of and qualifications to the local ecological-demographic model, the marked florescence of Hopewellian sociopolitical organization, ritual and material culture in the Scioto-Paint Creek area is better understood as the result of sociocultural and ideational processes embedded in a long-term historical development from the Early through Middle Woodland in a supportive natural environment than it is in strictly ecological terms.[24] This conclusion is given much additional support in Chapters 3 and 4, which describe in detail the social, political, and ritual lives of Scioto Hopewell people, and in Chapter 5, which revisits the question of how Scioto Hopewellian cultural life emerged.

SUBSISTENCE

Hopewellian peoples in the Scioto-Paint Creek area subsisted on a mixed diet of grown cultivars, collected wild plants, and hunted and fished animals. Wild foods appear, from current data, to have been the mainstay of the Scioto Hopewellian diet, although crops were a substantial complement to wild foods and increased dramatically in their dietary importance over the course of the Middle Woodland period. Cultivated plants include starchy seeds of the Eastern Agricultural Complex (maygrass, goosefoot, knotweed, little barley), oily seeds of the EAC (sunflower, sumpweed), and squash. Of these cultivars, those with morphological changes indicating domestication and that have been identified specifically in Scioto Hopewell sites include some samples of goosefoot (*Chenopodium berlandieri* var. *jonesianum*), marked by their truncate margin and thin seed coat, and maygrass and sumpweed, which occur outside of their natural distributions (Wymer 1987:59–63). All of the cultivated seedy plants appear to have been grown in cleared forest plots on valley bottoms and terraces of the Scioto and Paint Creek valleys. Plot productivity seems to have been sustained through a shifting-plot, swidden system. The compact flowers and seed masses on the terminal inflorescences of the EAC plant foods make them easy to harvest when grown in dense stands in gardens.

Animal Foods

Animals that were hunted and fished are known directly from their remains in the midden deposit of the McGraw site on the Scioto flood plain (Parmalee 1965:115–118; Prufer et al. 1965:136; Stansbery 1965:119–124). This one, rich midden provides a good sample of the kinds of animals that were eaten, but probably a limited view of the balance of the species. Mammals, especially white-tailed deer, and mollusks appear to have dominated the animal diet. Fish, turtles, and fowl, which were taken in approximately equal proportions, each constituted less than half the mammalian contribution.[25] Turkey, ducks, and geese were the birds that were most commonly eaten.

These animal foods would have been taken from microenvironments that were spread over several miles of a valley-upland profile, from the rivers themselves and river edges (mollusks, fish, turtle, ducks, geese), to Wisconsinan and Illinoisan terraces (deer, turkey, other mammals), to uplands and their dissecting, narrow tributary valleys beyond main valley rims (deer, other mammals) (see above, Figure 2.7). Logistical trips of a day to much longer duration away from valley-based residences would have been necessary to harvest these resources. Hunting deer that congregated in sheltered small valleys and hollows in the uplands during winter would have required long-duration logistical trips of some members of valley-based households. Whether seasonal base camps away from valley-based residences were established for all members or portions of a household during winter or other seasons can only be conjectured, currently (Chapter 3, Residential Communities). Symbolically, Hopewell peoples of the Scioto-Paint Creek area relied upon species with characteristics and/or locations of capture that were associated with the Above and Below realms. A fair balance of attention was given to animal foods and products from both sets of realms, opening the possibility that Hopewell people were concerned with balancing the things they associated with these places in their diet, technology, and other aspects of their daily lives, as were some historic Woodland Native Americans (Hudson 1976:165, 302, see also 317–319).

Plant Foods

Plant foods known through paleoethnobotanical studies of remains from five Middle Woodland sites in the neighboring Licking drainage (Wymer 1987, 1988, 1992, 1996) include wild and encouraged nuts, cultivated and wild seeds, fruits and berries. Tubers and roots, which normally do not preserve archaeologically, can probably be added to the list based on their frequent occurrence at the Middle Woodland Jennison Guard site, at the mouth of the Great Miami river in southwestern Ohio (Kozerak 1987, 1997; Wymer 1996:43). Hickory was ubiquitously the most common kind of nut used in the Licking drainage sites, ranging between 50 and 95% of the nut assemblages, while acorns, hazelnuts, black walnuts, and rare butternuts comprised most of the remainder of the assemblages and varied in importance from site to site (Figure 2.14; Wymer 1996:39–40, figure 3.3; 1987:142–143, 1988). Seedy food resources were predominated by EAC starchy seeds, on the order of 65 to 90% of seed assemblages within sites (Figure 2.15; Wymer 1996:figure 3.4). Fruits and berries were next most important, comprising about 10–20% of seed assemblages. Most of the recovered specimens were honey locust, with minor amounts of hackberry, grape, sumac,

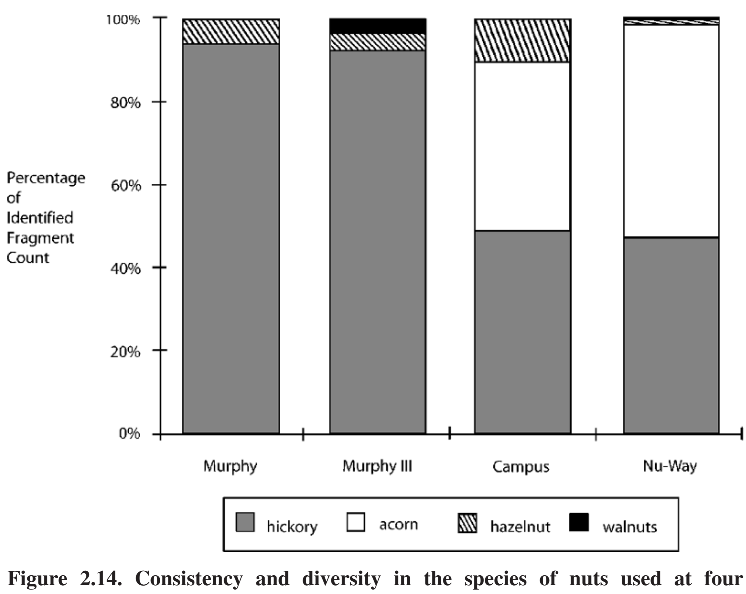


Figure 2.14. Consistency and diversity in the species of nuts used at four Hopewellian habitation sites in the Licking valley, Ohio. See credits.

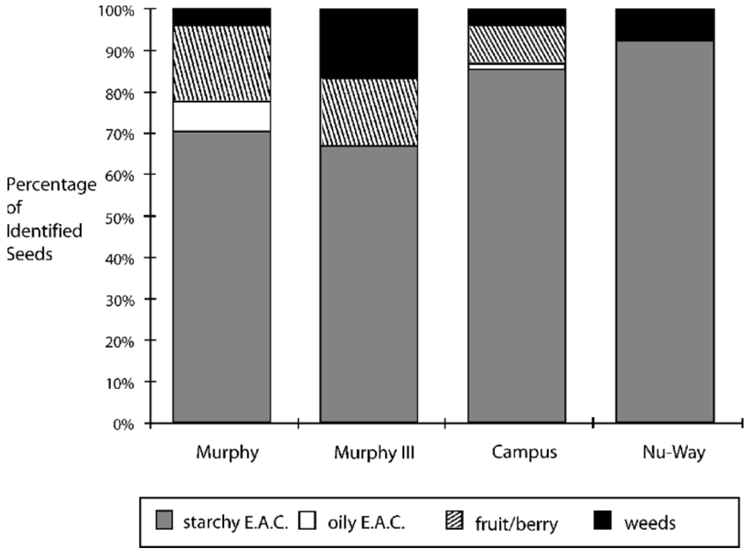


Figure 2.15. Consistency and diversity in the categories of seeds used at four Hopewellian habitation sites in the Licking valley, Ohio. See credits.

strawberry, pokeberry, and elderberry (Wymer 1996:41). Ruderal, wild weedy seeds, including bedstraw, panic grass, and several others, may sometimes have been significant foods, constituting about 3 to 15% of seed assemblages (Wymer 1996:41). Oily EAC seeds, unlike the previous forms, were not found at all five of the excavated sites, and made up a low, 1 to 6.5% of seed assemblages where present. Most of the oily EAC specimens recovered have been sumpweed, with only occasional sunflower seeds (Wymer 1997:157). Within the starchy EAC food category, maygrass was consistently important among sites, averaging about 38% of the starchy EAC seed assemblage and ranging between 17% and 75% (Figure 2.16; Wymer

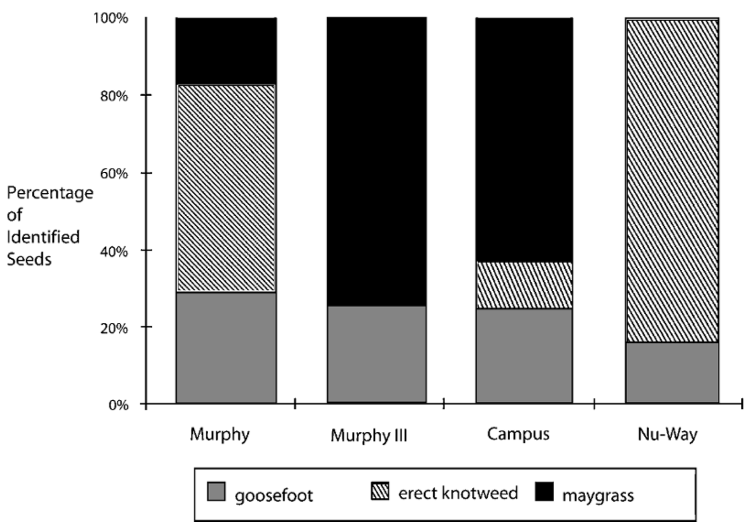


Figure 2.16. Consistency and diversity in the genera of Eastern Agricultural Complex seeds used at four Hopewellian habitation sites in the Licking valley, Ohio. See credits.

1996:figure 3.5). Erect knotweed was equally important on average, at approximately 38% of the starchy EAC seed assemblage, but more variable among sites, with ranges between 0% and 84% of the assemblages. Both foods were more important than goosefoot, which averaged only 24% of the starchy EAC seed assemblage, but was fairly consistent in its contribution to diet, ranging between 16% and 29%. The high and consistent level of use of maygrass probably relates to its spring harvest time, when most other plant foods in the Scioto-Paint Creek area have not reached fruition.

As was the case for animal foods, the plant foods used by Scioto Hopewell peoples were derived from diverse settings spread over several miles of a valley-upland profile. Hickory nuts were available in the uplands beyond valley rims. Acorns and black walnuts were taken from Illinoisan and Wisconsinan terraces. EAC seedy plants appear from all evidence to have been grown in swidden plots cleared in terrace and flood plain forests (Wymer 1996, 1997). At the edges of garden plots or in abandoned plots, where light was more available than in the mature terrace and flood plain forests, hazelnut, honey locust, sumac, elderberry, and raspberry would have grown naturally and were probably encouraged and tended for their fruits (Wymer 1996:47; 1997:159). Effectively harvesting their produce would have required close attention to them, to stave off animal competitors. The plant foods that Scioto Hopewell peoples gathered imply that they took logistical trips of a day to much longer away from their valley residences. Harvesting hickory nuts in the uplands could have involved the construction of fall season base camps in the uplands by some or all members of a household, away from valley-bottom and terrace residences (Chapter 3, Residential Communities). Upland settings have scarcely been explored in the Scioto-Paint Creek area, leaving this possibility open for study. Symbolically, Hopewell peoples in the area harvested and gathered plants primarily from locations associated with the earth-disk surface of the Below realms – terraces, and rises within flood plains – and secondarily from uplands transitional to the Above realms. Some tubers probably were dug along river edges transitional to the Below realms. Balancing plant foods and products from Above and Below realms in their diet, technology, and other activities in life, like balancing animal foods and products, may have been essential to the substance and rhythm of the lives of Scioto Hopewell peoples.

How Important Was Farming?

The level of contribution that cultivars made to the diet of Scioto Hopewell peoples is a central question. It bears on the major issues of the degree to which Scioto Hopewell peoples were annually sedentary, predispositions for territoriality and competition, subsistence risk and intercommunity exchange, kinship structure, and world view orientation, to name a few. Currently, it appears that crops were a *substantial* component of the diet of Scioto Hopewell peoples, but *supplementary* to hunted and collected, wild foods. DeeAnne Wymer (personal communication, 2005) currently would estimate that cultivars comprised approximately 30–50% of the annual diet of Scioto Hopewell peoples.[26] I would place the estimate somewhat lower, at approximately 25%, given the paleoethnobotanical and broader subsistence record for the area and a number of other considerations, which I discuss immediately below (see also Brown 2005:114; Smith 2006:501–502).[27] This lower estimate is more in line with other assessments of annual plant consumption in the general midwest-riverine area during the Late Archaic and Woodland periods, prior to the shift to intensive maize agriculture there.[28]

The significant role of cultivars in the diets of Scioto Hopewell people is evidenced in the ubiquity and density of EAC seeds across features within sites in the neighboring Licking valley. Both measures are high–comparable to the ubiquity and density of both wood charcoal and nuts across features (Table 2.2). These measures indicate the consistent and plentiful use of seeds at the sites. EAC seed ubiquity and density within Licking valley sites are also respectively more consistent and much higher than these measures within Middle Woodland

Table 2.2. Ubiquity and Density of Seeds, Nut Shells, and Charcoal in Middle Woodland Sites in the Licking Valley (Ohio), the Lower Illinois Valley, and the American Bottom (Illinois)

	All Seeds	EAC Seeds[2]	Nuts	Charcoal
Licking valley, Ohio[1]				
Ubiquity	82% of samples		84% of samples	100% of samples
Density	22 counts/liter	17.4 counts/liter	10.4 counts/liter	25 counts/liter
Lower Illinois valley, Illinois[3]				
Ubiquity	69% of samples		98% of samples	100% of samples
Density	1.29 counts/liter			
American Bottom, Illinois[4]				
Ubiquity	70% of samples		65% of samples	97% of samples
Density	0.67 counts/liter		3.0 counts/liter	3.5 counts/liter

[1]Data are for the Murphy I and Campus sites (Wymer 1987:135, 136, tables 10, 11). The samples number 44, come from 21 features, and total 160 liters.
[2]Datum is calculated knowing that EAC seeds comprise 78.9% of all seeds recovered from samples from the Murphy I and Campus sites (Wymer 1987:178, table 31).
[3]Data are for the Smiling Dan, Massey, and Archie sites (Wymer 1987:222, table 37). The samples come from 203 features and 348 midden samples and total 13,536 liters.
[4]Data are for the Mund and Truck #7 sites (Wymer 1987:221, table 36). The samples come from 48 features and total 1,354.5 liters.

sites in the lower Illinois drainage and the American Bottom (Table 2.2).

At the same time, Scioto Hopewell people's dependence on EAC seed plants appears to have been supplemental to wild foods, which comprised the bulk their diet. This qualification is suggested by seven kinds of qualitative data. First, the Scioto Hopewell subsistence system can be placed in culture historical context, on a scale from emphasis on wild foods to emphasis on domesticated cultivars, by comparison to the subsistence of the Mississippian societies of Moundville and Cahokia. These societies were much larger, had much greater regional population densities, and had much denser localized concentrations of people than Scioto Hopewell societies, and thus would have been more encouraged in their reliance on domesticates. The greater productivity of Late Woodland maize than EAC plants also would have made horticulture more attractive to Mississippian peoples than Scioto Hopewell peoples. Nevertheless, the contribution of maize to the caloric diet of early Mississippian people at Moundville (A.D. 1050–1250) is estimated at only 40%, and at similar to somewhat lower proportions for early Mississippian people at Cahokia (A.D. 1000–1050), as indicated by human bone chemistry studies (Schoeninger et al. 2000; Schoeninger and Schurr 1998; Yerkes 2005:244, 250). Less than 40% dietary reliance of cultivars would thus be expectable for Scioto Hopewell societies, which would make wild foods their mainstay.[29]

Consistent with this scaling of Scioto Hopewell people's dependence on cultivated plants, the historic Central Algonkian tribes of Illinois, Indiana, Ohio, and Wisconsin, including the Prairie Potowatami, Sauk, Fox, Menomini, Mascouten, Kickapoo, Shawnee, Miami, and Illinois, all relied most heavily on hunting and gathering for their subsistence. Agriculture played a secondary role (Miller 1955; Trigger 1978)

Second, at the McGraw and Brown's Bottom sites in the Scioto valley, the remains of nut, mollusk, and deer foods were each plentiful in archaeological deposits, with more minor representation of fish, bird, and small mammal remains (Pacheco 2005; Parmalee 1965:115–118; Prufer et al. 1965:136; Stansbery 1965:119–124; P. Pacheco, D. Wymer, and J. Burks, personal communication 2005).[30] If nuts, mollusks, and deer were of primary importance to the diet of Scioto Hopewell people, as they seem to have been from these two sites and as they were across much of the midwestern and midsouthern United States as a strong supra-regional pattern from about 5000 B.C. onward (e.g., Brown 1983:7; Brown and Vierra 1983:188–189; Emerson and McElrath

1983:237–238; Ford 1974:393, 395; Fortier 1983:258; Jeffries and Lynch 1983; Styles 1981; Styles et al. 1983:286, 290; Webb 1946, 1950a,b; Webb and Haag 1939, 1940, 1947; Winters 1969), then EAC seed plants proportionally must have constituted a minority of the Scioto Hopewell diet. Ubiquity and density counts for nuts compared to seeds in the Licking valley data (Table 2.2) do suggest that nuts were an important component of the Scioto Hopewell food spectrum, although probably somewhat less important than EAC cultivars.

Third, Scioto Hopewell settlements lack hoes for making agricultural production efficient. They are not found earlier in the area or in southern Ohio generally, and first appear in Ohio in Late Woodland villages, especially in the southwestern part of the state (Seeman and Dancey 2000:589).[31] By the Late Prehistoric period, a diversity of kinds of hoes, made of mussel shell, the shoulder blades of deer and elk, elk antler, and stone were used by Fort Ancient peoples of Ohio (Carskadden and Morton 1977:49, 53, 91; Griffin 1943:table 14; Hooton and Willoughby 1920:60–61, 66–67, plates 13-15; Marwitt et al. 1984:68; Mills 1904:164, figure 38, 1906:89, 1917:422, figure 74; Prufer 1975:284, 306; Prufer and Shane 1970:121; Otto 1980:65). The implication is that Scioto Hopewell peoples must have broken and cultivated ground with wooden digging sticks, which would have been less effective than the tools used by later peoples and would have encouraged their major attention on other, more easily gotten food sources.

Fourth, and related, slab and basin-shaped milling stones (metates) for processing seeds in quantity are also missing from Scioto Hopewell settlements. They, too, are not found earlier in the area or in southern Ohio generally, and first appear in Late Woodland villages broadly over southern Ohio (Seeman and Dancey 2000:589).[32] Their common use in southern Ohio continued through the Fort Ancient Period (Converse 1973:45; Hooton and Willoughby 1920:57, plate 10; Mills 1904:158; 1906:76, figure 10; 1917:355, 357, figure 27; Prufer and Shane 1970:121; Seeman 1985:58, 61). The lack of milling stones in the Scioto area cannot be attributed to Scioto Hopewell peoples having eaten their seed foods primarily uncooked and chewed instead of ground and cooked. Dental anthropological and ceramic technological studies suggest, instead, that seed foods were normally cooked.[33] These conditions imply that seedy foods were probably ground in less efficient ways, in preparation for boiling or baking, than by stone slab milling, and thus are less likely to have constituted the major portion of the diet of Scioto Hopewell people.[34]

Fifth, storage pits are rare in domestic sites in the Scioto valley and the neighboring Licking valley, with only one firm example and two less certain cases currently known.[35] This situation is consistent with the inference that production of EAC starchy seed crops in these valleys was limited, and did not regularly result in plentiful surpluses that were store for extended periods of time. However, the possibility of alternative means for storage must be considered, as suggested by the textile bag of domesticated goosefoot found in Ash Cave, Ohio, and another found in the Marble Bluff shelter in the Arkansas Ozarks (Smith 1985, 1995:187–188).

Sixth, the content of the representational art of Scioto Hopewell peoples is inconsistent with the idea that they depended heavily on cultivating plants. Almost all of their representational art depicts animals rather than plants (Carr 1998, 2000a, b; Seeman 2004:64–65). The corpus includes many hundreds of images of animals of diverse species, sculpted on smoking pipes, ceramic vessels, and bone and antler batons; cut out of mica and copper; painted on mica, copper, and textiles; patinated on copper breastplates, celts, and headplates; and built out of earthen and stone architecture. In contrast, I know of only two definite representations of plants – both of mushrooms associated with shaman-like trancing rather than foods (Table 2.3). A few other possible representations of seed pods, flowers, and sprouts have been suggested (Table 2.3; Figure 2.17A,B); however, other interpretations have also been made of these art works. Many of the just-mentioned items with animal imagery

Table 2.3. Ohio Hopewell Artworks Depicting Plants

	Site and Provenience	Reference
Definite Examples		
Copper wand effigy of an *Amanita* mushroom	Mound City, Burial 9, Mound 7	Mills (1922:489–491, 547–548, figures 31, 32, 71)
Stone effigy of a mushroom	Fort Ancient, Middle Woodland component	Carr and Case (2005a:29, figure 1.5B)
Possible Examples		
Copper effigy of head of *Amanita* mushroom?	Hopewell, Mound 17, Ceremonial Offering 1	Shetrone (1926a: 44, 46,186, figure 115), Zurel (2002)
Copper geometric effigy of seed pod in cross section?	Hopewell, Mound 25, Copper Deposit	Moorehead (1922:109–110, plate 65 #3) Zurel (2002)
Copper geometric effigy of seed pod in cross section?	Hopewell, Mound 25, Copper Deposit	Moorehead (1922:109–110, plate 65 # 1) Zurel (2002)
Copper geometric effigy of a flower?	Hopewell, Mound 25, Copper Deposit	Moorehead (1922:109–110, plate 65 # 2)
Copper geometric effigy flowers?	Turner, Mound 23, Central Altar	Willoughby and Hooton (1922:46–48, plate 11c)
Copper effigy emerging sprouts (rather than snake tongues)?	Hopewell, Mound 25, Burial 4	Shetrone (1926a:63, 187, figure 116), Zurel (personal communication 2002). See Figure 2.17B.
Copper effigy emerging sprouts? (rather than snake tongues)?	Turner, Mound 3, Central Altar	Willoughby and Hooton (1922:46–48, plate 11a) Zurel (personal communication 2002)
Mica effigy of a pistil, flower, or seed (partial)	Edwin Harness Mound	Mills (1907:173, figure 56)
Mica effigy of a pistil, flower, or seed (partial)	Edwin Harness Mound	Collections of the Ohio Historical Society Columbus, OH (catalog no. 7/-). See Figure 2.17A.

were markers of leadership or other socially important roles, suggesting the core value that Hopewellian peoples gave to wild game compared to native domesticates. This value system is not what one would expect for peoples whose livelihoods rested on their success in farming, and suggests the strong degree to which hunting and gathering remained woven in the fabric of Scioto Hopewellian life.

Seventh, the supplementary role that EAC seed plants played in the diet of Scioto Hopewell peoples is reflected in the social roles and relative sociopolitical status of Scioto Hopewell women and men. Across cultures, the access that women compared to men have to sociopolitical positions of importance (or that any segment of society has to important positions) depends considerably on the degree to which they dominate the perceived, essential means of production (Murdock 1949b; Sered 1994; Steward 1955). If EAC seed plants had been the majority component of Scioto Hopewell diet and perceived as core to Scioto Hopewell life, and if farming tasks beyond clearing of land were done primarily by women, then one would expect Scioto Hopewell women to have filled many important sociopolitical roles in their societies. Instead, most important sociopolitical and ritual positions were held primarily or exclusively by men (Chapter 4, Gender, Gender Relations, and Kinship Structure). The highest sociopolitical position of community-wide leader, which was marked by copper headplates, was held exclusively by males. Several specialized kinds of shaman-like leadership roles were filled exclusively or largely by males, and clan leaders were almost always male. A ceremonial sodality symbolized by bear canines, and perhaps another that employed smoking pipes, had exclusively male members. Two other sodalities, marked by breastplates and earspools, had male members two to four times more frequently than female members. There were

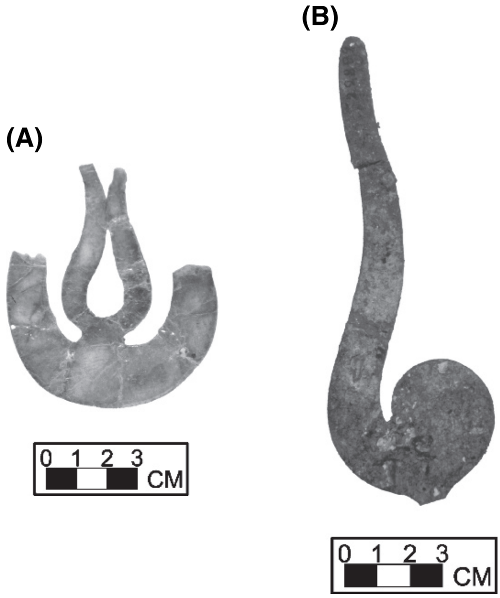


Figure 2.17. Possible Scioto Hopewell artistic representations of plants. (A) Mica cutout that might represent a flower or a flower's pistil in cross-section. From the Liberty earthwork, Edwin Harness mound, internal provenience unknown. (B) Copper cutout that might depict a growing seedling, or a fern or other plant unfolding (inverted orientation), or one half of a bifurcate snake's tongue (compare with Shetrone 1936:figure 77, lower row, center; and Greber and Ruhl 1989:243, 246, figure 6.61). From the Turner earthwork, Mound 3, Central Altar. See credits.

no important sociopolitical or ritual roles that women filled exclusively, and only one or two kinds, which involved blown instruments, that were filled primarily by women. Only three kinds of positions were held by women as often as men: community-wide leaders marked by copper celts, public ceremonial leaders who used conch shell dippers, and diviners who used mica mirrors. In short, the subordinate position of women in the sociopolitical and ritual arenas of Scioto Hopewell societies suggests that growing of EAC crops, and women's contributions to that work, were not perceived by Scioto Hopewell peoples as core to their subsistence and way of life. One is left with the conclusion that EAC foods were supplemental to wild one.

The reduced status of women compared to men in Scioto Hopewell societies and the conclusion reached from it, that horticulture was not the primary means of subsistence of those societies, reckons with ethnohistorical patterns in the Eastern Woodlands. Historically there, northern tribes that relied fully or considerably on hunting and gathering defined kin relations patrilineally, whereas southern tribes that relied more heavily on agriculture did so matrilineally (Hudson 1976; Trigger 1978).

All told, many lines of evidence, ranging from paleoethnobotanical and paleozoological to tools, features, art, and gender relations suggest that EAC foods made a substantial contribution to the diet of Scioto Hopewell peoples, but one supplementary to hunted and collected wild foods.

Subsistence Change over Time

To the best that can be told from paleoethnobotanical evidence in Ohio and the broader midwestern United States, Scioto Hopewell peoples increased their use of EAC seed foods dramatically over the course of the Middle Woodland period. Both the quantity in which seeds were used and diversity in the kinds of seeds used were expanded. These large changes in the balance of Scioto Hopewell diet appear to have begun around 50 B.C., and seem to have occurred within a fairly short time window at the beginning of the Middle Woodland period, with more gradual change thereafter over the remainder of the Middle Woodland. In contrast, the morphological changes in some kinds of EAC seed foods that made them more productive and culminated in their being classified as "domesticated" began much earlier and extended over a much longer period of time, on the order of millennia. Significant morphological changes that distinguish them as domesticated occurred between about 2000 and 1000 B.C. (Smith 1992:205–206).[36]

Contrasts between Early Woodland and Middle Woodland paleoethnobotanical samples in the upper Ohio valley basin show that over this time span, the use of all kinds of seeds (EAC foods, fruits, berries, weeds) increased about 34 times, and the use of specifically EAC seeds increased about 69 times (Table 2.4). During the Early Woodland period,

Table 2.4. Changes in the Use of All Seeds and Eastern Agricultural Complex Seeds Over the Early Woodland and Middle Woodland Periods in the Upper Ohio River Basin[1]

Time Period	All Seeds / Liter	EAC % of All Seeds	EAC Seeds / Liter
Early Woodland[2]	0.5	36%	.18
Middle Woodland[3]	17.	73%	12.41
Rate of Increase over Time, Early to Middle Woodland	*34 X*	*2 X*	*68.9 X*
Early Late Woodland[4]	13.	70%	9.1

[1]Data are from Wymer (1992:71–72, figures 9.4, 9.6).
[2]For the sites of Graham, east-central Kentucky; Boudinot, southeastern Ohio; and Niebert–Early Woodland component, northwest West Virginia.
[3]For the sites of Campus, Licking valley, Ohio; Murphy, Licking valley, Ohio; and Dow Cook, east-central Kentucky.
[4] For the sites of Waterplant, Scioto valley, Ohio; Scioto Trails/Zencor, Scioto valley, Ohio; and Childers, northwest West Virginia.

upper Ohio valley peoples focused primarily on maygrass and goosefoot, and made little or no use of other EAC seedy foods. The EAC diet of upper Ohio valley peoples during the Middle Woodland was more diverse, and included maygrass, goosefoot, and knotweed, as well as augmented percentages of sunflower and cucurbit (figure 2.18; Wymer 1992: figure 9.7).

The probable timing and pace of these changes can be estimated with some confidence from small but consistently patterned paleoethnobotanical samples from the upper Ohio valley basin. Throughout a range of early to late Early Woodland sites there, between about 600 B.C. and 100 B.C., the use of seeds of all kinds and those specifically of the EAC remained consistently very minor. A large jump in the use of seeds is documented to have occurred between about 40 B.C. and A.D. 10 at the Middle Woodland Nuway and Campus sites, and seed use remained high thereafter, through

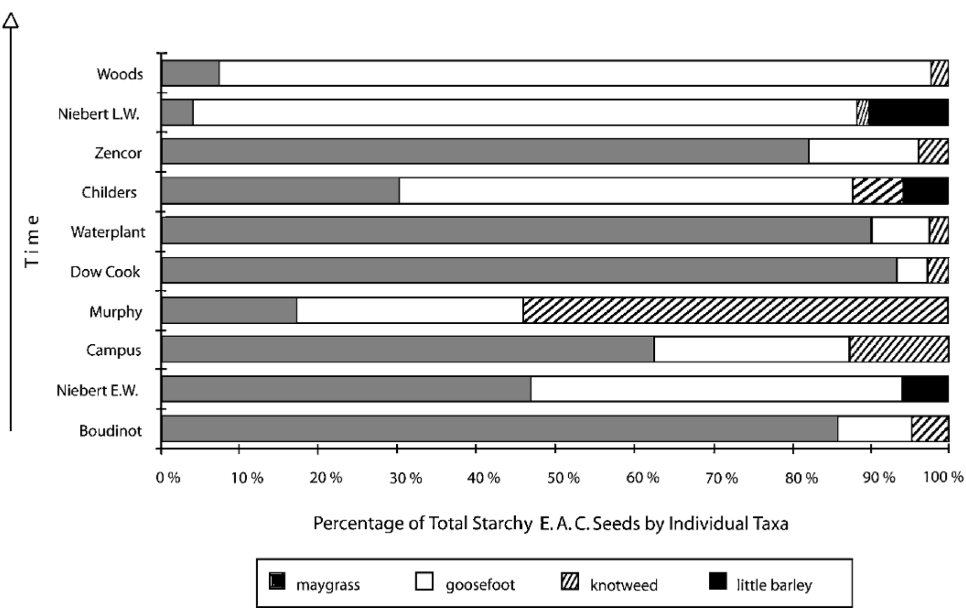


Figure 2.18. Consistency and diversity in the genera of Eastern Agricultural Complex seeds used at ten Early Woodland through Late Woodland habitation sites in the upper Ohio valley drainage. See credits.

Table 2.5. Changes in the Use of All Seeds and Eastern Agricultural Complex Seeds over the Early Woodland through Early Late Woodland Periods in the Upper Ohio River Basin

Site[1]	Occupation Dates [2]	All Seeds / Liter [3]	EAC % of All Seeds	EAC Seeds / Liter
Early in Time				
Graham (Early Woodland)	801 B.C.	0.0	0%	0.0
Boudinot 4 (Early Woodland) [4]				
early features	922 B.C. average	0.01	0%	0.0
later features	362 B.C. average	0.18	88%	0.15
latest feature	101 B.C. average	0.65	61%	0.39
Niebert (Early Woodland)	274 B.C., 22 B.C. averages for two modes	0.33	31%	0.10
—— Rapid increase in use of all seeds and EAC seeds beginning around 50 B.C. ——				
Nuway (Middle Woodland)	40 B.C.	9.0	92%	8.3
Campus (Middle Woodland)	A.D. 12	30.0	81%	24.3
Murphy (Middle Woodland)	40 B.C., A.D. 285 averages for two modes	22.0	70%	15.4
Waterplant (Early Late Woodland)	A.D. 655 average	15.0	78%	11.7
Scioto Trails / Zencor (Early Late Woodland)	A.D. 658, 878 averages for two modes	15.0	80%	12.0
Late in Time				

[1] Graham is located in east-central Kentucky; Boudinot in southeastern Ohio; Niebert in northwest West Virginia; Nuway, Campus, and Murphy in the Licking valley, Ohio; and Waterplant and Scioto Trails in the Scioto valley, Ohio.
[2] Based on calibrated radiocarbon dates in Wymer and Abrams (2003), Clay and Niquette (1989), Dancey and Pacheco (1997a: table 1.3), Maslowski et al. (1995), and Carr and Haas (1996).
[3] Most of the paleoethnobotanical data are from Wymer (1992:71–72, figures 9.4, 9.6). Information on Boudinot 4 comes from Wymer and Abrams (2003). Information from Niebert comes from Clay and Niquette (1989).
[4] Early features are numbers 16 and 14. Later features are numbers 11, 8, and 5a. The latest feature is number 5b.

the Middle Woodland and early Late Woodland periods, between approximately A.D. 10 and A.D. 800 (Table 2.5, Figure 2.19). Wymer (Wymer and Abrams 2003:189) would place the establishment of horticulture as a prominent aspect of the economies of peoples in the upper Ohio valley basin slightly later – by approximately A.D.100 – with continuity thereafter.

This pattern and its approximate timing are corroborated by a larger, though less geographically relevant suite of paleoethnobotanical samples drawn from the broader midwestern and midsouthern United States. Compositing samples from west-central Illinois, the American Bottom, central Tennessee, and eastern Tennessee (Figure 2.20; Smith 1992:206, figure 9.3a) suggests that the dramatic increase in use of EAC seed foods in these areas began about 100 B.C. and was rapid.

The sudden increase in the use of EAC seed foods in the Scioto-Paint Creek area somewhat after the beginning of the Middle Woodland period, if this pattern holds, has important implications for understanding the beginnings of Hopewellian style lifeways there (Chapter 5).

Swidden Farming

Hopewell peoples farmed the bottoms and terraces of the Scioto and Paint Creek valleys by swidden methods. These methods involved opening garden plots in the valley forests and relocating garden plots over time in order to take advantage of new, fertile, and less weed-prone soils.

A number of kinds of evidence support this reconstruction. First, simply the use of EAC cultigens by Scioto and Licking Hopewell peoples suggests that they cleared forest land for garden plots. EAC plants could not have grown in the dim light of the valley forests native to the Scioto and Paint Creek (Wymer 1996:47).

Second, wild, forest-edge plant species representing different stages of forest regrowth were collected and eaten by Scioto Hopewell

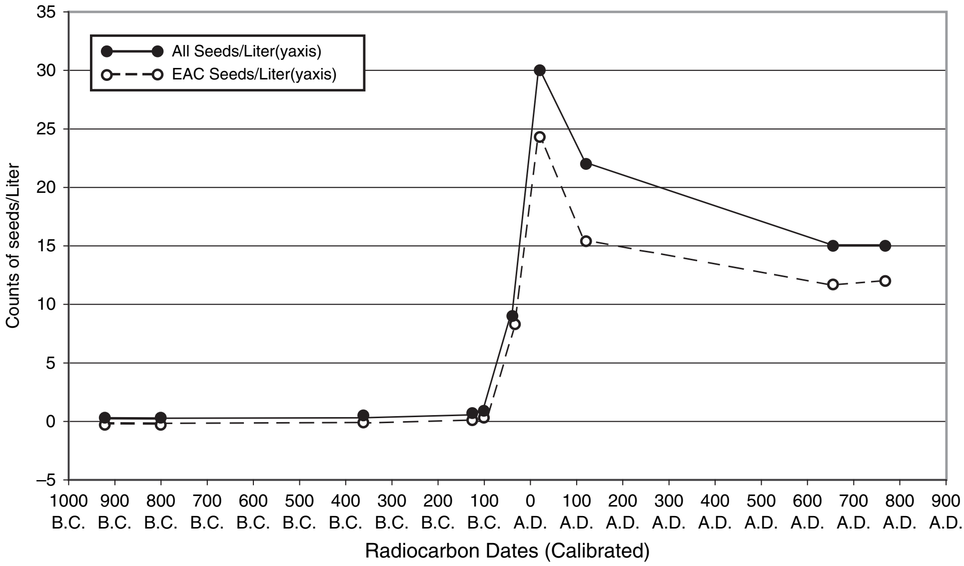


Figure 2.19. The use of seed foods, and Eastern Agricultural Complex seeds in particular, increased abruptly in the upper Ohio valley drainage between about 40 B.C. and A.D. 10.

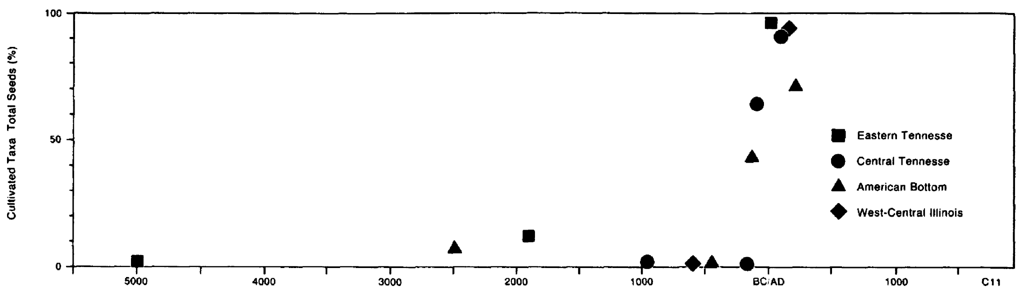


Figure 2.20. The use of seed foods broadly in the midwestern and midsouthern Eastern Woodlands (west-central Illinois, the American Bottom, central Tennessee, and eastern Tennessee) increased dramatically about 100 B.C. See credits.

peoples. This practice suggests that garden plots were made, abandoned, and used for their natural products after abandonment, as were other natural patches of wild foods near their residences. The forest-edge plants that were used include raspberry, elderberry, sumac, hazelnut, and honey locust (Wymer 1996:47; 1997:159). That these forest-edge products represent regrowth at the edges of extant and old garden plots rather than the edges of a settlement, itself, is evidenced by the occurrence of several different suites of species from different stages of regrowth, rather than only species from new growth. Different garden plots at different stages of regrowth around a settlement were all used simultaneously. In addition, the forest-edge foods found in Scioto and Licking Hopewell habitation sites are not nearly so common in earlier, Early Woodland habitation sites (D. Wymer, personal communication 2005). The increased occurrence of forest-edge foods over time in southern Ohio and neighboring areas correlates with the increased use of EAC plant foods there, implying that the two kinds of foods were interconnected in their growth and use, i.e., the growth of forest edge species in abandoned EAC garden plots.

Third, a rotating system of garden plots is implied by the short lengths of occupation of

Scioto and Licking Hopewell habitation sites and a pattern of their repeated reoccupation. It appears that a household would move its residence to a new location when mature forest land for garden plots became an inconvenient distance away. Short lengths of occupation, on the order of a few years to a generation, have been estimated by total assemblage mass (Prufer et al. 1965), ceramic assemblage size (Carr and Haas 1996:29), ethnohistoric analogs (Rainey 2003), a study of plant use and succession in abandoned Hopewellian swidden plots in the area (Rainey 2003), and by comparison to much denser, Illinois Hopewell habitation assemblages (Chapter 3, Long-term Cycles of Residential Mobility and Lengths of Occupation of Sites). Cycles of reoccupation of a same location are estimated at 175–300 years, based on the radiocarbon chronologies of individual sites (Chapter 3, Long-term Cycles of Residential Mobility and the Lengths of Occupation of Sites; Table 3.3).

All of these diverse lines of evidence would be hard to explain succinctly by other than the practice of swidden farming by Scioto and Licking Hopewell peoples.

Opportunism

The reconstruction offered here of subsistence in the Scioto-Paint Creek area and its surroundings is a generalization. Households in the area seem to have varied significantly in the particular food resources that they emphasized, depending on very localized conditions in the foods most easily obtained. This kind of variation can be seen in paleoethnobotanical data from the Licking valley. There, the Murphy I, Murphy III, Campus, and Nu-Way sites vary considerably in the percentages of maygrass and goosefoot per starchy EAC seeds recovered from them, on a count basis (see above, Figure 2.16; Wymer 1996:41, figure 3.5), the percentages of fruit and berry seeds compared to starchy, oily, and weedy seeds retrieved, on a count basis (see above, Figure 2.15; Wymer 1996:40, figure 3.4), the overall density of nuts recovered, on a weight basis (Wymer 1987:135, table 10; 1996:39, figure 3.1), and the percentages of particular species of nuts excavated, on a count basis (see above, Figure 2.14; Wymer 1996:40, figure 3.3).

Larger scale differences in subsistence practices probably occurred between the Scioto-Paint Creek area, which was environmentally very diverse and productive, and portions of the Scioto valley to the north and south, which were more homogeneous and less productive (see above, Ecological Setting). These differences in subsistence were fundamental enough to apparently have produced organizational differences in residential settlement and mobility between the Scioto-Paint Creek area and its northern and southern counterparts. Habitation sites with strong evidence for multi-season residential stability, like some known in the Scioto-Paint Creek area, appear to be lacking in the northern and southern portions of the Scioto valley. There, seasonal base camps are found, instead, implying the movement of residences over the course of the year (Chapter 3, Residential Communities).

Summary

By all empirical accounts, Hopewell peoples of the Scioto-Paint Creek area were mixed forager-farmers. They relied substantially and relatively equally on collected nuts, especially hickory, hunted deer and other mammals, gathered mollusks, and cultivated Eastern Agricultural Complex starchy and oily seeds. Fish, turtles, and fowl that were taken, as well as pods, fruits, and berries that were encouraged and harvested at the edges of their gardens, and probably roots and tubers that were dug, filled out their diets. These products were gotten from diverse parts of the people's cosmos – in their river and riverbank portals to the Below realms, on their valley bottom and terrace surface of the earth-disk – the top surface of the Below realms – and in their valley edge and upland transition to the Above realms. Swidden farming of the naturally largely forested valley bottoms and terraces required Scioto Hopewell peoples to move their gardens periodically, probably every several or more years, and to shift their small, valley-based residences every few years to a decade or two. Obtaining other foods involved short, one-day logistical trips, longer-duration logistical trips, and perhaps the building of seasonal base camps away from their from valley-based residences.

Hopewell peoples of the Scioto-Paint Creek area developed their particular system of subsistence and settlement, with its significant integration of swidden gardening and its valley-bottom focal residences, relatively quickly, over perhaps three or four generations in the last half century or so B.C. and the first decades A.D. As will be seen in Chapter 5, this subsistence-settlement shift appears to have been precipitated by changes in religious belief and practices that made late Early Woodland peoples decide to move their ceremonial centers and rituals from valley edge locations transitional to the Above realms to valley terrace settings on the earth-disk surface of the Below realms. Thereafter, subsistence and settlement in the Scioto-Paint Creek area remained essentially the same throughout the Middle Woodland period, until nucleated village life was relatively quickly adopted in the central Scioto valley, in the sixth century A.D. (Carr and Haas 1996), or perhaps somewhat earlier (P. Pacheco, personal communication 2007). Subsistence practices changed in only minor ways through the ninth century A.D., over which time the spectrum of eaten plant foods was broadened across all major plant categories (nuts, seeds, fruits, berries, weedy genera) and greater reliance was placed upon nuts (Wymer 1987, 1992:65).

CONCLUSION

Part of the process of richly describing a people, in order to come to know them in their terms, is contextualizing their deeds and ideas within their own local environmental setting. This setting includes not only physical and biological places and aspects of the environment, but also the symbolic meaning of them to the people in light of their world view and beliefs. The setting also includes spiritual places and aspects of the environment that are recognized by the people but that may have no physical correlate that you or I can perceive. In addition, because culture and environment hold a recursive relationship to each other, the environmental setting also comes to include cultivated and built places and characteristics, such as Hopewell peoples' garden plots in use, abandoned garden plots, and earthworks. Finally, human demographic features of a landscape, as a part of its ecology and as a transitional category between nature and culture, also contribute to the character of a local setting. All of these components of a people's environment form the context in which individual and social perceptions, decisions, and actions take place.

This chapter has described the natural, symbolic, cultivated, and demographic environmental setting in which Scioto Hopewell people created their lives and culture. A number of key aspects of the Scioto-Paint Creek environment have been revealed. First are the area's physiographic, floral, and faunal diversity and productivity, its broad and nutrient-rich flood plains, and its longer growing season compared to surrounding locales. These characteristics of the area are largely attributable to it encompassing ecotones between the glaciated Till Plain, the glaciated Allegheny Plateaus, and the unglaciated Allegheny Plateaus, and to the Scioto river following the course of the preglacial Teays valley near Chillicothe. The natural diversity and richness of the area were essential to the increases in numbers of people there during the Early Woodland period and the development of Adena social and ceremonial complexity, which stood at the foundation of Scioto Hopewellian cultural innovations. Later, during the Middle Woodland period, the rich and large flood plains supported the aggregation of people there from surrounding valley-edge and upland locations, and the moving of people into the area from neighboring parts of the Scioto drainage. The intensification of horticulture in the Scioto-Paint Creek area at the beginning of the Middle Woodland period was secondary to the area's natural, wild biotic productivity in allowing population aggregation and local population increases there at that time.

Second, the Eastern Agricultural Complex foods that Scioto Hopewell people cultivated were supplemental in their diet to the wild foods they harvested. Deer and other mammals, nuts, and mollusks constituted the core of the diet of Hopewell people in the Scioto-Paint Creek area, as they were generally for peoples across the Midwest-Riverine area during the Woodland period. Seven diverse lines of paleoethnobotanical, zooarchaeological, artifactual, artistic, and gender-based evidence support this conclusion.

Third, intensification of horticulture and increased reliance on Eastern Agricultural Complex seed foods occurred abruptly at the very beginning of the Middle Woodland period rather than gradually over the course of the Early and Middle Woodland in the Scioto-Paint Creek area. Current paleoethnobotanical data suggest that the develop occurred over perhaps three or four generations, between about 40 B.C. and A.D. 10. Subsistence change appears to have been coeval with the development of Scioto Hopewellian social and ritual organization rather than prior to it, and probably was not a direct, primary cause of it. This point is elaborated and its implications are explored in Chapter 5. There, it is shown that the florescence of Scioto Hopewellian sociopolitical organization, rituals, and material culture is better understood as a response to conceptual developments in world view and belief that began in the late Early Woodland period and quickly crystalized at the beginning of the Middle Woodland period.

Fourth, total population in the greater Scioto-Paint Creek area does not seem to have changed much from the Early Woodland to the Middle Woodland period. Instead, this time span saw primarily the relocation of people, from valley-edge and upland settings to valley terraces and bottomlands in the vicinity of the confluence of Paint Creek with the Scioto river, and from some parts of the Scioto valley north and south of the confluence area to it.

Fifth, subsistence data summarized here, and geographic analysis of the areal sizes and spacings of local symbolic communities, as presented in Chapter 3, indicate that despite the aggregation of people into the valleys and bottomlands of the Scioto-Paint Creek area during the Middle Woodland period, social groups were not closely packed together spatially and social packing was not a causal factor in subsistence and social change. Communities were liberally separated from one another, and the plant foods utilized were those most easily collected and grown rather than a broad spectrum of easy to hard-to-procure ones. Considering this point and the previous means that earlier ecological explanations of Hopewell that pose the linear causal chain of sedentism, regional population growth and packing, agricultural intensification, local subsistence risk, and the development of social complexity (Ford 1974; see also Braun 1977, 1986; Dancey 1992; Fagan 1995; Tainter 1977; and some aspects of Caldwell 1958) are not supported empirically for the Scioto-Paint Creek area during the Early Woodland to Middle Woodland time span. Also, while increases in the numbers of people who resided in the Scioto-Paint Creek area provided the medium for social and ritual complexity, they were not the impetus for its development. Scioto Hopewell cultural complexity was not a response to population pressure and to social competition that was specifically demographic in its basis. These conclusions and evidence for them will be considered in greater detail in Chapter 5.

Finally, the natural environment of the Scioto-Paint Creek area was, for Hopewell people there, a creative medium that suggested cultural possibilities, provided means for expressing them, and guided the development of culture within certain broad limits. The valley edges with their conical-shaped hillocks, the flat terraces and bottomlands of the valleys, and the rivers were a very natural expression of the age-old, Eastern Woodlands, layered cosmos (Lankford 1975) with one or more Above realms, one or more Below realms, and a Center from which many horizontal directions were also recognized. The physiographic relief of the area made for a landscape of light and shadows, which was played out in the fascination of Hopewell people there for contrasts between light and dark, and shiny and dull (Carr and Case 2005b; Greber and Ruhl 1989; Turff and Carr 2005). The rugged relief of the area, as well as the massive trees and dense forests that its fertile bottomland and terrace soils supported, evoked a sense of awe and imbued the area with a greater feeling of power than the flat to rolling Till Plain to the north. These characteristics certainly contributed to the concern that Hopwellian peoples in the Scioto-Paint Creek area had for the appropriate balancing of powers and their raw material, artifactual, and architectural manifestations, and the cautious decommissioning of these in ceremonial deposits and under specific kinds of soils, minerals, sands, and gravels. The awe-inspiring features and power of the Scioto-Paint Creek area also must have contributed to its attraction to outsiders as Scioto Hopewellian rituals and earthen architecture became more elaborated. The area was a natural and cultural theater for pilgrims, for individuals and social groups searching for esoteric knowledge and power, and perhaps for those needing to be healed (Carr 2005d:585–586, 589–591, 609, table 16.2; see also Ruby and Shriner 2005). Extraordinary geographic features in the Scioto-Paint Creek area, such as alum-weeping Copperas mountain directly across the valley from the Seip earthwork, the outcrops of red ochre near Seip, the falls on Paint Creek three miles above Seip, the springs near the Hopewell earthwork, and the pipestone outcrops across the valley from the Tremper site, were perceived as places of power, and drew Hopewell people to build their earthworks near these locations. Animal species of the area, each with their own unique roles in nature, habits, and personalities, provided models for leadership roles, clans, and clan interrelations, and served as vehicles for obtaining personal power, traveling to other realms of the cosmos, and passing onto an afterlife. The flamboyant and powerful nature of Scioto Hopewellian culture, ritual practices, art, and architecture, which excited antiquarians who first explored the Scioto Hopewell archaeological record and is yet felt today by archaeologists and laypersons alike, owes much to the expressiveness of the natural environmental setting in which Scioto Hopewell people created their world.

NOTES

1. The upper reaches of Paint Creek, in Madison county and northern Fayette county, flow through the Wisconsinan Till Plain with mixed oak forests comprised of white oak, black oak, bur oak, post oak, and shagbark hickory interdispersed with prairie. The oaks are stunted (Gordon 1969:40, 55, 62). Through the remainder of Fayette county, Paint Creek flows through the Till Plain with denser elm-ash swamp forests (Gordon 1969:44–47). Upon entering the Allegheny Plateau, it flows within yet denser beech forests and mixed mesophytic forests comprised of beech, sugar maple, tulip poplar, white basswood, chestnut, yellow buckeye, white oak, red oak, and/or small prairie openings (Gordon 1969:50). Near its confluence with the Scioto river, Paint Creek flows within dense bottomland mixed hardwood forests of beech, white oak, sugar maple, red maple, elm, black walnut, ash, and/or yellow buckeye, with occasional small prairie openings (Gordon 1969:70; Ohio Department of Natural Resources 2005; Maslowski and Seeman 1992:11). See Figures 2.2 and 2.3 in the text.

   The upper reaches of the Scioto river, in Marion county, likewise flow through the Till Plain with mixed oak forests comprised of white oak, black oak, bur oak, post oak, and shagbark hickory interdispersed with prairie. Again, the oaks are stunted (Gordon 1969:40, 55, 62). Through Delaware and northern Franklin counties, in the Till Plain, the Scioto flows through denser oak-sugar maple forests and beech forests. In southern Franklin, Pickaway, and northern Ross counties, in the Till Plain, the river flows through elm-ash swamp forests surrounded by sugar maple and mixed oak forests. As it approaches the Allegheny Plateau, in Ross county, the Scioto river begins to flow through dense bottomland mixed hardwood forests of beech, white oak, sugar maple, red maple, elm, black walnut, ash, and/or yellow buckeye, with occasional small prairie openings. These are surrounded by oak-hickory, mixed mesophytic, and mixed oak-sugar maple forests (Gordon 1969:37–44, 50, 70; Ohio Department of Natural Resources 2005; Maslowski and Seeman 1992:11). See Figures 2.2 and 2.3 in the text.

   The denser and darker experiential quality of the forests in the Allegheny Plateau, in contrast to the somewhat more open forests of the Till Plain, is well captured by the phrase, “dark and bloody ground.” This was the historic description of the general Kentucky area given by a young Cherokee Chief, Dragging Canoe, to Daniel Boone – “dark” referring to the depths of the forests there and “bloody” to it having been a hunting ground for many surrounding tribes and/or where many fierce battles occurred between northern and southern Woodland tribes along the Warrior’s Path through the area (Web 2006).
2. The both earthy and watery nature of the Below realms is described well by Chaudhuri and Chaudhuri

(2001:15) for the Creek. See also Bailey (1995:31, 33, Figure 3.1)

3. Sensitivity to the fabric of historic Woodland cultures generally and Scioto Hopewell art, architecture, and rituals in particular requires us to leave behind the tripartite and vertically-emphasized cosmos of three stacked worlds or sets of worlds that are posited in recent ethnohistoric and archaeological literatures for the Woodlands (see citations in text). Tripartite and strongly vertical organization discord with the two and/or four-part cultural fabric of most historic Woodland and related Plains peoples: the organization and symbolism of their ceremonies, myths, sacred formulae, songs, and art (e.g., Bailey 1995; Chaudhuri and Chaudhuri 2001:26–27; Lankford 1992; Mann 2003:176–180, 212–215; Mooney 1891a,1900a, esp. p. 431), their social and socio-political organization into horizontally complementary, two-part moieties, dual divisions, leadership roles, and other reciprocal social categories (Bailey 1995; Callender 1994; Chaudhuri and Chaudhuri 2001:28–55, 73–80; Fenton 1978:310–311; Fletcher and La Flesche 1911:134–141; Radin 1923; Swanton 1946:663–665; Thomas et al. 2005:table 8.2; Tooker 1971), and their independence and dislike for subordination and command that characterizes the personalities and ways of Woodland peoples (Holizinger 1961; Miller 1955). Likewise, tripartite symbolism is rare in Scioto Hopewell art and architecture, with the exception of symbols of one particular alliance among three communities (Chapter 4, Ritual Gatherings and Alliances; Carr 2005a), and Scioto Hopewell social interactions had a strong horizontal dimension created by roughly equal and role-complementary clans, sodalities, and leaders (Chapter 4). Thus, it appears inappropriate, in terms of Scioto Hopewell world view, to speak of a cosmos comprised of Upper, Middle, and Lower Worlds, emphasizing a tripartite and vertical structure.

It may also be inappropriate to speak of a Scioto Hopewell "Middle World" or "This World" (e.g., Dye 1989:322, 325, 333, 350; Hudson 1976:122–123; Lankford 2004:208; Reilly 2004:127) as a cosmic layer and an absolute position in space viewed by a hypothetical, outside observer rather than to use the term "Center" as a locus that is relative to the experiencer or place of ceremony and that varies in absolute geographic location with the locus of the experiencer. For example, in pan-Indian pipe ceremonies of Woodland and Plains peoples, "the pipe is always at the center of the cosmos" and the center varies in location as the pipe is passed around the circle (Paper 1987:300). Contrast the center-focused viewpoints of Paper (1987:299–301, 303) for Plains and Woodland pan-Indian cosmology and J. E. Brown (1971:31–43) and Mails (1991:104–106) for Oglala and Teton Sioux to the planar viewpoints reported by Mooney (1891b:85, 1900a:239–240) for the Cherokee, Swanton (1928:480) for the Creek, Swanton (1931:200–201) for the Choctaw, and Bailey (1995:31, 33) for the Osage.

One Scioto Hopewell example that is relevant to this issue is the Pricer mound within the Seip earthwork. There, within the charnel house, deceased individuals or small groups of deceased individuals were each placed, in almost all cases, on a clay platform of their own, above the water-washed sand floor of the building. The platforms each possibly represent Turtle Island, and the sand floor the primal waters around and below it (Figure 2.8). The individuals were not all placed together on a single clay platform. In other words, each person or small group of persons was conceived of as having been located at the Center of the cosmos, Turtle Island (their burial platform), at the time of their having been ceremonially laid out, and the Center varied in its absolute geographic location over time as different persons were laid to rest on different burial platforms. No single Middle World or earth plane/disk as an absolute place viewable from an outside vantage, in the form of a single clay platform for all deceased persons, was built within the charnel house.

A multi-centered cosmos analogous to that suggested by the layout of the Seip-Pricer charnel house floor is recorded for the historic Chippewa. They envisioned the earth as "lots of islands on the surface of the big ocean", the islands being thought of as floating pieces of muskeg (peat) (Reagan 1922:335–336). (However, Chippewa cosmology is yet more complex, with both the "earth plate" and "sky plate" having their respective, distinct centers [Reagan 1922:336, 338, 339, 356, 357].) A multi-centered cosmos is also implied by historic Plains and Woodland Earth Diver myths and their enactments in the Cheyenne and Arapaho Sun Dances. In the Cheyenne Earth Diver myth, the earth-diving mudhen gave the mud it brought up from below the waters to a man. He put the mud in "little piles . . . on the water at different places near him, and these became land which spread out and grew until, as far as could be seen, all was solid land" (Grinnell 1972, 2:337–338 cited in Hall 1997:19), i.e., he created a multi-centered land. In the Cheyenne Sun Dance, five sods are cut and placed around the buffalo skull altar, separated from one another and reminiscent of the different piles of mud placed on the water by the man (Hall 1997:20–21, figure 3.1). (The five sods might also represent mud brought up on each of the five toes of the mudhen , and be analogous to the five toes of the muskrat earth diver in many Algonkian origin myths, according to Hall [1997:22]; however, in the Cheyenne case, at least, the mud was brought up by the mudhen on his beak). In the Arapaho Sun Dance, two round pieces of sod were cut from a swampy location and placed, separated from one another, on opposite sides of the buffalo skull altar (Hall 1997:19). I am greatly indebted to Rex Weeks for our many conversations in which he raised the basic concern and which led to these insights.

See Churchill (2000) for additional criticisms of specifically Hudson's (1976) model of the cosmology of southeastern Woodland Native Americans, which has been foundational to other, more recent models of Woodland cosmology generally (e.g., Dye 1989:322; Lankford 2004, 2007; Penney 1985; Reilly 2004; Townsend 2004).

4. The numbers of Below and Above realms that Scioto Hopewell peoples represented in the Pricer mound is unclear from its construction and historic Woodland Native American analogs. Refer to Figure 2.8. The vegetation-topped layers of muck below the water-washed sand floor of the mound varied in total number from place to place, with up to six layers noted in one area. The vegetation-muck layers varied in total thickness under the sand floor from six inches to a foot in general, and occasionally were up to two feet or more in depth (Shetrone 1926a:363–364). Multiple layers comprised the primary and secondary mounds that represented Above realms. The primary mound was apparently built as one layer of light brown clay (Shetrone 1926a:359). No stratification of the gravel cap over the primary mound was reported (Shetrone 1926a:356). The secondary mound was built up of a minimum of four layers of soil of differing darkness and texture, according to a stratigraphic profile drawn by Shetrone (1926a:357, Figure 3) and at least six layers, to judge from the combined evidence of this profile and colluvial deposits mapped at the base of the mound (Shetrone 1926a:354–361, Strata 1 to 5 and a).

   Historically in the Eastern Woodlands and Plains, Native American cosmologies posited varying numbers of Above realms and Below realms, and differed in whether they focused on the Above or Below or both. A simple Sky-Earth division was posited by the Iroquois (Mann 2003:177–180), Ondataouaout (Thwaites' [1896–1901] Jesuit Relations 33:227), Choctaw (Swanton 1931:200–201, 1946:777), Chickasaw (Swanton 1946:776), Caddo (Rogers and Sabo 2004:625; Swanton 1942:211–212), Oglala Sioux (J. E. Brown 1971:6, footnote 7), and Osage (Bailey 1995:31). More elaborate, vertically symmetrical cosmologies were held by the Ojibwa, Chippewa, and Mandan, who each told of four realms Above and four Below (Alexander 1916:23, 105, 275; Barnouw 1977:41; but see Reagan 1922:336). Several tribes had cosmologies with both Above and Below realms, but asymmetrically posited more Above realms. The Cherokee knew of seven Above realms (variably below or above the sky vault; compare Mooney [1900a:240] and Hudson [1976:122] to McLachlan 1999:43) and one Below realm (McLachlan 1999:43; Mooney 1900a:240; Swanton 1946:767) or perhaps no Below realm (McLachlan 1999:40–60). The Winnebago held there were three Above realms and one Below or earth realm (Radin 1923:316, 354, 355). The Omaha divided the Sky of the Sky-Earth division into seven realms (Fletcher and La Flesche 1911:196, 589). The Potowatomi told of twelve Above realms and three Below (ShupSheWana 2007:75). Likewise, the Delaware knew 12 Above realms and many fewer Below (Feest 1986:6; Speck 1931:61). In contrast are tribes with cosmologies that asymmetrically emphasized the Below realms. The Creek held there were multiple Below realms and one Above (Chaudhuri and Chaudhuri 2001:15; Swanton 1928:478, 480; 1946:773). The Saulteaux "emphasized only the lower world immediately below this one, although they asserted there are other worlds farther down as well as one or two above 'the central plane' on which they live" (Hallowell 1977:145–146).

5. The Liberty Earthwork is an outlier, situated more than 5000 feet from Walnut Creek and yet further from the Scioto river.
6. Byers (2004) and Romain (2000), writing about Ohio Hopewell peoples, and Buikstra and Charles (1999:215), discussing Illinois Hopewell peoples, have focused too narrowly on world renewal ceremonies, alone, as involving water "purification" rites. See Chapter 15, Functions of Ceremonies, and Table 4.11.
7. Earthen enclosures in the Scioto-Paint Creek area also have a strong tendency to have been built close to a river confluence, within less than a mile (Romain 2004:101–102). This pattern could be used to argue that Scioto Hopewell people chose to construct their earthworks near natural places of power (confluences) associated with the Below realms. However, the average distance is much greater than that between the earthworks and their adjacent streams. The correlation might also indicate simply locations that were easily accessible to Hopewellian peoples by river travel, or areas along rivers where terrace-flood plain remnants were wide and afforded adequate space for building earthworks, or areas of wide flood plains that provided abundant and fertile ground for wild and grown foods.
8. Fire cairns – large fires that were built on top of piles of rock – have been found on prominent, elevated positions around some larger earthworks. Squire and Davis (1848:183) offered that they might be lookouts or signal stations. Christopher Turner (2000:10) made a systematic survey of the horizon surfaces around the Hopeton earthwork and found fire cairns to correspond to sight lines defined by the gateways of the site. The locations of such cairns do not likely coincide with areas where people might have gathered in numbers to observe from above the earthworks and the ceremonies within them, but do indicate a linkage between earthworks and the use of their surrounding high ground, and the feasibility of Seeman's (2004:67–68) idea for other highland settings for observation closer to the earthworks. Observation of the earthworks and their ceremonies from above by shamanic, out-of-the body journeying would have been more effective (e.g., Mails 1991:107–109; Neihardt 1979:224–229).
9. "Large slabs of shale from Copperas mountain, nearby, were set up around the platform, inside the log [tomb] structure" of Burial 39 under the Pricer mound in the Seip earthwork, according to Shetrone (1927 field notes, August 1, p. 10). Shale (of unspecified origin)

was also placed above the cremation in Burial 8, surrounding and above the cremation in Burial 10, and so as to form a box-like cist above, below, and around Burial 96 – all under the Pricer mound (Shetrone 1926 field notes, July 26, p. 4; Shetrone and Greenman 1931:474–475). Red shale was placed on the charnel house floor around Grave 1 and an adjacent grave, and on the eastern and southern sides of Burial 70 (Shetrone 1928 field notes, July 12, 13, p. 99). Sandstone or other, unspecified kinds of stones were used to form parts of the tombs of Burials 69, 82, and 97 (Shetrone and Greenman 1931:472–473, 476, 479). It is significant that the one tomb identified to have been formed of shale from Copperas mountain was also distinguished by five copper celts, two earspools, and a breastplate. The remaining burials had no artifacts, excepting Burial 97, which had a shark's tooth, a small copper celt, two prismatic blades, and a half dozen pearls.

Shale (of unspecified origin) was also used to form two effigies–one of a lizard, insect pupa, or composite animal, and one of a human head (Shetrone and Greenman 1931:427, 457, Figure 47).

10. The black shale of Copperas mountain sparkles in the light from the water that perpetually runs from it, balancing its dark color with its light surface. Balancing and transforming dark and light were fundamental concerns in Scioto Hopewell cosmology (Carr 1998, 2000a, b; Carr and Case 2005b:199–201). In this regard, the shale of Copperas mountain was like obsidian, which is dark yet shines, and the shale cliff of Copperas mountain is similar in quality as well as form to Obsidian Cliff, Wyoming. However, no shale ceremonial artifacts complementary to the obsidian ceremonial bifaces found in some Scioto Hopewell ceremonial centers are known.

    The shale of Copperas mountain also is predominantly black in color, but has red, yellow, white and green patinas. These are the five colors that are most common in Scioto Hopewell art, and that historically indicated the Four Directions of the cosmos and its center for numerous Woodland Indian tribes. Thus, Copperas mountain has qualities that express the Scioto Hopewellian and historic Woodland Indian concern for balancing various constitutents of the cosmos (Carr 1998, 2000a, b; DeBoer 2005; Hudson 1976:132; Mails 1991:60, 104–106; Mooney 1891a:342, 388–391).

    Small crystals of pyrite, larger crystals of colorless calcite, colorless quartz crystals up to 5/8 inch in length, plates of colorless barite that often exceed 4 inches in length, and large limestone concretions that typically range from 1 to 8 feet in diameter and that may have a skin of fine crystalline or radiating pyrite are found in Copperas mountain (Carlson 1991:20–21).

    Quartz crystals were commonly used by Scioto Hopewell peoples, both in raw form and knapped into projectile points. Both forms were used by historic Woodlands and eastern Plains Native Americans to divine for various purposes and to send and extract power intrusions (Table 11.3, Appendix 11.8). The small quartz crystals from Copperas mountain could have been used in their natural state by Scioto Hopewell peoples, but are too small to have been made into the knapped quartz projectile points found in some Scioto Hopewell sites.

    Pyrite shaped into hemispheres that were probably used for divination were deposited at the Hopewell site (Shetrone 1926a:190–191), which is not far from Copperas mountain, but in a different branch of Paint Creek valley. However, most if not all pyrite crystals in Copperas mountain are too small to have been made into these artifacts. In addition, no pyrite is reported from Seip (Shetrone and Greenman 1931:455–458, 509), which is directly adjacent to the mountain.

    Crystals of colorless calcite, plates of colorless barite, and large limestone concretions like those found in Copperas mountain are not reported from Scioto Hopewell sites.

11. The Serpent Mound in Adams County, Ohio, in the Brush Creek drainage, is located on the western flank of a circular cryptoexplosion geological structure that is four miles in diameter, includes more than 7 cubic miles of disturbed rock, and has an uplifted center more than 1000 feet above it normal position (Hansen 1994). The selection of this massive geological feature as the location for construction of the Serpent mound may relate to the feature's effect on local "energy fields" to which shaman-like practitioners can be sensitive and/or to its culturally-significant shape. The structure has a circular shape and profile like an Adena sacred circle with outer embankment, inner ditch, and central mound. (This is also the typical shape of a meteorite crater – one of the possible causes of the feature.) Whether the Serpent mound was built by Adena people (Greenman 1934; Webb and Snow 1945), Hopewell people (Converse 1979:3; Romain 2000:234), or Fort Ancient people (Fletcher et al. 1966; Lepper 1998; Lepper cited in Hansen 1994:2; Lepper and Frolking 2003) is debated.
12. Animal effigy smoking pipes: Mound City, $n = 57+$ (Otto 1992:5); Tremper, $n = 80$ (Otto 1992:2). Plain smoking pipes: Mound City, $n = 143+$ (Otto 1992:5); Tremper, $n = 56$ (Otto 1992:2).
13. An experimental study by Baby (1954) indicates that most of a sample of 128 cremations from the sites of Seip, Ater, Mound City, and Liberty were the product of dismemberment and burning of bodies in the flesh rather than the burning of dry bones that had been defleshed and dismembered. At the same time, more than a third of the cremations were composed of fragments of only skulls and long bones, and ribs were absent from most of the cremations, possibly indicating the selection of some body parts for cremation and burial and the disposing of others in nature.
14. The bird head effigy was found in Hopewell Mound 25. Moorehead's (1922:110) published site report notes it as having occurred under the head of Burials 265, while other documentation places it with Burial 266,

in the location where the head of this headless person would have existed. The effigy encompassed only the head of the bird, and would have resembled the head of the full bird shown by Moorehead (1922) in Plate LXIX.

15. Possibly depicted within the bird effigy, but not easily seen, are the small heads of several humans, some dressed in ceremonial headgear (Carr, personal observation).
16. The exceptions to this pattern are: the Circleville Works, 18 miles north of Chillicothe, the Wright-Holder Works, 54 miles north of Chillicothe; the Seal Works, 23 miles south of Chillicothe; the Tremper earthwork, 35 miles south of Chillicothe, the Portsmouth earthworks, at the confluence of the Scioto and Ohio rivers, and a few small works reported on Mills' (1914) *Archaeological Atlas of Ohio*, but not verified.
17. Earthen enclosures in the Little Miami valley that are exceptions are the Bell Works, Bull Works, and Pollock Works (Riordon 2004:226–227) in the Wisconsinan Till Plain, about 25 miles north of the terminus of the Wisconsinan glaciation. Earthen enclosures in the Great Miami valley that are exceptions are the Alexandersville Works, Miami River Earthwork, and Glander Works in the Wisconsinan Till Plain, more than 35 miles north of the terminus of the Wisconsinan glaciation.
18. Struever argued that these settings provided favorable conditions for the natural growth of dense stands of Eastern Agricultural Complex seed foods and their collecting, domestication, and agricultural production. The areas' natural ecological diversity is equally important to consider.
19. A first reason why demographic parameters and trends in the Scioto drainage are hard to estimate is that a broad, regional-scale survey that statistically samples various microenvironments within the drainage has yet to be done. Prufer's (1967) opportunistic survey is the only broad-scale one available for the drainage, and it covered only a 25 river-mile stretch of the valley, from Chillicothe south to Waiverly. Systematic surveys in the neighboring Licking drainage (Pacheco 1996) provide a more even picture of Hopewellian domestic settlement there, but a lack of chronological indicators of the ages of habitation sites presents the problem of assessing the contemporaneity of habitations and their density during any one slice of time. Second, the area of landscape use over which population density should be assessed is unclear. Third, detailed surveys of burial mounds (Mills 1914; Seeman and Branch 2006) in the Scioto drainage are insufficient for estimating absolute population densities currently because the numbers of persons buried in most Early and Middle Woodland mounds is unknown, and is hard to figure given a weak relationship between mound size and burial population, in both time periods. Fourth, in the Middle Woodland period, only select individuals were given mound burial, and the proportion of the population not given mound burial remains unknown (Carr 2005a:278–280; Prufer 1964a:74).
20. It is unclear even for the Early Late Woodland situation in the Scioto valley that the paleoethnobotanical indicators of population packing found there indicate increases in *regional* population densities. The diverse food resources used may indicate, instead, only very local conditions and pressures on food resources associated with nucleated village life. Known, Early Late Woodland nucleated villages in the Scioto drainage are few in number.

    An increase has been documented, however, in the diversity of plant foods used from the Early Woodland Period to the Middle Woodland Period in the upper Ohio valley generally (see Figure 2.18, Wymer 1992:figure 9.7; D. Wymer, personal communication 2005). If this pattern held at the local scale of the Scioto drainage, it could suggest some increases in population density and packing there over the time range.
21. The significance of local cultural-historical factors to the development of Hopewellian lifeways is also seen across the Eastern Woodlands in the notable absence of Hopewellian traditions in lands that were nonetheless ecologically rich: portions of the middle Mississippi valley, the American Bottom (largely absent), portions of the Missouri valley, and much of the Tennessee valley, for example (Griffin 1967:181). Whether Hopewellian lifeways came to flourish in an area depended on the receptivity of local people to Hopewellian beliefs and practices.
22. Specifically, the lower Illinois valley is rich (although not the richest) in natural food resources that would have encouraged sedentism and population growth. Yet the resources are strongly circumscribed, which could have promoted social competition, tensions, and concomitant organizational complexity. Moderate connectivity would have ensured the interactions of local populations and the expression of their competition, but also would have been a vehicle for cooperation and developing socio-political-ritual complexity at a supralocal scale. The lower Wabash-Ohio confluence is the richest of the three areas in natural foods and has the greatest potential for population growth. However, food resources are not circumscribed much and would not have encouraged food-based competition. In addition, the low circumscription of natural foods within the area, the ease of transportation within it, and its large size all would have facilitated the budding-off of local social groups as local populations rose, as a strategy for obviating social competition. Increases in sociopolitical complexity would not have been so necessary there. The Scioto valley offers the lowest density of natural food resources and potential for population growth. Its food resources are not strongly circumscribed and so promoting of competition that would encourage sociopolitical and ritual complexity. Especially significant is the lack in the Scioto valley of backwater lakes and sloughs, which the lower Illinois valley and lower

Wabash-Ohio have and which provide abundant fish and mollusk harvests (Ruby et al. 2005:129). Also, duck and geese migrations are much smaller in the Scioto valley than in the lower Illinois valley and lower Wabash-Ohio (Ruby et al. 2005:128, Table 4.1).

23. Lower Wabash-Ohio region includes the large earthwork at the Mann site, which consists of six enclosures, two large loaf-shaped mounds like those at Hopewell, Seip, and Liberty in the Scioto valley, two rectangular mounds, six conical mounds, and a very long, linear earthwork. Two of the mounds in the earthwork, along with the nearby Mount Vernon mound, rank among the five largest Middle Woodland mounds in the midwestern United States. (The other two are Hopewell Mound 25 and Seip-Pricer, in the Scioto drainage.) The Mount Vernon mound had an extraordinarily rich mortuary record, approaching that of the Hopewell site in the Scioto valley (Seeman 1995). In contrast, the lower Illinois valley has only one or two earthen enclosures – Golden Eagle, comprised of an oval embankment and 2 to 6 small mounds within it, and Ogden-Fettie, perhaps comprised of a subrectangular or pentagonal ditch along with its 37 mounds (Chapter 5, Note 10) – and has no mounds that rival those in the lower Wabash-Ohio region or the Scioto-Paint Creek region in size or richness in ceremonial artifacts. See also Struever (1964) for a comparison of the Ohio and Illinois Hopewellian material records.
24. See also Wymer (1987:260–262) for a complementary conclusion from paleoethnobotanical data. "The implication is that the Interaction Sphere, and the accompanying ceremonial rituals, was not a cultural system that emerged or functioned as an adaptation to human populations beset with unpredictable or uneven subsistence resources. Humans in this region [central Ohio] have always faced this problem both prior to and after the appearance of the Hopewell" (Wymer 1987:261).
25. The most numerous mammal remains identified to genera at the McGraw site included white-tail deer and cottontail rabbit, followed by lesser numbers of grey squirrel, raccoon, chipmunk, muskrat, beaver, and woodchuck, and single occurrences of 15 other genera. Diverse genera of fish were recovered from McGraw, including redhorse, buffalo, drum, suckers, catfish, gars, walleye, and a single bass. Five different kinds of turtle were recovered. Turkey, ducks, and geese were the most common birds found at McGraw, complemented by 8 other avian genera.
26. Previously, Wymer suggested "that [Eastern Agricultural Complex] agricultural products had been a major (if not the primary) component of [Ohio] Hopewellian diet" (Wymer1997:158; parentheses in original). Again, "I would suggest that the cultigens from those gardens were a major, *if not the* major, proportion of their diet" (Wymer 1996:42; emphasis in original). Also, speaking for the upper Ohio valley generally, "This [Early Woodland] pattern is in clear contrast to the paleoethnobotanical record beginning around A.D. 100 and continuing to the Contact period, in which cultigens seem to have played a prominent, if not central, role in the populations' diets" (Wymer and Abrams 2003).
27. J. Brown (2005:114) would agree with this lower estimate for northern Hopewellian societies generally: "While cultivation of weedy annuals provided a dependable plant resource base to supplement fishing and foraging, the economic base did not depend on cereal grain farming."

    Smith (2006:501–502) places Hopewell societies that fall between 35° and 40° latitude, including Ohio Hopewell societies, within his crosscultural category of "low-level food production" societies, which gain less than 30–50% of their annual caloric budget from domesticates. He says that Hopewell societies within these latitudes "fall comfortably" within this caloric range. This view, however, leaves a wide range of possibilities, and Smith (2006:502), himself, says "Unfortunately, it is still difficult to establish with any degree of confidence the relative range of dietary contribution of crop plants to Hopewell groups and their exact role within the larger context of continuing reliance on wild plant and animal species."
28. Yarnell (1969, 1974a:122) estimated that cultivated plant foods comprised about 42% of the diet of explorers of Salts Cave, Kentucky, while making their visits inside the cave, between 2,250 and 2,700 B.C. during the Late Archaic period. However, the specialized use of Salts Cave comprised only one component of the land use and settlement system of these people. Abundant rock shelters in the area and dating to this time range show little evidence of the use of cultivated plants (Gremillon 1990; Gremillon and Sobolik 1996:536; Wagner 1978; Watson 1985); likewise open sites (Yarnell 1974b:112) and the vestibule of Salts Cave compared to its interior and paleofeces from its interior (Yarnell 1974a,b). This suggests that *annual* dietary contributions of cultivated foods considering all components of the Late Archaic system of land use and settlement in the Salts Cave area was considerably less than the 42% estimate (Gremillon and Sobolik1996:537).
29. Later in the Mississippian period, at the site of Moundville, Alabama, between A.D. 1250 and A.D. 1500 (Moundville II and III phases), and at the Late Prehistoric period Fort Ancient sites of Turpin and Incinerator, Ohio, the contribution of maize to peoples' diets was greater: about 65% in each case, based on bone isotopic analyses (Broida 1984; Conrad 1985; Schoeninger et al. 2000; Schoeninger and Schurr 1998; Yerkes 2005:244, 250).
30. Prufer (1964b:98) concluded from the faunal and floral analyses of the McGraw site–the largest Hopewellian zooarchaeological and paleoethnobotanical assemblage from the Scioto valley excavated and analyzed to date – that "a substantial part of their food came from hunting, fishing, and collecting. Analysis of the animal bones shows that the commonest source of meat was the

white-tailed deer . . . . River produce was of equal or perhaps greater importance . . . ”

31. Hoes are unknown from the Scioto Hopewell sites of McGraw, Brown’s Bottom, Ilif Riddle I and II, Madeira Brown, Haven, Clarence Ford, Marsh Run, Gilead, Starr’s Knoll, and Wade. (For references to these sites, see Chapter 1, Note 1.) Hoes are also unknown from the Murphy I site and the Murphy site complex in the neighboring Licking valley (Dancey 1991; Pacheco 1993, 1996, 1997).

    Mussel shells with holes for mounting on a pole were found at the McGraw site. However, most are too small to have served as agricultural hoes, and experimental specimens made from mussels taken from the Scioto river usually “broke almost immediately upon even gentle use” (Prufer et al. 1965:93). Winters (1969:65–66) inferred that similar specimens found in the Late Archaic Riverton culture sites in southwestern Indiana might have been used for hearth rakes, given their association with hearths, their lack of soil polish, and the fact that the walls of pits show that they were dug with digging sticks.

    Unhafted hoes made of slabs of limestone, sandstone, and shale and showing soil polish have been recovered in fair number from several Kentucky Adena sites (Webb and Snow 1974:23, 88; see also Webb 1946:273). Their use in digging pits and in excavating soil for mounds is likely, but their handheld nature would not have made them effective for breaking and cultivating the ground of garden plots. Similar implements are unknown from Ohio Early and Middle Woodland sites. No unhafted or hafted hoes were found in the Early Woodland Boudinot #4 habitation in the Hocking valley (Abrams 1989, personal communication 2006).

    In the Illinois valley, chert bifacially chipped hoes with soil polish, and hoe chips with polish, are common in Middle Woodland settlements (Carr 1982:261–262; Montet-White 1968:84; Sonnefeld 1962:63; Witthoft 1967:387). The practice of making chert hoes was a strong tradition that continued there and in the American Bottom during the early Late Woodland (Wray and MacNeish 1961:61, figure 16) and into Late Bluff times (Harn 1971: 33; Maxwell 1959:28, 30; Munson 1971:11–13; Munson and Anderson 1973:34, 43). Chert hoes and hoe chips are unknown from Ohio Middle Woodland sites.

32. No slab or basin-shaped milling stones (metates) were found at the Scioto Hopewell sites of McGraw, Brown’s Bottom, Ilif Riddle I and II, Madeira Brown, Haven, Clarence Ford, Gilead, Starr’s Knoll, and Wade. One mano was recovered from the Marsh Run site. However, it was found on the surface and might be attributable to the Late Archaic or Terminal Late Archaic/Early Woodland components at the site. (For references to these sites, see Chapter 1, Note 1.) Slab and basin-shaped milling stones are also unknown from the Murphy I site and the Murphy site complex in the neighboring Licking valley (Dancey 1991; Pacheco 1993, 1996, 1997). No slab or basin-shaped milling stones were recovered from the Boudinot #4 habitation in the Hocking valley (Abrams 1989, personal communication 2006). In contrast, slab-shaped milling stones are known from Illinois Hopewell settlements (Carr 1982:252–258). In Illinois, slab-shaped milling stones date as far back as 6300 B.C. in the Middle Archaic at the Koster site and continue there throughout the Middle Archaic horizons until 2900 B.C., but are absent from the Late Archaic Titterington Phase occupation (Brown and Vierra 1983:183–185; Cook 1976).

33. In Ohio, the tooth crown wear rates of Woodland through Late Prehistoric peoples were markedly less than those of earlier Late Archaic peoples. This decline in tooth crown wear correlates with the introduction, there, of pottery for cooking foods (Sciulli 1997). The correlation suggests that Ohio Woodland people normally cooked their seed and other tough foods, in contrast to earlier Late Archaic peoples, who probably ate their seed and other tough foods uncooked and directly by chewing. Paleofeces from Early Woodland contexts in Salts Cave, Kentucky, indicate that, there at least, Eastern Agricultural Complex seeds and other seed foods were eaten uncooked and by chewing (Steward 1974; Yarnell 1974).

    Analyses of Woodland ceramics from Ohio (Carr and Haas 1996; Cotkin et al. 1999) show that Middle Woodland cooking vessels commonly have on their interiors carbonized residues that can be attributed to cooked foods rather than smudging. Boiled, starchy foods, such as starchy seeds, are good candidates for the kinds of foods that produced the residues. This pattern supports the above dental evidence that Ohio Middle Woodland peoples normally cooked their starchy seed foods rather than ate them uncooked by chewing. (For similar ceramic evidence from the Illinois Hopewell record, see Braun [1983].)

34. It appears that Middle Woodland peoples of the Scioto drainage, and Early Woodland peoples there and in Kentucky, did not commonly use ground stone artifacts generally to process the nuts and seeds they ate, unlike peoples in some other regions of the Great Lakes-Riverine area at these and earlier times. Pitted nutting stones/mortars are unknown from almost all Scioto and Kentucky Early Woodland and Middle Woodland sites (Otto 1980; Webb and Snow 1974:90). One pitted nuttingstone or anvil was recovered from the fill of the Middle Woodland Armitage mound in the Hocking valley, Ohio, and another from the Early or Middle Woodland components of the Taber Well site in the vicinity (Elliot Abrams, personal communication 2006). No pitted nuttingstones were found at the Boudinot #4 site in the Hocking drainage (Elliot Abrams, personal communication 2006). Pitted nuttingstones did not become widespread over southern Ohio until the Late Woodland and continued in use thereafter (Seeman and Dancey 2000:589; see also Carskadden and Morton 1977:90; Hooton and Willoughby 1920:56–57, plate 10; Marwitt et al.

1984:70; Mills 1917:353, figure 23; Prufer and Shane 1970:120–121; Seeman 1980). Pestles are rare in Scioto and Kentucky Early Woodland sites (Webb and Snow 1974:24, 90). One possible, informal pestle for crushing and/or grinding seeds held possibly in a small bowl was found at the Early Woodland Boudinot #4 habitation site in the Hocking valley, Ohio (Abrams 1989:22, figure 7d, personal communication 2006). Pestles are unknown from Scioto Middle Woodland sites. They do occur in Early Late Woodland through Fort Ancient sites across southern Ohio (Hooton and Willoughby 1920:57, plate 10; Mills 1904:158; 1906:75; 1917:358, Figure 28; Oehler 1973:17). At the same time, paleoethnobotanical remains evidence the plentiful use of nuts and/or seeds in these areas and during these times. Materials and technologies other than pounding and/or grinding with ground stone nutting stones, pestles, and slab and basin-shaped milling stones must have been used. The possibility that these implements were used and stored only at logistical sites, which have not been located, is remote but cannot be rejected at this time, for lack of adequate regional survey data. The inability to stylistically date nutting and milling artifacts to time period is also a problem. Three pitted stones were recovered from the Madeira-Brown site in the Scioto valley flood plain (Bush et al. 1989, 1992), two pitted stones and one mano grinding stone from the Marsh Run site in an upland setting (Aument 1992, Aument et al. 1991), and at least two pitted stones from the Clarence Ford site in an upland setting (Aument 1992). Each of these sites includes a Middle Woodland seasonal camp, but components of other time periods prevent the attribution of the ground stone finds to the Middle Woodland occupation.

During the terminal Archaic, just north and west of the Scioto drainage, in northwest Ohio, northeast Indiana, and southern Michigan, ground stone nutting stones, pestles, and slab and basin-shaped milling stones are unknown from Glacial Kame burials in several dozen sites, save at the Zimmerman site (Converse 1979; Cunningham 1948:40). The absence cannot be attributed to the mortuary nature of these archaeological records, because other utilitarian subsistence items (e.g., projectile points, atl-atl weights, harpoons, copper ceremonial renditions of utilitarian celts and awls) were in fact commonly included with Glacial Kame burials.

In contrast to the above terminal Archaic, Early Woodland, and Middle Woodland archaeological records in the Scioto drainage and neighboring areas, farther southwest, in Green River Late Archaic sites (Webb 1946:231–232, 274–276; 1950a:295, 299; 1950b:381, 386; Webb and Haag 1939:20, 60; 1940:93, 96, 103–104; 1947:21, 29, 36, 41), pestles and nutting stones are very numerous (many hundreds). In Illinois, at the Koster site, pestles are known in Middle Archaic horizons from 6200 B.C. to 5800 B.C, and manos are known throughout the Middle Archaic and Late Archaic horizons, from 6200 B.C. to 950 B.C. (Brown and Vierra 1983:183–186; Cook 1976). Winters (1959:9, 10, 13) typified the Illinois Archaic period by pebble grinding stones, pestles, grinding slabs, and nutting stones. Manos, but not pestles or nuttingstones, are frequent at Late Archaic Riverton culture sites in the Wabash valley, Indiana (Winters 1969:61–64). Fowler (1959:19) characterized the Illinois Early Woodland by pestles and mortars.

35. A large and deep cylindrical pit, which extended 90 centimeters below plowzone, was found in the interior of a substantial house at the Brown's Bottom #1 site in the Scioto-Paint creek area. The pit was encircled by a line of posts that probably supported a screen. The pit functioned most likely for storage (Pacheco et al. 2005; P. Pacheco, D. A. Wymer, and J. Burks, personal communication 2005). A large, 90 centimeter in diameter and 65 centimeter deep, cylindrical, flat-bottomed pit was excavated at the Murphy III site in the Licking drainage. It most likely was used for storage (Pacheco 1996:27). A similar, large, 75 centimeter in diameter, but shallow, 24 centimeter deep, cylindrical pit that possibly was capped with limestone slabs was excavated at the Murphy I site in the Licking drainage. It may have been a storage pit (Dancey 1991:43).

    The paucity of storage pits in the Scioto and Licking drainages during the Middle Woodland Period is mirrored by their complete absence in southern Ohio during the Early Woodland (Seeman 1992a:26).

36. Increase in the achene size of marshelder (*Iva annua*) is documented by about 2000 B.C. Reduction in the seed coat thickness of goosefoot (*Chenopodium berlandieri*) is noted by about 1500 B.C. Increase in the achene size of sunflower (*Helianthus annuus*) occurred by about 1000 B.C. Increases in the thickness of the rind and morphology of seeds of squash (*Cucurbita pepo*) are known by about 1000 to 500 B.C. (Smith 1992: 205–206).

Chapter 3

Settlement and Communities

CHRISTOPHER CARR

The daily lives of Hopewell people in the Scioto-Paint Creek area were spent largely individually or in small groups close to nature. Away from the great earthworks and burial mounds, in the deep forests on the terraces and bottomlands of the Scioto and Paint Creek valleys, small groups of one or two extended families built their homes and made their gardens in dispersed locations. Smaller portions of such a residential group hunted, gathered, grew crops, collected shellfish, and fished together in the main valleys and, at particular times of the year, made trips to the valley edges and up secondary streams to gather and hunt wild foods. Sometimes, a part or all of a residential group might move to these more remote settings for a harvesting period. Deer, turkey, mollusks, turtle, fish, ducks and geese, hickory nuts, acorn, pods, berries, greens, tubers, and maple syrup all could be harvested most effectively by an individual or a few persons, and provided no impetus for large numbers of people to assemble. Likewise, horticultural plots could be planted, weeded, and harvested of their seeds by a family or two. In their homesteads and while out in nature, Scioto Hopewell families raised their young, taught them the practical material, magical, and spiritual skills for living, showed their children their place among kin, instilled in them open aspects of the stories, history, beliefs, and values of their people, and tended to their sick, the well-being of the family, and personal power and protection with rituals of their own concern. Kin from a few neighboring residential groups, joined by footpaths through the forest, periodically visited each other, probably joined forces at times to clear horticultural plots and house sites, and gathered together for small celebrations. A Scioto Hopewell person's closest relationships were with nature and family.

Counterbalancing this tendency toward isolation, the lives of Hopewell people in the Scioto-Paint Creek area were richly interwoven economically, socially, politically, ritually, and spiritually into larger groups of a variety of kinds, geographic scales, social compositions, and functions. Communities of residential groups, as well as clans, clan-specific ceremonial societies, sodalities, possibly phratries, and multicommunity social-spiritual alliances, provided the groups and social networks within which critical aspects of Hopewell life occurred: enculturation in the ethos, esoteric knowledge systems, and rituals of the culture; initiation to adulthood and other social statuses; finding mates and arranging marriages; exchanging foods, raw materials, and ritual items; crafting ceremonial paraphernalia; building ceremonial centers; and performing group and multicommunity rituals that were necessary for life, healing, burying the newly deceased, and helping them to pass to an afterlife.

This chapter and the next describe the organization of Scioto Hopewell people into social groups of many kinds, ranging from individual residential groups to multicommunity alliances. This chapter focuses on the integration of people into communities. By having a geographic dimension, and by encompassing the topics of settlement patterning and residential and logistical mobility, the concepts of community and community organization bridge the natural environmental setting discussed previously with the social realm. Chapter 4 goes on to describe social groups and categories that were not defined spatially, including clans, clan-specific ceremonial societies, sodalities, phratries, leadership roles, and genders.

Chapter 3 begins by defining three kinds of communities that differ in scale and into which Scioto Hopewell people were organized: residential, local symbolic, and sustainable communities. A Scioto Hopewellian residential community was comprised of one or two extended families who lived in one or a few spatially clustered habitations. Residential communities were spread over the landscape, isolated from one another. The chapter describes the sizes, settlement plans, annual logistical mobility, annual residential mobility, lengths of occupation, and swidden-linked resettlement cycles of residential communities. A distinction is drawn between the annual mobility patterns of residential communities in the environmentally rich Scioto-Paint Creek area and those in the less environmentally productive, northern and southern Scioto valley. Two examples of residential communities are presented. The chapter next discusses Scioto Hopewellian local symbolic communities. A local symbolic community was composed of a group of residential communities that occupied a landscape catchment usually about 6–10 kilometers in diameter and that were integrated through their jointly building ceremonial centers and participating together in ceremonies there. Two local symbolic communities, each with multiple, simultaneously used ceremonial centers, are documented. The chapter ends with a description of Scioto Hopewellian sustainable communities. A sustainable community was a set of allied, local symbolic communities that tended to reside within an area of about 16–18 kilometers in diameter. Labor, mates, and probably food and other material resources were exchanged across a sustainable community, buffering each local symbolic community from its local demographic and subsistence variations. The alliances that tied local symbolic communities to one another were spiritual-social in nature: they involved burying the dead from the multiple communities together in one or more shared cemeteries. No evidence is found for sustainable communities having been held together by a strong, centralized leadership position that spanned multiple, local symbolic communities. Two examples of sustainable communities are documented. Formal geographic analysis of the distances between ceremonial centers in the Scioto-Paint Creek area is used to define both local symbolic communities and sustainable communities there. Sustainable communities are further confirmed by the spatial distributions of styles of fabrics, shared shapes and celestial orientations of earthworks in different local symbolic communities, and strong similarities in the shapes and sizes of some charnel houses in different local symbolic communities.

COMMUNITIES OF MULTIPLE KINDS AND GEOGRAPHIC SCALES

The social and ritual lives of Scioto Hopewell peoples flowed across a landscape of sites of many kinds, and were interrelated at several, distinct geographic scales. Hopewell people built habitation sites, specialized camps that supported specific subsistence pursuits, small burial mound centers for burying and honoring their dead, larger geometric-shaped earthen enclosures with mounds for burying their dead and large spaces for a wider range of ceremonies and activities, other geometric earthen enclosures with only large spaces for unknown kinds of rituals, and stages elevated on mounds for ceremonial performances apparently not related to death. Some of these kinds of sites were made and used by very small social groups like families or lineage segments while others were created by people within much more encompassing social networks for gatherings of a wide range of sizes and purposes (Chapter 4; Carr 2005a, b; Ruby et al. 2005).

From sociological and ecological perspectives, Scioto Hopewell people organized and carried out the activities of their daily lives and defined their identities within three distinct kinds of communities. First is the *residential* community. This is a set of households and people who live in close proximity and interact regularly on a face-to-face basis (Murdock 1949a:79–80). The people may live densely in a nucleated community or may be dispersed widely over a landscape. A residential community is a territorially based social formation, in that it combines both people and place (Mahoney 2000; Tringham 1972; Varien 1999:21), and typically its members have a sense of common identity by virtue of their ties to a place (Basso 1996). Other criteria that may be important to a community's self-definition or definition by outsiders are kinship, race, dialect, other potentially shared social identities, and peculiarities of culture and lifeways, but these are not universally essential across cultures. A residential community is also a decision-making unit that can jointly consider a wide range of cultural issues – behaviors, principles, and other ideas – that arise in daily life. In this sense, it is a corporate group (Befu and Plotnicov 1962). Scioto Hopewellian residential communities appear to have been very small hamlets of one to a few extended households, or small clusters of several single or multiple household hamlets (see below).

A second kind of community into which Scioto Hopewell people were organized is the *sustainable community* (Mahoney 2000). It is a regional social network within which mates, labor, food, and other material resources are regularly exchanged, offsetting and buffering against local demographic variations (e.g., in birth rates, age-specific death rates, sex ratios) and the ups and downs of local subsistence productivity (Braun and Plog 1982; Moore and Moseley 2001; Wobst 1974). Through exchange, long-term viability is ensured. A sustainable community is not tied to place or people; its boundaries and membership can shift dynamically with changes in the spatial distribution of demographic and subsistence variability. A sustainable community may or may not be self-recognizing with a self-given name, sense of identity, or even an outside-given name (e.g., Fried 1968). Given its potentially fluid and anonymous nature, a sustainable community may or may not be capable of making united decisions and actions. Examples of Scioto-Hopewell sustainable communities include those who gathered from afar in large numbers at geometric earthen enclosures with a great concentration of small burial mounds overlying small charnel houses or with one or more large loaf-shaped burial mounds each comprised of two or more submounds that covered the distinct rooms of a big charnel house. Mound City, Tremper, Seip, Liberty, Old Town (Frankfort), Hopewell, and Ater are ceremonial centers that fit this pattern. The multiple small mounds or the conjoined submounds represent multiple social units from varying segments of the Scioto and Paint Creek valleys who jointly participated in processing and burying their dead together and, in at least some cases, who jointly planned and/or built charnel facilities for processing their dead (see below; Carr 2005a; Weets et al. 2005).

A third kind of community into which Scioto Hopewell people organized themselves is the *local symbolic community* (Charles 1995). It is a set of residential communities, or segments of them, that actively construct and negotiate their affiliation to a larger social unit for some united purpose(s). As such, a local symbolic community is a self-identifying unit. It also is capable of united decision making and action relative to its goals, and thus is a corporate group. The goals of a symbolic community may be political, economic, religious, or some combination of these, such as warfare or regulation of irrigation (Abbott 2000; Rice 1998) or maintenance of the cosmos (Rappaport 1968, 1971). Like a sustainable community, a local symbolic community can be fluid in its boundaries and membership in response to a changing landscape of social, political, economic, or other risks and opportunities. Some symbolic communities may have members that do not necessarily derive from a limited geographic area and may not be localized. Pan-tribal sodality organizations can illustrate this characteristic. Typically, however, symbolic communities gain some of their coherency from the geographic closeness of their members as well as the group concerns that they hold in common. Examples of local symbolic communities in the Scioto-Paint Creek area, in the latter portion of the Middle Woodland period, are the three groups of people who lived respectively in main Paint Creek valley, in the North Fork of Paint Creek valley, and in an adjacent section of the Scioto valley, and who together in turn comprised a sustainable community and jointly buried their dead together in conjoined mounds in the Seip, Liberty, and Old Town earthworks (see below; Carr 2005a).

RESIDENTIAL COMMUNITIES

A picture of Hopewellian residential communities in the immediate Scioto-Paint Creek area can be inferred in only a general and indirect way, from a few small surface surveys and excavations there, and by way of analogy to broader systematic surveys and more thoroughly excavated habitation sites in neighboring regions of Ohio. Informative, neighboring regions include the lower Scioto drainage south of the Scioto-Paint Creek confluence by 20 or more kilometers, the upper Scioto drainage north of the confluence by 30 or more kilometers and around Columbus, the Licking valley, and the upper Muskingum valley.[1] To date, only one habitation site with definable buildings has been excavated in the immediate Scioto-Paint Creek area (Pacheco et al. 2005), and it has been excavated too recently to yet be documented in print. Thus, in assembling a picture of Scioto-Paint Creek residential communities from those over the broader region, the possibility must be considered that the Scioto-Paint Creek habitation pattern varied somewhat from patterns in other, known better areas. In particular, the portions of the Scioto valley north and south of the Scioto-Paint Creek area are less productive and diverse in food resources than the ecotone in the vicinity of the Scioto-Paint Creek confluence (Chapter 2, Environmental Setting) and provide different opportunities for population aggregation and sedentism. Care must also be taken to distinguish the nature of settlements within wide, main valleys from those on features that overlook the valleys or in other upland settings along small streams. Settlements away from the main valleys tend to have lower densities and diversities of artifacts and features, and probably have different functions and seasonal patterns of use (Aument 1992; Aument et al. 1991; Ohio Department of Transportation 1993). Table 3.1 lists settlements that occur in different portions of the Scioto drainage and in main valley flood plain settings, and versus upland settings, and that shed light on the nature of Scioto Hopewell residential communities.

Within the Scioto valley at large, habitation sites were constructed directly on its flood plain as well as on its middle terraces. Sites in these geomorphological settings seem to be most concentrated in the vicinity of Hopewellian earthworks and to taper off with distance from the earthworks (Prufer 1975:316; see also Pacheco and Dancey 2006). Upland settings of habitation include end moraines, a bluff edge overlooking a narrow flood plain, a knoll over looking a wetland depression, and a small upland flat (Aument 1992; Aument et al. 1991; Baker and Genheimer 1976; Baker 1977, 1978, 1979; Church and Ericksen 1992, 1997, Ohio Department of Transportation 1993).

A general, current understanding of Hopewellian residential communities in the Scioto-Paint Creek area and neighboring portions of the Scioto drainage is that they were usually very small social units, comprised of one or two extended families each. The habitation site of such a group, at any one point in time, consisted of one or two subrectangular and/or circular houses. In main valley

Table 3.1. Multi-Season Residential Sites, Single-Season Base Camps, and Logistical Sites in the Scioto Drainage[1]

Geomorphological Setting	Scioto Valley, North and South of the Scioto-Paint Creek Area	Scioto-Paint Creek Area
Upland and/or in small tributaries entrenched in the Appalachian Plateau	Clarence Ford (33 Fa 81) seasonal base camp Gilead (33 Mw 19) seasonal base camp Marsh Run/ Walmart (33 FR 895) seasonal base camp	Starr's Knoll (33 Ro 159C) logistical camp Wade (33 Vi 315) logistical camp or possibly a seasonal base camp Ilif Riddle I (Ross Co.) seasonal base camp? Ilif Riddle II (Ross Co.) logistical camp
Main valley flood plain	Madeira-Brown (33 Pk 153) seasonal base camp (or multi-season residential site less likely) Haven (33 Dl 1448) seasonal base camp	McGraw (Ross Co.) multi-season residential site Brown's Bottom #1 (33 Ro 21) multi-season residential site[1]

[1] Material characteristics that define and distinguish primary multi-season habitations, auxilliary seasonal habitations/base camps, and logistical sites are as follows. Both primary multi-season habitations and auxilliary seasonal habitations, as residences of whole households, can have substantial buildings with large, deep, closely spaced, and regularly arranged posts; artifacts and features used in a similar, wide range of maintenance activities; and a similar size. A seasonal habitation, occupied a small percentage of the year and in contrast to a multi-season habitation, is more likely to have no or weak midden development, light artifact density, few processing pits per building, no storage pits, and a restricted range of plant food remains (e.g., largely nuts harvested in fall or maygrass harvested in spring). A seasonal habitation away from valley bottoms is more likely to have largely wild plant food remains. A logistical camp, being temporary and made by usually a subset of a household for focused subsistence purposes, is likely to have no permanent building, artifacts and features used in one or a few extractive activities and few used for maintenance activities, no midden development, light artifact and pit density, no storage pits, and a restricted range of wild plant food remains. Large numbers of bladelets found on a site are not thought to be diagnostic of a multi-season habitation or seasonal habitation. Large numbers of bladelets have been found on both multi-season residential sites (e.g., McGraw, Brown's Bottom #1) and on small, special purpose or logistical sites (e.g. Murphy IV, Pacheco 1993). Bladelets are multipurpose tools and may be produced and used expediently, not curated, and accumulate in quantity in an assemblage. See Notes 3 and 4 for evaluations of the functions of each site by these criteria and Note1 for references.

flood plain sites, where the definition of houses has been most successful (Brown's Bottom #1, Haven, Madeira-Brown, sites; 9 houses total), most houses range between 36 and 132 square meters (ca. 5–19 persons). Two modal sizes and one outlier are apparent. One mode is in the 36–60 square meter range (5–11 persons). The second mode is in the 100–132 square meter range (16–19 persons), about double the number of persons. The outlier (Brown's Bottom #1 site) is yet larger, at 188 square meters (ca. 25 persons), about three times the first, small mode in number of persons. The anomalously large building was located in the Scioto-Paint Creek area, whereas the remainder of the buildings were considerably north and south of the area. Another building in a valley setting (DECCO site) may have had either a domestic or ritual function and was 128 square meters (ca., 18 persons). (Phagan 1977, n.d.a., n.d.b.). The one upland site with excavated post patterns (Marsh Run), in the northern Scioto, contained one house in the 72–125 square meter range (ca., 12–18 persons) or two houses in the 52–72 square meter range (10–12 persons). The interior areas of all of these valley and upland houses are slightly to substantially higher than the mode of interior areas of Middle Woodland houses known across the Eastern Woodlands, at 32–40 square meters (8 persons), but within the wide total range of that mode (4.5–131 square meters; 2–18 people) (Smith 1992:214).[2] Variation in household sizes within the Scioto drainage probably reflects their life cycles of births, marriages, and deaths, as well as functional differences between primary, multiseason residences and seasonal field camps/habitations (see below, on annual residential mobility).

Within a Scioto Hopewell house, one or a few basin-shaped pits and heating/cooking pits were build. Outside a house, one or more work areas were created, consisting of combinations of shallow basins, earth ovens, occasional cylindrical pits, and posts for racks or screens. An area was typically reserved for dumping refuse in multiple-season residential sites and in some single-season base camps (e.g., Bush et al. 1989, 1992; Ohio Department of Transportation 1993; Pacheco et al. 2005; Weller and Eriksen 2005; see also Aument 1992; Aument et al. 1991; Dancey 1991; Prufer et al. 1965). Storage pits have been documented in only one case in the Scioto valley (Pacheco et al. 2005).

Buildings and work areas were sometimes relocated, up to a few times, over the length of occupation of a site (e.g., Aument et al. 1991; Bush et al. 1989, 1992; Ohio Department of Transportation 1993). These shifts occurred within both valley and upland sites.

In the Scioto and Licking drainages, in main valley flood plain settings, habitation sites were used between a few years and a decade or two before a household moved to a new location (Carr and Haas 1996:29), possibly tied to swidden cycles (Rainey 2003). Habitation sites in these settings have been interpreted as swidden farmsteads that were periodically moved as field locations changed (Dancey and Pacheco 1997a:11; Prufer et al. 1965:136; 1964a:71; Wymer 1996, 1997). In upland areas, sites appear from their sparser material remains to have been used for shorter durations. Their artifact densities and diversities have been interpreted as indicating single-season field base camps/habitations and temporary logistical hunting and collecting camps (Aument 1992; Aument et al. 1991; Church and Ericksen 1992, 1997; Ohio Department of Transportation 1993:42–47).

Most residential sites in main valleys were isolated from one another, but spatial clusters of up to six habitation sites are known (e.g., Coughlin and Seeman 1997; see also Carskadden and Morton 1997:374; Pacheco 1993, 1996). Some habitation sites within a cluster may have been contemporaneous – the product of budding off a founding family (Pacheco 1993, 1996) – whereas others may indicate the relocation of homes or reuse of a neighborhood over a series of swidden cycles.

Annual Logistical Mobility

In the Scioto drainage, both within the Scioto-Paint Creek area and further north and south, it is likely that some portions of the year, some of an extended family left their valley homestead, went on hunting and/or gathering logistical trips, and set up short-term hunting and collecting camps in upland, end moraine, and small tributary settings (Ohio Department of Transportation 1993:42–47). This view is supported by the ephemeral nature of some sites, including their lack of permanent buildings, artifacts and features used in one or a few extractive activities and few in maintenance activities compared to multi-season valley habitation sites, no midden development, light artifact and pit density, no storage pits, and a restricted range of wild plant food remains (e.g., Starr's Knoll site, Ilif Riddle II site, perhaps Wade site, other unnamed sites; Baker 1977:27, 1979; Baker and Genheimer 1976; Carskadden and Morton 1997:374; Church and Ericksen 1992, 1997; Prufer 1997). In addition, it is empirically clear that upland rock shelters were used during the Middle Woodland as short-term logistical hunting and/or gathering camps, given the light density of Middle Woodland artifacts, the paucity of ceramics, and the anomalous projectile point-to-bladelet ratios within them compared to multi-season valley habitation sites (Seeman 1997:310–311). The fact that wild, upland plant and animal foods made up a significant portion of the diet of Scioto Hopewell people, and of farmers in the Eastern Woodlands generally up through the time of contact (e.g., Yerkes 2005:245), also strongly points to the use of logistical sites by Scioto Hopewell people.

Annual Residential Mobility

The topic of the annual residential mobility of habitations, in contrast to their annual logistical mobility, is currently under debate. Dancey and Pacheco (1997a:15, 18) have modeled that Ohio Hopewell valley habitations were occupied essentially year round, with the possibility that logistical trips were taken from them by some members of a household to hunt and gather wild foods. Their model is based on excavation data (Murphy I, III sites) and survey data from the Licking drainage, complemented with excavation data in the Scioto-Paint Creek area (McGraw site). Dancey (1991:67) argued this specifically for the Murphy I habitation based on what he saw as a well maintained spatial organization of work areas within the site, the presence of stock-piled tool blanks, and the heavy recycling of the lithic assemblage. In his view, work spaces would have been offset from each other, giving a smeared archaeological record, had the site been abandoned and reoccupied annually. Stock-piling blanks and recycling lithics would have been unnecessary if the inhabitants at Murphy I annually moved their residence to other locations where lithic raw materials were at hand. Wymer (1997:160) has argued from paleoethonbotanical data in the Licking drainage that Ohio Hopewell valley habitations were occupied by at least some persons during at least spring, summer, and early autumn, in order to work garden plots and to protect domesticated and wild plant foods in active and abandoned garden plots from predation by animals.

A second model of annual residential mobility or stability sees Ohio Hopewell households as having moved their residences seasonally between flood plain and terrace sites, upland sites, and the earthworks (Yerkes 1988, 1990, 1994). Yerkes proposed this model based on a number of characteristics of the Murphy I habitation in the Licking drainage that he considered to indicate annual residential mobility rather than residential permanency: a high frequency of expedient lithic tools and low frequency of curated and heavily utilized lithic tools, weak development of microwear on lithic tools as a result of their expedient use, lack of microwear evidence for hafting of tools which suggests their expedient use, the lack of evidence of a building, shallow and narrow posts where they exist, and the lack of deep pits for storage. The three listed characteristics of the lithic assemblage have been reasonably shown to be inadequate indicators of annual residential mobility and more attuned to the availability of lithic raw material (Pacheco 1993:60–65). Also, many posts at Murphy I are, in fact, fairly large, between 15 and 26 centimeters in diameter (Dancey 1991:51, Table 3), although not as substantial as those at most seasonal and multi-season residences in the Scioto valley (Brown's Bottom #1, Clarence Ford, Marsh Run, Haven; see Notes 3, 4). However, the lack of patterning of posts into a house form and the lack of storage pits are significant support for the argument for annual settlement impermanence. The clear spatial structuring of activity spaces at Murphy, which Dancey (1991) used to argue for annual settlement permanence, is not indicative; it also characterizes impermanent, short occupation sites among mobile peoples (e.g., Bartram et al. 1991; Binford 1983:144–187; Carr 1982:308–342, 516–517, 1991; O'Connell 1979; O'Connell et al. 1991; Yellen 1974, 1977). Yerkes' view that Ohio Hopewell people moved their residences seasonally also interfaces with his conclusion that Eastern Agricultural Complex seed plants were a less significant contribution to the diets of Ohio Hopewellian people than Prufer et al. (1965), Dancey and Pacheco (1997a; Dancey 1991), and Wymer (1996, 1997) have inferred, and that Ohio Hopewell people were not tied down spatially year-round by stored grown foods.

A third possible variant on annual residential mobility or stability is alternation between specifically spring-summer-fall homesteads and winter homesteads. Some Middle Woodland residential buildings in the Scioto drainage are rectilinear, others round – a pattern that is like the common historic Southeastern Woodlands division between summer houses or ramadas and winter houses, respectively (Faulkner 1977), and that is reiterated in the Middle Woodland period in both the northeast and southeastern Woodlands (DeBoer 1997:230–231; Butler 1979; Freeman 1969; Sullivan 1989). At one Middle Woodland site neighboring the Scioto-Paint Creek area, houses of both shapes were present (Madeira-Brown site; Bush et al. 1989, 1992; Ohio Department of Transportation 1993), suggesting year-round residence at the site. At other sites, only rectilinear buildings were present (Marsh Run site; Haven site, late components; Brown's Bottom # 1; Aument 1992; Aument et al. 1991; Burton 2006; Pacheco et al. 2005; Paul Pacheco, Jarrod Burks and DeeAnne Wymer, personal communication, 2005; Weller and Eriksen 2005) or only a round building (DECCO site; Phagan 1977, n.d.a., n.d.b.), suggesting alternation between sites over the seasons – if building shape corresponded with season(s) of use. No current evidence from the Scioto drainage, however, indicates a correlation between the seasons of use of a house and its shape. In fact, the rectangular structures at Madeira-Brown, Haven, and Brown's Bottom #1 had close post spacings and were not ramadas, weakening the ethnohistoric and archaeological analogies. The functional and symbolic distinctions between the two structure shapes observed ethnohistorically in the Woodlands apparently are reduced to a symbolic one, alone, at best, in the Scioto situation.

The above three models of annual residential mobility/sedentism all suffer from combining habitation data from multiple drainages (the Licking, Scioto) or multiple sections within drainages (the northern Scioto, Scioto-Paint Creek area, southern Scioto) and from having been suggested to be applicable to all Ohio Hopewell traditions. In contrast, different degrees of annual residential mobility and different mixes of residential and logistical mobility are expectable in different drainages or portions of drainages that vary in their environmental productivity. A case in point is the contrast between the Scioto-Paint Creek area, with its productive and diverse food resources in a multiple-ecotone setting, and the northern and southern portions of the Scioto valley with their simpler ecology and lesser productivity. Table 3.1 shows that in the Scioto-Paint Creek area, settlements with strong indicators of multiple-season residential stability in the main valley flood plain (McGraw, Brown's Bottom #1) are found in combination with ephemeral sites that are located in upland settings or small tributaries entrenched in the Applachian Plateau and that appear to have been logistical in their function (Starr'sKnoll, Ilif Riddle II, possibly Wade).[3] Significant residential stability in combination with logistical mobility would be expected in the Scioto-Paint Creek area with its close, diverse, and productive microenvironments. In contrast, in the northern and southern portions of the Scioto drainage, no sites with strong evidence of multiple-season residential stability on the scale of McGraw or Brown's Bottom #1 have been found, but sites that appear to have been seasonal habitations/base camps (Clarence Ford, Marsh Run, Haven site, Gilead) and one seasonal habitation/base camp or, less likely, small multiple-season residential site (Madeira-Brown) are known.[4] Greater residential mobility, with seasonal shifts among habitations in different environs and with some logistical trips taken from these, would be expected in the northern and southern portions of the Scioto valley, which were less productive.

In actuality, the situations in the Scioto-Paint Creek area and the northern and southern portions of the Scioto drainage may have been more complex than the dichotomy drawn here between these two kinds of environments and movement within them. A realistic description of residential stability or mobility in each area should consider not only the seasons of occupation of a residential site, but also the proportion of a household that resides there in various seasons. It is possible, and can be an effective subsistence strategy, for part of a household to remain at a main residential site while part goes off to exploit food resources in other areas, residing there in small residential base camps for weeks or a season at a time. Some weeks and seasons a main residential site may be occupied by all household members, other weeks and seasons by only a part of the household. The remote residential sites occupied by a part of a household for weeks at a time should not be confused terminologically with logistical sites, which are much shorter-duration hunting and collecting camps. Thus, residential stability should be conceived of on two scales (number of seasons of residential stability and proportion of a household that remains in residence) rather than on only one (number of seasons of residential stability). A further complication to envisioning residential stability or mobility is that it may change for a household with its life cycle and size. These nuances have yet to be considered empirically for the Scioto-Paint Creek area and the northern and southern Scioto drainage.

In sum, currently, the issue of annual residential mobility is open. While paleoethnobotanical and/or paleofaunal evidence (Parmalee 1965; Stansbery 1965; Wymer 1992, 1996, 1997; Yarnell 1965) in the Scioto-Paint Creek area and the neighboring Licking valley suggest at least partial household occupation of valley habitation sites during spring, summer, and early autumn, the remaining six months of the year are unaccounted for at them. In the northern and southern Scioto drainage, seasonal residential moves between complementary upland and lowland habitations appear likely, and no sites are currently known that are comparable in scale to the multiple-season residential sites found in the main valley flood plains of the Scioto-Paint Creek area. Patterns of annual residential mobility or stability possibly varied in different portions of the Scioto drainage. More nuanced understandings of residential stability and mobility that consider both seasons of residence and the proportion of a household in residence remain uninvestigated. Palynological records are sorely needed to help resolve the issue of annual residential mobility.

Examples of Residential Communities

A case of an excavated Hopewellian valley habitation that is clear in its internal organization is the Madeira-Brown site (33 Pk 153). It is located on a low terrace in the Scioto valley, 30 kilometers south of the Scioto-Paint Creek confluence. The site's debris scatter covered an area of 100×120 meters on the surface. Excavation of 25% of the site revealed three houses, only two of which could be contemporaneous (Figure 3.1). Two of the houses were circular, of similar diameter, with one post pattern on top of the second, indicating a rebuilding episode. The most completely excavated of the two circular houses was 6.8 meters in diameter, about 36 square meters in floor area, and was capable of accommodating about 8 people. A small, circular, shallow, basin-shaped pit was the only feature found inside the two buildings. The third house was subrectangular, at least 6.1×9.8 meters and 60 square meters in floor area, and could have accommodated a minimum of

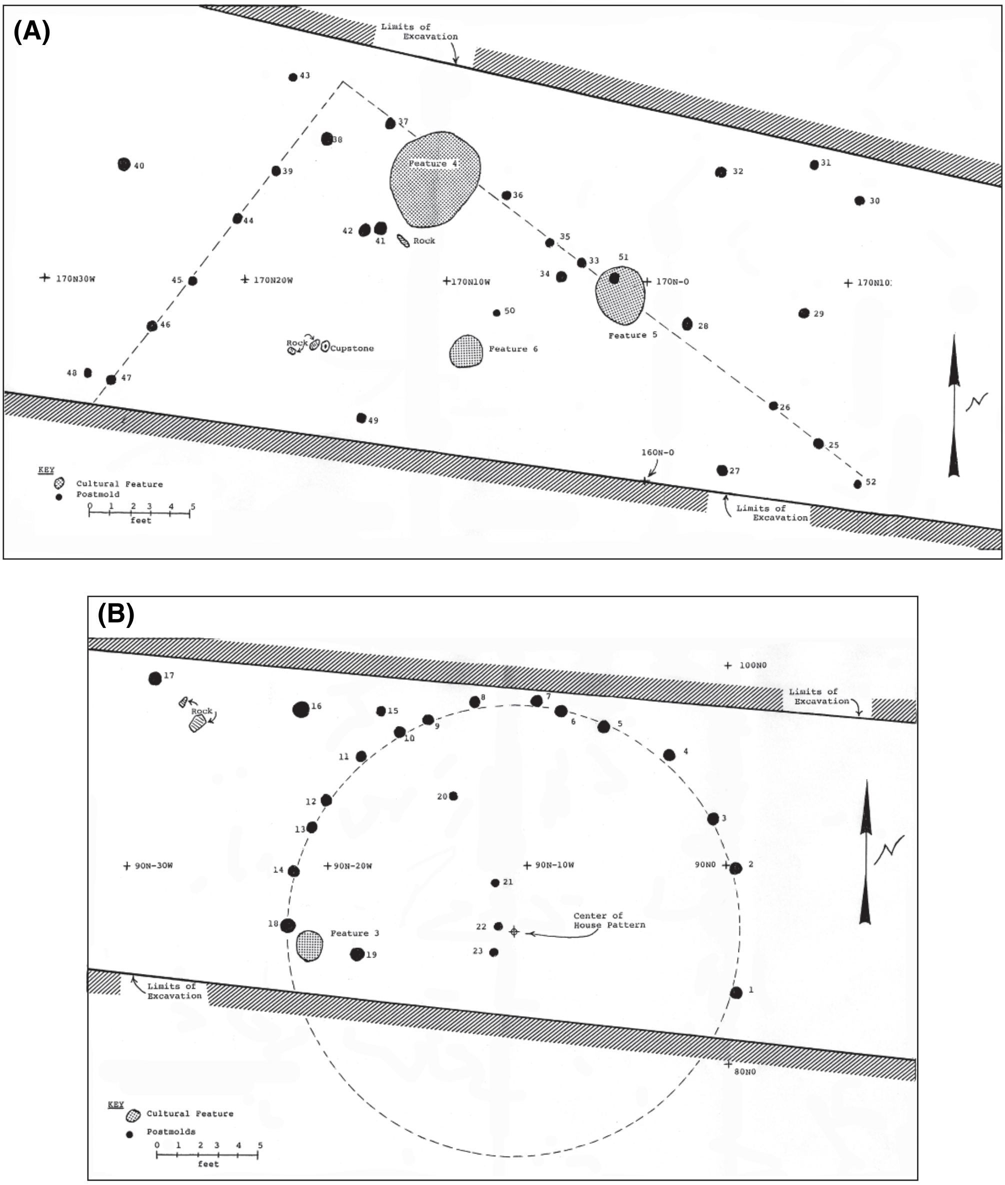


Figure 3.1. The Madeira Brown habitation site, 33Pk153, in the lower Scioto valley. (A) Floor plan of the rectangular house, within the 175′ north trench. (B) Floor plan of the two circular houses, within the 100′ north trench. See credits.

about 11 people. It, too, contained a small, circular, shallow, basin-shaped pit. Along the inside of the house's walls and partially cut by their alignment were a large, circular, shallow depression and a large, three-foot deep, cylindrical, apparent earth oven. Outside the house was a concentration of fire-cracked rock that possibly was the remnant of a pit. A swale nearby the site could have been the location of a substantial refuse dump. Very few artifacts were found at the site. The buildings at the site suggest some degree of residential stability rather than its use as a temporary logistical site. However, both the paucity of pit features and the small artifact assemblage indicate short occupations consistent with a single-season base camp instead of a multiple-season residential site.

An excellent example of a concentration of multiple Hopewellian habitation sites that formed a residential community with a valley setting, and of the community's changing nature over time, is one documented by Pacheco (1993, 1996). The community lived in the Granville portion of Raccoon Creek valley, a tributary of the Licking valley east of Columbus and close to the Newark earthwork (Figure 3.2). A surface survey of a 50 hectare transect of primarily the terrace of Racoon creek revealed ten Middle Woodland sites/clusters of artifacts and debris, one site of which had two Middle Woodland components. Based on the size, artifact and debris density, spectrum of artifact and debris classes, lithic raw materials, and boundary crispness of each site, three functionally distinct kinds of sites could be defined: habitations marked by their refuse dumps (Murphy I, III, V, VI, and IV-Vanport chert component); a specialized camp as large as the habitations but with a high proportion of bladelets, many heavily utilized and many made of an exotic chert (Murphy IV-Wyandotte chert component); and small, short-term, specialized, logistical use areas of varying artifact and debris spectra and perhaps different functions (Clusters 1, 2, 4, 5/8, 7). The approximate historical sequence of development of these habitations and use areas, as shown in Figure 3.2, was determined by noting the varying proportions of local Vanport and exotic Wyandotte cherts among the sites and the varying kinds of artifact classes within a tool reduction sequence that were made from the two cherts, and by reasonably assuming that all 40–50 kilograms of Wyandotte chert in the area was acquired and introduced at one time. The total suite of sites appears to represent the settlement of the area by one household (Time 1, Murphy IV-Vanport chert component), its acquisition of Wyandotte chert, its relocation and perhaps its growth and budding into two households (Time 2, Murphy I, Murphy-V, and special use area Murphy IV-Wyandotte), and further settlement relocation and perhaps budding into up to three households (Time 3, Murphy I, Murphy III, Murphy VI), followed by abandonment of the area. Contemporaneity of habitations and the precise number of contemporaneous households within Times 2 and 3 cannot be assessed. The historical sequence possibly spanned several generations. The factors responsible for the shifting locations of habitations are unknown, but could include the effects of refuse build up within a habitation, household budding and privacy, and/or the desire to stay close to swidden farming plots that were relocated over time.

Long-term Cycles of Residential Mobility and the Lengths of Occupation of Sites

Residential mobility can have two components: moves that recur annually as a part of a "seasonal round" among locations, and longer-term cycles of settlement relocation that can be tied to the relocation of swidden plots, the declining availability of local natural resources due to impacts on them, refuse accumulation and health issues, and/or privacy, to name a few factors. Annual residential mobility has been discussed above, but long-term residential mobility only mentioned.

Currently, two positions have been taken on the degree to which Hopewell people in the Scioto drainage and adjacent areas were residentially mobile over the long-term. Prufer (Prufer et al. 1965:137) held that occupation of Ohio Hopewellian habitation sites was "semi-permanent" in response to the "shifting agricultural" system that he thought Hopewell people had. He made the "educated guess" that the excavated McGraw habitation site was used about "one generation, or 30 years.... Certainly the site was not inhabited for a long period of time" (Prufer et al. 1965:137). He gave no specific reasons for the estimate. In contrast, Dancey and Pacheco modeled Ohio Hopewellian habitations as stable, both annually and over the long term: "households were stable, long-term settlements of people" (Dancey and Pacheco 1997a:3; see also p. 8, and Pacheco and Dancey 2006:6). Dancey (1991:50, 66–67) argued that the excavated Murphy I site

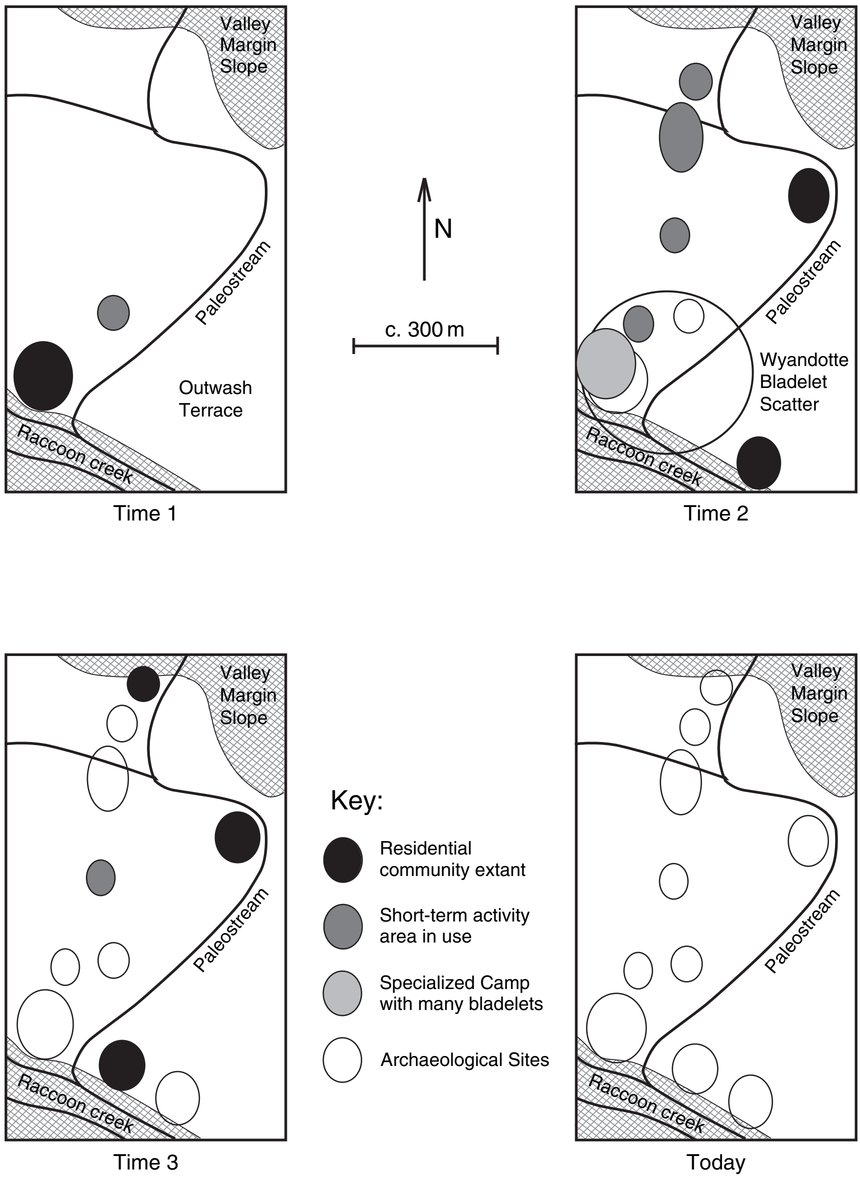


Figure 3.2. The Murphy complex, a concentration of multiple Hopewellian habitations and use areas in the Licking drainage that comprised a residential community and that shifted locations over time. Time 1 is defined by the occurrence of only local Vanport chert at the components. Time 2 is defined by the acquisition and primary use of nonlocal Wyandot chert to make tools and their occurrence at the components. Time 3 is defined by the recycling of Wyandot chert tools and their presence at the components. See credits.

was occupied "several generations, or approximately a century." His logic relied on the relatively wide spread of radiocarbon dates from the site combined with his conclusion that the site was not periodically abandoned and reoccupied (see above, Annual Residential Mobility).[5]

The disparity between Dancey's and Prufer's views is significant because the Murphy site contained many times fewer the amounts and areal densities of ceramics and lamellar blades (indicators of amounts of activity) than did the McGraw site (Table 3.2), yet one would expect the reverse from the

Table 3.2. Comparison of Artifact Density at the McGraw and Murphy Sites, Ohio, and the Smiling Dan Site, Illinois[1]

	Brown's Bottom #1[2]		Murphy I[3]		McGraw[4]		Smiling Dan[5]	
	Total	Items/m^2	Total	Items/m^2	Total	Items/m^2	Total	Items/m^2
Site Area (m^2)	5,000		4,000		1,236		6,705	
Ceramics	4,502	0.9	858	0.21	9,946	8.05	138,350	20.63
Debitage	2,237	0.45	21,501	5.38	1,691	1.37	65,355	9.75
Lamellar Blades	185	0.04	473	0.12	233	0.19	2,254	0.34

[1] Table constructed and graciously contributed by Bret Ruby. Numbers have been revised from Ruby et al. (2005:168, table 4.5) with counsel from P. Pacheco (personal communication 2007).
[2] Brown's Bottom #1 data from Pacheco et al (2006; Pacheco, personal communication 2007).
[3] Murphy I site data from Dancey (1991), Dancey and Pacheco (1997:table 1.1), and Pacheco (1997).
[4] McGraw site data from Prufer (1965:10, 60, 85, table 3.1).
[5] Smiling Dan site data from Stafford and Sant (1985:39, table 11.1). Ceramics total includes minor Late Woodland and Black Sand components, totaling approximately 1691 sherds. Debitage total includes flakes plus cultural blocky fragments.

conclusions drawn by the two researchers. This situation suggests the need to re-evaluate the issue of long-term residential site permanence or mobility, or in equivalent terms, the lengths of occupation of residential sites. Three empirical approaches to the issue are now presented.

First, the ceramic assemblage recovered from the Murphy habitation site suggests that its total length of occupation was short – on the order of 1.4–14 years. Because much of the site and its ceramic contents were excavated, a reasonable estimate of its duration of use can be made. The site produced only 858 pottery sherds. Assuming that a vessel breaks into 30–100 sherds, that a household used two to three vessels at a time, that only one household used the site, and that the average use-life of a vessel is six months to one year (Rice 1987:297, Figure 9.4) implies the 1.4–14 year length of occupation. Increasing the number of sherds into which a vessel breaks, the number of vessels used by a household at once, or the number of households that occupied the site – to compensate for the potential directions of errors in the estimation – would only decrease the estimated length of occupation.

Second, the swidden systems of historic Native American farmers in the northeastern Woodlands and a model of the Scioto Hopewell swidden system suggest that residences in the Scioto-Paint Creek area might have been moved between every 10 and 50 years (Rainey 2003). In the Northeast, Native American farmers moved their villages every 10–20 years, usually in coordination with shifts in the locations of fields. Fields and gardens were usually made close to or within villages, in order to tend to them and to keep wild animals from feeding on them. Field houses, which would have allowed the working of more distant fields and longer-term residential stability, were not used. By assessing the successional nature of the wild food plant remains found in six Middle Woodland habitation sites in the Scioto-Paint Creek and surrounding areas, and assuming swidden farming practices, Rainey (2003) estimated that fields abandoned up to 25–50 years were sometimes used for their secondary-growth wild resources, implying up to this duration between residential moves for some habitation sites. Shorter occupations are implied by the paleobotanical records of some other sites. These ethnohistorical and paleobotanical estimates, as well as the ceramic-based estimate of 1.4–14 years, are much less than the century of occupation estimated by Dancey (1991) for the Murphy I site.

Third, periodic, long-term movement of the residential sites of Scioto and neighboring Hopewellian peoples is also suggested by the typically multimodal nature of the sites' radiocarbon dates (Table 3.3). Of nine Middle Woodland habitation sites located in the Scioto and neighboring drainages and having multiple, reasonable radiocarbon assays, eight have two or three statistically distinct modes, suggesting abandonments and later reoccupations. Only one site appears to represent a

Table 3.3. Modalities in Calibrated Radiocarbon Dates from Middle Woodland Habitations in the Scioto Valley and Neighboring Areas[1]

Site	Number of Dates	Means of Modalities			Separations among Means of Modalities
Scioto Valley					
McGraw	11	A.D. 40	A.D. 315	A.D. 585	275 yrs, 270 yrs
Marsh Run	3	180 B.C.	A.D. 120	A.D. 290	300 yrs, 170 yrs
Decco	4	A.D. 320	A.D 441		121 yrs
Harness-28	3	50 B.C.	A.D. 380		430 yrs
Locust	3	A.D. 176			one mode only
Muskingum Valley					
Li 79.1	2	A.D. 137	A.D. 420		283 yrs
Murphy I	6	40 B.C.	A.D. 283		323 yrs
Newark Campus	2	A.D. 20	A.D. 540		520 yrs
Great Miami Valley Area					
Jennison Guard	3	A.D. 224	A.D. 398		174 yrs

[1]Dates are reported by Carr and Haas (1996) and Dancey and Pacheco (1997). Dates taken from Carr and Haas have been clustered into statistically distinguishable modes, per procedures described by them. Dates taken from Dancey and Pacheco have been sorted into modes qualitatively, noting their standard deviations and disallowing any overlap among the standard deviations of dates in separate modes. An exception is the Jennison Guard site, where overlap among defined modes is minor. When a mode is defined by a single calibrated date with multiple intersect points, the average of the multiple intersect points has been used as the estimated mode. When a mode is defined by multiple calibrated dates, the average of the dates, and/or their multiple intersection points, has been used as the best estimate of the mode. For example, the calibrated dates reported for the Decco site include one with multiple intersections (A.D. 268/273/338) and three with single intersection points (A.D. 343, A.D. 381, A.D. 441). One mode (A.D. 320) is defined by the average of the three intersection points of the first date and the single intersection points of the second and third dates. The second mode (A.D. 441) is defined by the single intersection point of the fourth date.

single occupation. This pattern is expectable as the product of swidden farming, where residences are cyclically moved, eventually to be relocated in previously used areas in order to take advantage of the greater food resource diversity created there by former human disturbances and the areas' less mature, more easily cut forests. In itself, the pattern of abandonment and resettlement is significant support for the idea that Scioto and neighboring Hopewell people were swidden farmers. In addition, the data document length of reoccupation cycles for specific habitation locations. The cycles most commonly lasted about 175–300 years. The periodicity of movement of a farming household within a general area of use, with the potential for selection of other new locations and alternative previous habitation sites for settlement within the area, could thus be considerably less than 175–300 years. That periodicity is probably well estimated by the up to 25–50-year period of farming plot regrowth concluded by Rainey (2003).

The long-term residential mobility of Hopewell households in the greater Scioto area can be placed in a broader, interregional perspective, relative to that in the Havana Hopewell area in Illinois. Table 3.2 shows the numbers and areal densities of ceramics, lithic debitage, and lamellar blades found at the Brown's Bottom #1 habitation in the Scioto-Paint Creek area and the Murphy I habitation site in the Muskingum drainage in comparison to the Smiling Dan habitation site in the lower Illinois valley. All three sites were excavated in a similar manner, by sampling and strip excavations, providing reasonably comparable assemblage data for making qualitative inferences about the durations of occupation of the sites. When standardized to densities per square meter, ceramics are 20–100 times more dense at Smiling Dan than at Brown's Bottom or Murphy, lithic debitage is 2–20 times more dense at Smiling Dan, and lamellar blades are 3–8 times more dense. The much denser record at Smiling Dan than at Brown's Bottom #1 can be attributed almost fully to the different durations over which the sites were occupied rather than different numbers of individuals who occupied each, given the close population estimates for Smiling Dan and Brown's Bottom.[6] In addition, the Smiling Dan site had a midden dump that was up to two meters deep, and spanned the entire north–south extent of the Middle Woodland occupation there. No refuse deposit approaching this magnitude has been identified in any Scioto, Muskingum, or other Ohio Hopewell site. These observations point to the substantially shorter occupancy of habitation sites and the much greater degree of residential mobility in the greater Scioto area than in Illinois. The comparison becomes all the more significant when it is realized that Smiling Dan was a relatively small and low artifact density habitation compared to some other major Middle Woodland occupations (e.g., Apple Creek, Macoupin, Gardens of Kampsville) in the lower Illinois valley, and that Brown's Bottom and Murphy had relatively rich artifact assemblages compared to some upland habitation sites in the Scioto drainage (e.g., Marsh Run, Clarence Ford, Wade; see above and Note 4).

In summary, to the best of our current understanding, a residential community in the Scioto-Paint Creek area was normally comprised of one or two extended families who built their homes in bottom land and terrace settings of the major valleys. There, households practiced swidden farming of Eastern Agricultural Complex plant foods, which complemented their hunting and gathering of wild foods. Hunting and gathering sometimes took segments of a household away on logistical trips to upland environments. Households moved their residences every number of years, presumably in response to changing locations of swidden plots, and might reoccupy an abandoned habitation site every 175–300 years. Residential communities in the Licking drainage, which has an ecological richness and diversity similar to the Scioto-Paint Creek area, may have been organized similarly. In the less rich and diverse environments of the Scioto drainage north and south of the Scioto-Paint Creek area, households appear to have moved seasonally back and forth between valley and upland residences. Logistical sites were also probably used, but have not been well documented through excavation. Thus, the logistical, annual residential, and long-term residential mobility of communities in different locales within the Scioto drainage probably varied by locale, depending on their food resource productivity, diversity, and schedules. The logistical and annual residential mobility of a household also might have varied over the course of its life cycle and size.

LOCAL SYMBOLIC COMMUNITIES

The spatial dispersion, small size, and considerable annual residential permanence of Scioto Hopewell residential communities had the effect of isolating households from each other. Longer-term, swidden-initiated cycles of relocation of residences had the potential for disrupting local networks among households. In order to offset these effects, to meet the daily to life-long personal, cultural, and biological needs of their members, and to ensure their cultural and biological reproduction, Scioto Hopewell households formed and maintained relationships with one another by a variety of social and ritual means: the creation of local symbolic communities through ritual; possibly overlapping membership among local symbolic communities; the creation of larger sustainable communities through ritual socio-politico-spiritual alliances among local symbolic communities; a leadership structure comprised of diversified positions with complementary social and ritual roles; ritual sodalities; crosscutting membership among sodalities; and a nonlocalized clan organization. Here we focus on local symbolic communities and sustainable communities. The remaining integrative forms are described at length in Chapter 4.

Over the Scioto-Paint Creek area, households formed a number of local symbolic communities, each of which was held together by the active decisions of households to jointly build earthen ceremonial centers and to jointly participate in rituals there. Some ceremonies focused on laying to rest and honoring dead relatives in charnel houses and/or burial mounds. Yet there were also diverse, other kinds of ceremonies that brought people together (Chapter 4, Ritual Gatherings and Alliances; Sodalities and Ceremonial Societies). Ceremonial diversity is evident in part from differences in the forms, architectural elements, and locations of the earthen ceremonial centers, themselves, and thus their uses. Middle Woodland ceremonial centers in the Scioto-Paint Creek area include: valley-situated earthen enclosures with burial mounds for primarily leaders and other persons of importance (e.g., Mound City, Hopewell), valley-situated earthen enclosures with burial mounds for a broader but still prestigious spectrum of persons (e.g., Seip, Liberty, probably Old Town), a valley-located enclosure with flat-topped mounds that probably were stages for rituals (Cedar Banks), valley-placed enclosures that lacked or largely lacked burial mounds and that surrounded primarily open space (e.g., Hopeton, Baum, Works East), a hilltop "fort" that surrounded open space (Spruce Hill), and small isolated mounds or mound clusters without enclosures (e.g., McKenzie, Rockhold, Shilder, West).

Ceremonial diversity and differences in the ceremonial functions of earthworks are also indicated by the different directions in which they were oriented. Directionality is and has been a common means by which Native Americans have symbolically expressed the themes and goals of their ceremonies (Eagle Feather 1978:87–92; Hudson 1976:229, 318–319, 342, 346, 353; Mails 1978:98–99; 1979:57–58, 80, 97–98, 120, 127–130; 1991:48, 52–54, 58–60; Nabokov and Easton 1989:40; Swanton 1931:11). In the Scioto-Paint Creek area, ceremonial earthen enclosures were oriented to summer solstice sunset, winter solstice sunrise, equinox sunrise, and moon maximum north rise (Romain 2004:104, 2005), suggesting the different themes and purposes of these enclosures.

Throughout much of the Middle Woodland period, each local symbolic community built and used contemporaneously multiple earthen ceremonial centers of different functions within their lands. It is not possible currently to fully decompose the ritual landscape of the Scioto-Paint Creek area into all of its local symbolic communities at various time-planes. However, certain such communities are known (Ruby et al. 2005, Carr 2005a, b). Fairly early in the Middle Woodland, a local symbolic community in the main Scioto valley, between about A.D. 1 and 250, built the complementary sites of Mound City with its burial mounds, and Hopeton with its open spaces (Figure 3.3 A, D, E). Mound

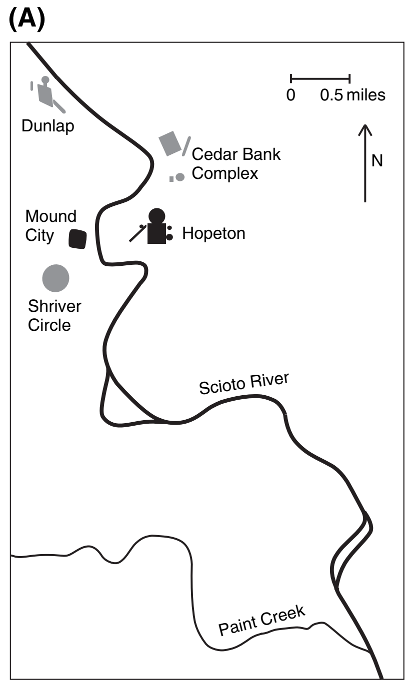


Figure 3.3. (A) A local symbolic community in the Scioto valley, between about A.D. 1 and 250, built the ritually complementary pair of sites of Mound City, with its burial mounds, and Hopeton, with its empty spaces, each in black. Other components of the community's ritual landscape may have included the Shriver Circle; the Cedar Banks complex composed of a square earthwork, a circular earthwork, two platform mounds, and a conical burial mound; and perhaps the Dunlap earthwork, each in grey. (B) The Dunlap Works. (C) The Cedar Banks complex. (D) The Mound City earthwork and Shriver Circle. (E) The Hopeton earthwork. See credits.

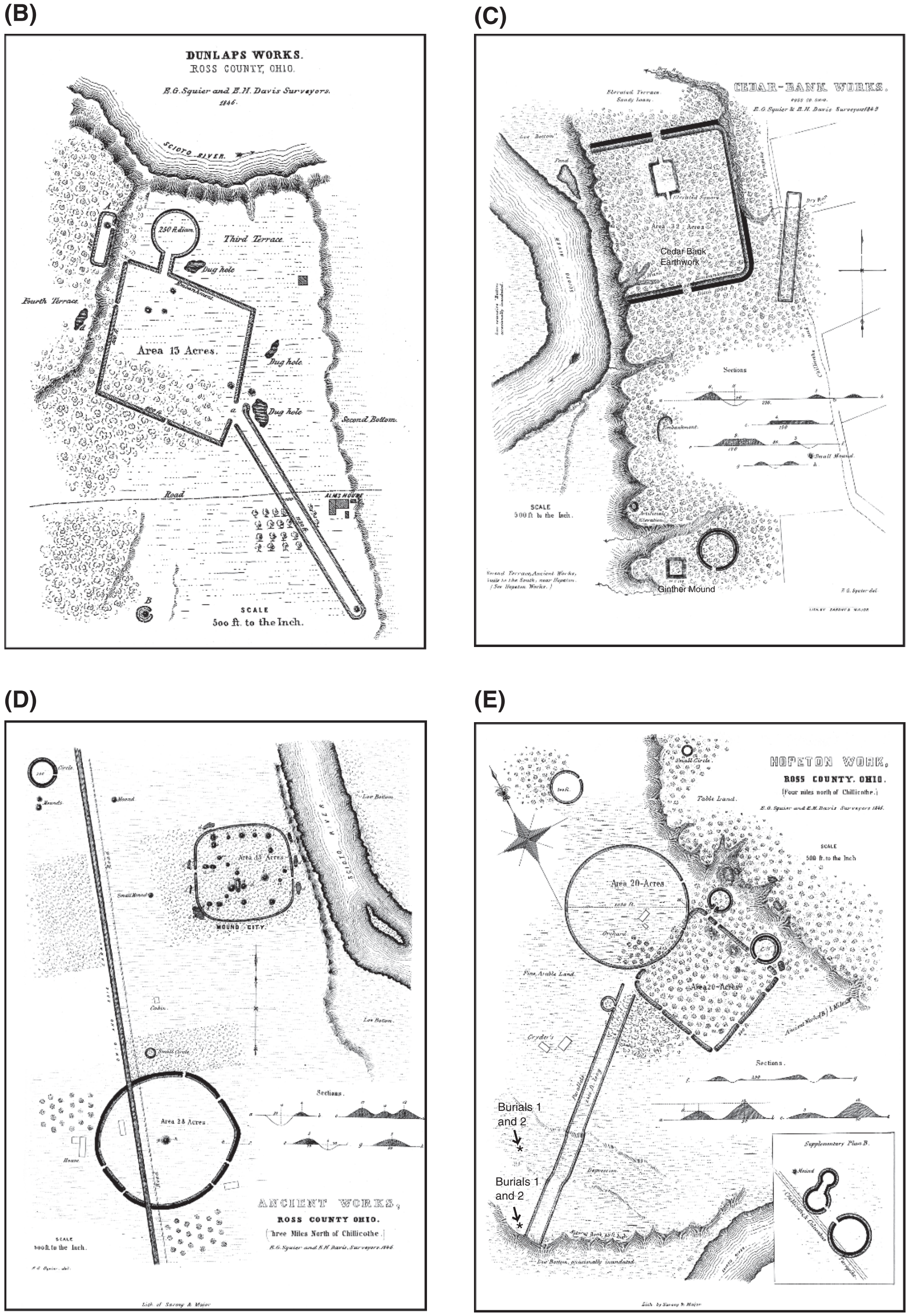


Figure 3.3. *(continued)*

City was primarily a cemetery grounds. It contained burials of largely deceased elite, not only from the local symbolic community in which it was located, but others as well. The specific functions of the Hopeton site are unknown, beyond its apparent use in summer solstice and winter solstice ceremonies indicated by the orientations of the embankments of its square and causeway (Romain 2004:104, 2005). Other parts of the ritual landscape of this local community probably included the Shriver circle just south of Mound City; perhaps the Cedar Banks complex with its square earthwork, an open circle, two platform mounds, and the Shilder mound, all north of Hopeton; perhaps the Dunlap earthwork somewhat farther north; and less likely the more distant Junction Group of circular earthworks, at the confluence of main Paint Creek and its North Fork (Figure 3.3A–C). The ages of most of these additional earthworks and mounds are unknown.[7]

Another, neighboring local community that may have been coeval with the Mound City-Hopeton community resided in the North Fork of Paint Creek. The Hopewell and Anderson sites, and perhaps the Junction Group, may have been components of this neighboring community. The Hopewell site contains many burial mounds, Anderson seems to lack them, and Junction contains a few. Some early dates from the Hopewell site (Greber 2003:102–103; Prufer 1964a:45), an early date from the Anderson site (Maslowski et al. 1995), the similar size of the Anderson enclosure to the Mound City enclosure, and the arrangement and forms of the enclosures of the Junction Group all suggest their contemporaneity with Mound City and Hopeton or their somewhat earlier date.[8]

Toward the end of the Middle Woodland, between about A.D. 300 and 350, three local symbolic communities had formed in the area: one in main Paint Creek valley, a second in the North Fork of Paint Creek valley, and a third in the Scioto valley at its confluence with Paint Creek valley (Figure 3.4A). Each community (with some help from the others, see below) built within its lands two ceremonial earthworks that were functionally complementary. All six earthworks had tripartite symbolism. Five of the earthworks were composed of a large circle, a small circle, and a large square, and the sixth had a large tripartite mound like those in two of the other earthworks. The community in the main Paint Creek valley built the Seip earthwork with its burial mounds, and the Baum earthwork with its open spaces, both in the valley. The enclosure of Spruce Hill, with its open space, was built in the uplands overlooking Paint Creek valley not far from Baum, and may or may not have been contemporaneous with it and Seip. In the North Fork of Paint Creek valley, a community built the Old Town earthwork with its burial mounds, and continued to use the Hopewell earthwork and burial mounds. The Hopewell site, like Mound City before it, contained burials of largely deceased elite persons, from both the local symbolic community in which it was located and neighboring local symbolic communities. In the main Scioto valley, a local symbolic community built the Liberty earthwork with its burial mounds and Works East with its open spaces (Figure 3.4B–G).[9] Each of these three local symbolic community's, in the A.D. 300–350 time range, had within them earthworks that were distinct functionally from one another not only in whether or not they contained burial mounds, but also in their celestial orientations (Carr 2005b:86–87; Romain 2004, 2005): Seip from Baum, Old Town from Hopewell, and Liberty from Works East (Carr 2005b:86 Chapter 3; Romain 2004, 2005).

Each of the above five groups of multiple ceremonial sites can be identified as indicative of a local symbolic community based on analysis of the geographic distribution of earthwork ceremonial centers in the Scioto-Paint Creek area (Ruby et al. 2005:159–166). In previous models of Ohio Hopewell community organization (Dancey and Pacheco 1997a:8, 21, figure 1.2; Greber 1979a, esp. pp. 45, 57; Greber and Ruhl 1989:46–64; Prufer 1964a:71, 1964b; Prufer et al. 1965:137; Smith 1992), each geometric earthwork was envisioned as the center of a community (here, a local symbolic community) of dispersed households who did not have daily, face-to-face contacts with one another but maintained a sense of identity and common purpose through jointly building an earthwork and participating in ceremonies and other activities within it.[10] However, in the Scioto-Paint Creek area, earthen enclosures are "too close" to each other for each to have stood at the territorial center of a distinct local symbolic community. Some local symbolic communities must, instead, have encompassed multiple earthen enclosures.

Specifically, crosscultural studies of the travel costs and the sizes of resource exploitation catchments of swidden farmers (see Varien 1999:153–155 for a summary) report that they regularly cultivate fields at distances of 3–5 kilometers from their homesteads, with 7–8 kilometers being about the maximum distance traveled. These distances can also be taken as the practical distances within which swidden farmers might interact fairly regularly with each other and actively form a local symbolic community. Significantly, these distances match well the sizes of local symbolic Hopewellian communities in the central Muskingum valley, which are distant from the complex ceremonial landscapes around Chillicothe and Newark, and which are more easily untangled and defined. In the Dresden subregion of the central Muskingum valley, a well defined cluster of small habitations, mounds, and a small earthwork has a diameter of 6 kilometers, or a catchment radius of about 3 kilometers (Pacheco 1996:29, Figure 2.8). In the upper Jonathan Creek subregion of the central Muskingum, another cluster of small habitations, mounds,

(A)

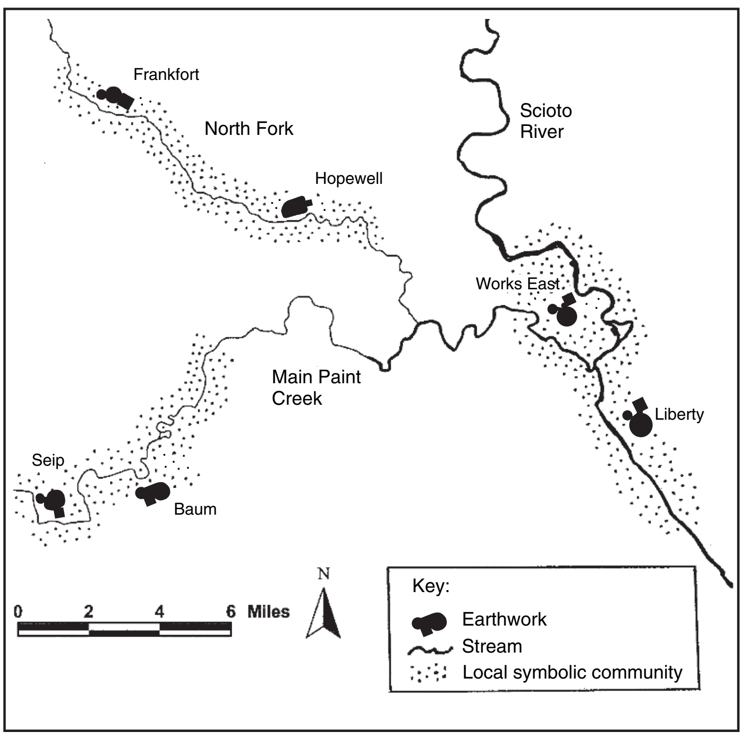


Figure 3.4. (A) Three local symbolic communities in the Scioto valley, main Paint Creek valley, and North Fork of Paint Creek valley, between about A.D. 300 and 350, built and used the ritually complementary pairs of sites of Seip and Baum, Old Town and Hopewell, and Liberty and Works East. (B) The Seip earthwork. (C) The Baum earthwork. (D) The Old Town, or Frankfort, earthwork. (E) The Hopewell earthwork. (F) The Liberty earthwork. (G) Works East. See credits.

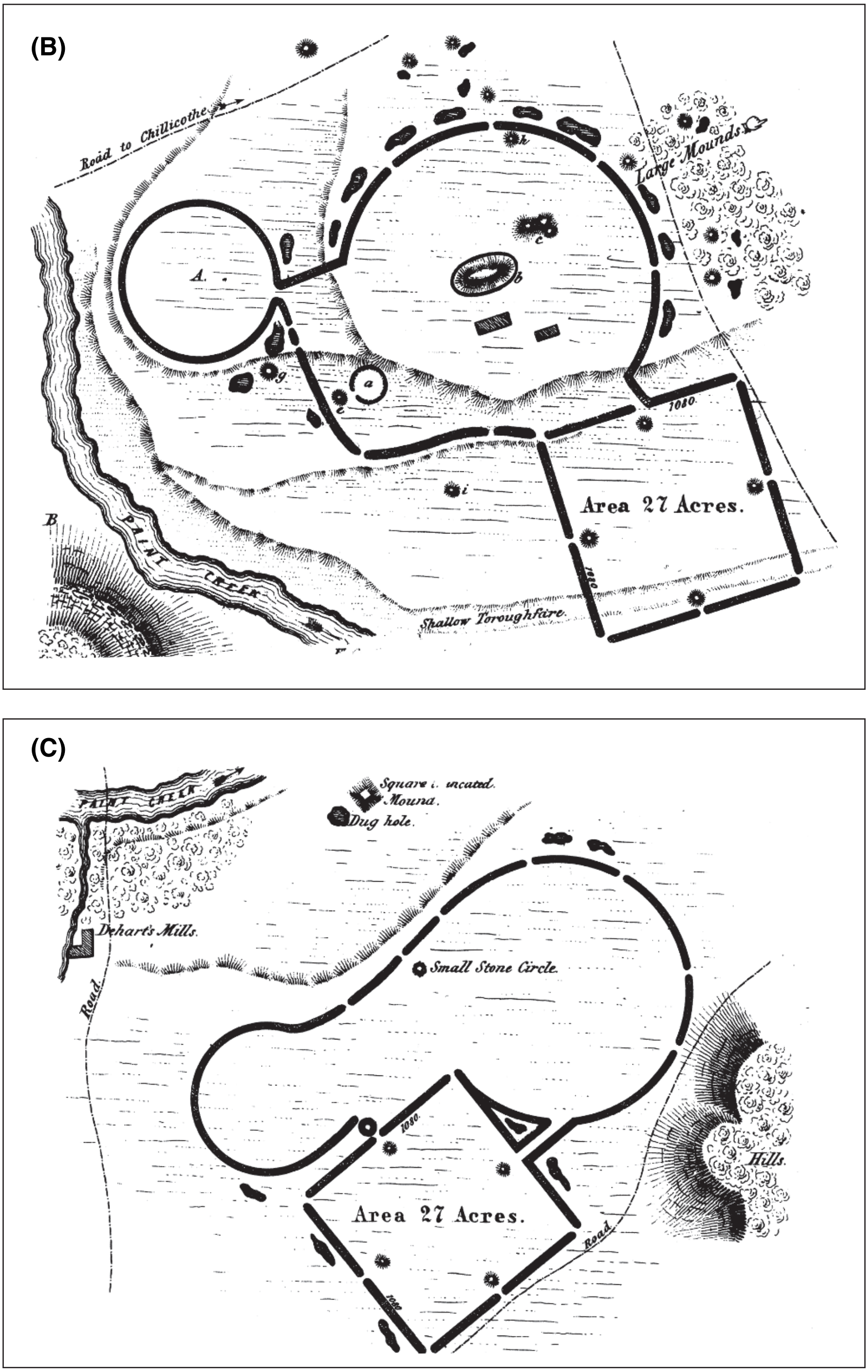
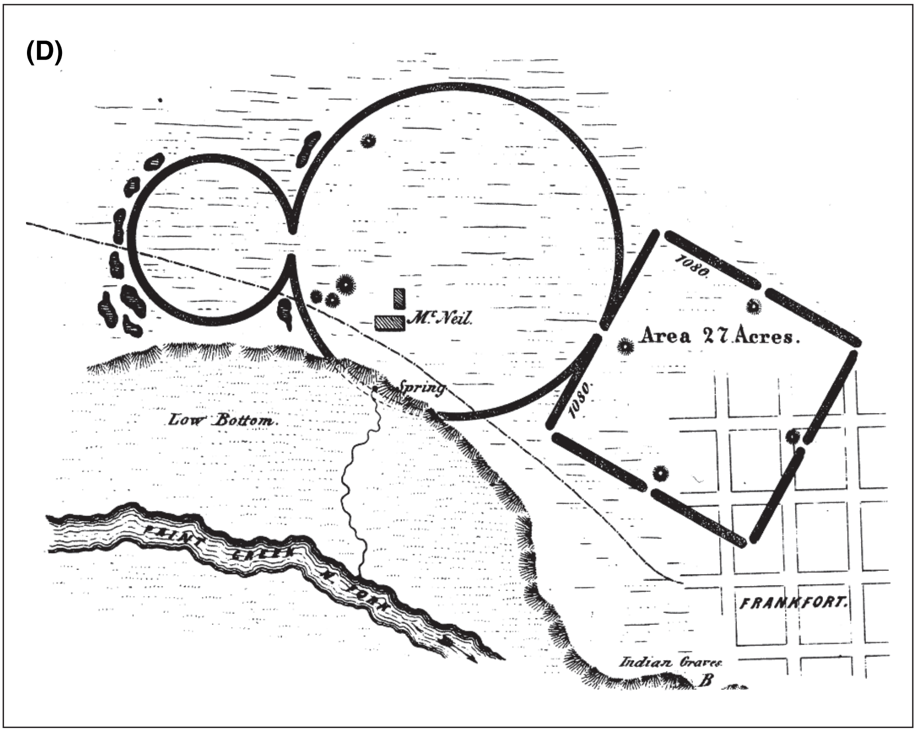


Figure 3.4. *(continued)*



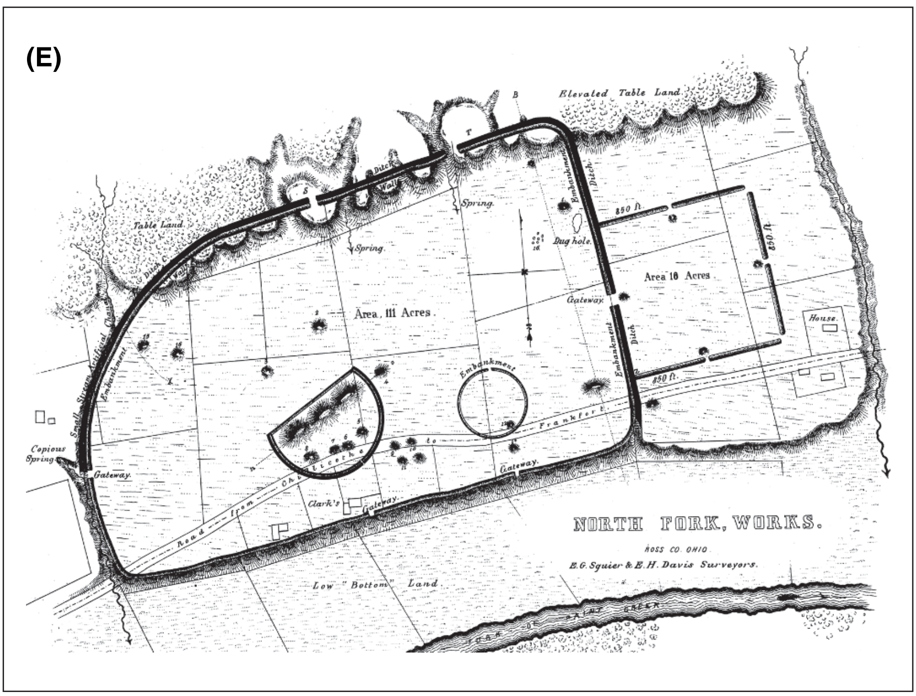
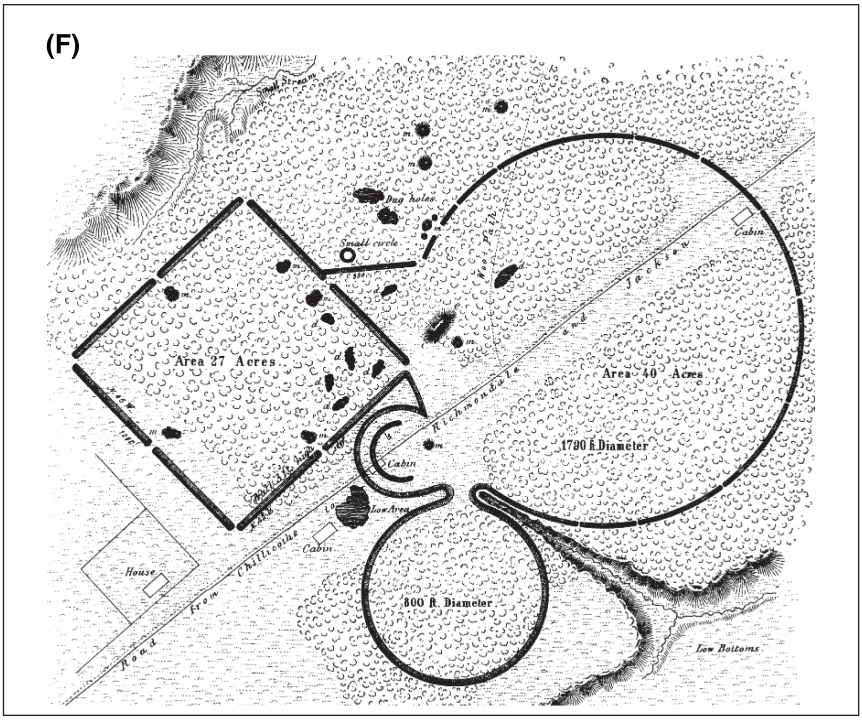


Figure 3.4. *(continued)*



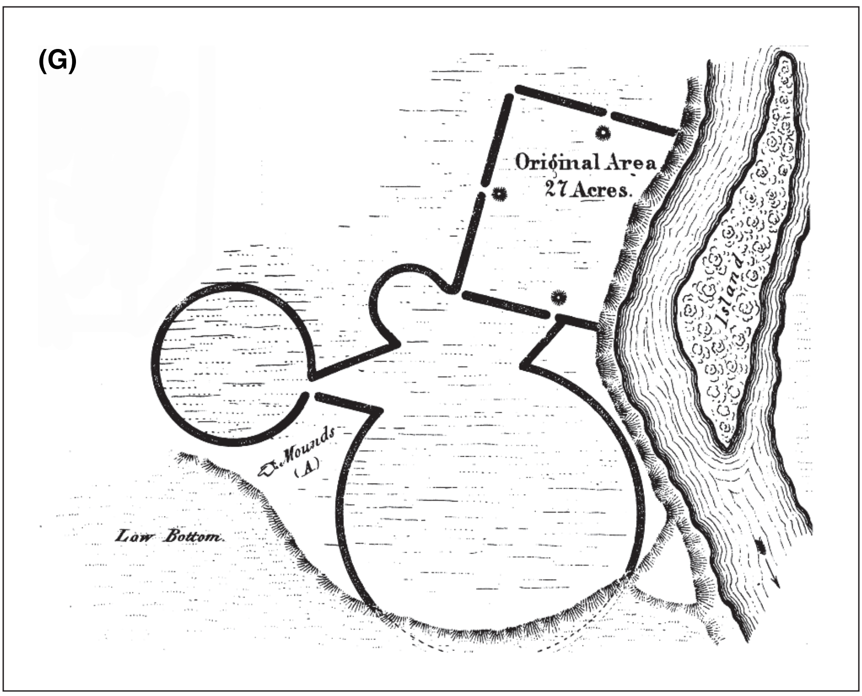


Figure 3.4. ***(continued)***

and earthworks has a diameter of about 11 kilometers, or a catchment radius of about 5.5 kilometers (Pacheco 1996:31, Figure 2.11). Thus, it would seem that 3–5.5 kilometers is a good estimate of the catchment radii, and 6–11 kilometers is a good estimate of the diameters, of local symbolic communities for Ohio Hopewell swidden farmers.

In contrast to this estimate, the Mound City and Hopeton earthworks lay less than 2.5 kilometers apart, which would equate to their each having a catchment radius of only 1.25 kilometers if each earthwork was the center of its own local symbolic community. The two earthworks are less than an hour's walk apart. Thus, Mound City and Hopeton are too close, by ethnographic and Hopewellian standards, to have been ceremonial sites at the centers of two distinct local symbolic communities. Given that the two sites also are contemporaneous (Ruby et al. 2005:161, Figure 4.5) and complementary in function, it is likely that they represent two ceremonial grounds within one local symbolic community with a differentiated ritual landscape. The Ginther platform mound and adjacent Shilder burial mound, and the Cedar Banks enclosure with a platform mound, which are respectively only 0.9 and 1.6 kilometers distance from Hopeton, again may have fallen within the local symbolic community that included Hopeton and Mound City; however, it is unknown whether Cedar Banks, Ginther, and Shilder were contemporaneous with Hopeton and Mound City.

Similar arguments can be made for the other three local symbolic communities mentioned above, which each contained two ceremonial centers with tripartite symbolism within their lands. From Seip to Baum is only 6.3 kilometers; from Liberty to Works East is only 8.8 kilometers; and from Old Town to Hopewell is only 9.6 kilometers. Each of these intersite distances is less than the 6–11 kilometer estimate of the diameters of Ohio Hopewell local symbolic communities, suggesting that sites of a pair fall within the same local symbolic community. The complementarity of the functions of sites in each pair (see above), and several lines of evidence for the overlap in time of all six of these sites (Carr 2005a:305–307), support this reconstruction.

An Example of a Local Symbolic Community

The local symbolic community centered around the Seip and Baum earthworks in main Paint Creek valley provides a good illustration of local symbolic communities in the Scioto-Paint Creek area. The two earthworks are very similar in formal design (Figure 3.4B,C). Both are tripartite, comprised of an 11 hectare square, a 16 hectare large circle, and a 4 hectare small circle. The squares of both earthworks have breaks in their walls at each vertex and at the middle of each side. A "marker" mound sits just interior to each of the breaks in each side. Although the similar geometry of the two sites speak to their having been built by people who shared an identity and symbolized it (i.e., a local symbolic community), other features of the sites show their complementary ritual functions. Seip's square is oriented to the winter solstice sunrise, whereas Baum's square is oriented to the winter solstice sunset (Romain 2004:104, 2005). Seip's large circle enclosed two large burial mounds, each with a charnel house with many deceased persons, whereas Baum's large circle enclosed no burial mounds and only one small stone circle. Excluding marker mounds, Seip had a total of 14 known or potential burial mounds within and immediately outside of it, whereas Baum had only one, but did have a platform mound outside of it.

Two additional, small mound centers may also have been a part of the Seip-Baum local symbolic community. Rockhold, to the west of Seip, had three mounds that held a total of five people. No earthen enclosure was associated with the mounds. The Bourneville complex, to the east of Baum, had one mound with eleven people, a second that has not been excavated, a small 3.2 hectare ditch-and-embankment circle, and a tiny 0.3 hectare ditch-and-embankment circle (Figure 1.3). It is more probable than not that the excavated mound floors at Rockhold and Bourneville were approximately contemporaneous with the charnel houses under Pricer and Conjoined mounds at Seip, based on Ruhl's (1996:figure 9; Ruhl and Seeman 1998) earspool chronological seriation (see Carr, Chapter 15, Chronological Uncertainties in the Scioto-Paint Creek Area). The Rockhold cemetery was built and used by probably a few related households. The Bourneville complex was built by perhaps a slightly larger number of households. For both sites, the households that constructed them had some people who were important at a broader social scale, evidenced by the ritual paraphernalia with which they were buried, and were distinct in this way from other households of more common people within the local symbolic community. In their social distinction, some members of these households were accorded mound burial at Rockhold and Bourneville, whereas other members, and many people within the local symbolic community generally, were not (see below). The fourteen small mounds within and around the Seip earthwork may also each have been a cemetery for select members of a few prestigious households within the community.[11]

The two charnel houses at Seip were used sequentially, first the larger beneath the Pricer mound, with 102 deceased persons on its floor, and then the smaller one beneath the Conjoined mound, with 43 deceased persons on its floor (Carr 2005a:309–310; Greber 1979b:37; 1997:215). The sex ratio and age-at-death profile of the individuals buried under the Pricer mound is in line with the interpretation that the mound was a community cemetery: no major age or sex group was excluded from it, and only newborns to one year olds were underrepresented, as is often the case for prehistoric Native cemeteries in the Eastern Woodlands (Konigsberg 1985:129–130). It is not possible to make a similar demographic assessment for the deceased persons buried under the Conjoined mound.[12]

Many of the social roles of those who lived in the local symbolic community situated around Seip and Baum can be inferred from the items placed with individuals who were buried in the Pricer mound, specifically in the lobe that represented that community. The lobe with the second largest burial population – the middle lobe – appears to be the relevant one (Carr 2005a:310–311). There, community-wide leadership is indicated by copper celts; some other kind of leadership is marked by a copper crescent; public ceremonial leadership is seen in a marine shell cup probably used to serve a substance like the black drink of historic Southeastern Native Americans; other possibly public ceremonial roles are found in a shark's tooth scratcher and a painting cup; shaman-like hunt and/or war divination, or sending or pulling power intrusions, is marked by obsidian bifaces; some other kind of shaman-like divination is indicated by boatstones; shaman-like body processing and possibly psychopomp work is suggested by awls; and prestigious sodality membership and/or achievement is marked by breastplates and earspools. Link-shaped mica cutouts, a copper-covered button, and a butterfly-shaped obsidian biface erratic indicate other important persons.

The individuals who had these items of social and ritual leadership and achievement are too numerous (n = 17, 46% of 37 individuals) compared to other, apparently more common persons who were not accompanied by such important items (n = 20, 54%) for the burial population in the middle lobe to be a cross-section of a community in one slice of time. Select persons from the local symbolic community in Paint Creek valley were accorded burial in the Pricer mound, and a great majority of the community's members were disposed of elsewhere, without mound burial. Selection of important people for burial in mounds was a broadly distributed practice in the area (Prufer 1964a:74), but not ubiquitious (e.g, the Tremper mound; Mills 1916).[13]

Of the nine clans that had animal eponyms or totems and are known among Hopewellian communities in the Scioto-Paint Creek area (Keller and Carr 2005:358–361), only two are indicated by clan items placed in burials in the Pricer Mound. They are Feline and Bear. The clan affiliation of most persons buried in the Pricer Mound went unmarked, so it is possible that the Seip-Baum community included other, undetected clans. The small mound centers of Rockhold and Bourneville included markers of only the Bear clan.

SUSTAINABLE COMMUNITIES

In the Scioto-Paint Creek area, earthen enclosure ceremonial centers were seldom, if ever, built and used by members of a single local symbolic community. Instead, multiple local symbolic communities, which together sometimes comprised a sustainable community, sometimes not, combined their efforts to construct ceremonial centers and participated together there in rituals and other activities.

Local symbolic communities and sustainable communities in the Scioto-Paint Creek area can be identified and the relationship between them can be explored through geographic analysis, through study of the labor required to construct ceremonial centers, and with contextual information. Let us consider each of these means.

Within the Scioto-Paint Creek area, there are ten earthen enclosures for which some kind of evidence – radiocarbon dates, artifact styles, or architectural similarities – suggests their approximate contemporaneity.[14] A histogram of the first through ninth nearest-neighbor straight-line distances among these ten sites (Figure 3.5) reveals clustering of the sites at three nested geographic scales – the three modes of the histogram. These scales are: 3–6 kilometers (mode, 3 kilometers), 6–13 kilometers (mode, 6–10 kilometers), and 13–31 kilometers (mode, 16–18 kilometers). The first mode can be identified as the distance between very closely spaced centers within a single local symbolic community, per estimations of the catchment radii of local symbolic communities of swidden farmers in crosscultural ethnographic and Ohio Hopewell cases (3–5.5 kilometers radius, see above, Local Symbolic Communities). By the same logic, the second mode can be identified as the expanse of a single local symbolic community's earthworks, including its most distant earthworks. The second mode is similar to the diameters of local symbolic communities of swidden farmers and ethnographic and Ohio Hopewell cases (6–11 kilometers, see above, Local Symbolic Communities). The third mode indicates the expanse of multiple local symbolic communities within a single, broader sustainable community, specifically the distances between earthworks

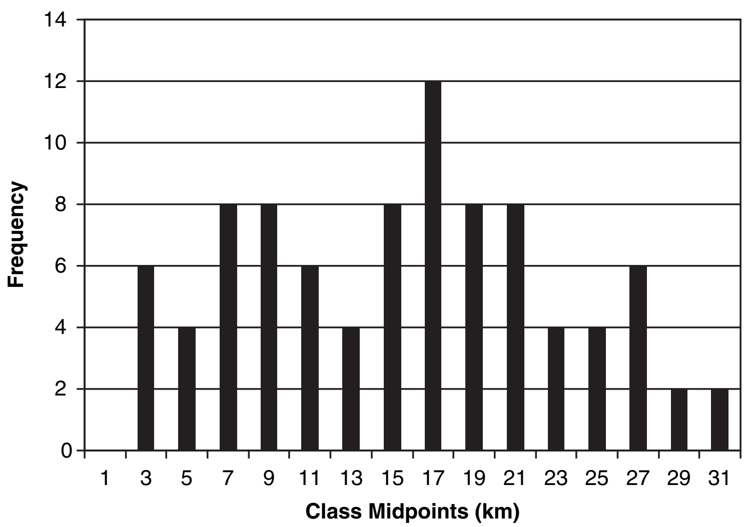


Figure 3.5. Histogram of nearest neighbor distances for ten earthworks in the Scioto-Paint Creek area and suspected to have been fully or partially contemporaneous. First through ninth nearest-neighbor distances are included for each earthwork. See Note 14 for a list of the ten earthworks.

in different, geographically separated local symbolic communities. The actual coherence of this sustainable community is evidenced by a labor analysis and contextual information provided below.

The four local symbolic communities discussed above and their interrelationships can be understood in light of this geographic model. The straight-line (air) distances between the paired sites of Mound City and Hopeton (2.5 kilometers) early in the Middle Woodland Period, and between the paired sites of Seip and Baum (6.3 kilometers), between the paired sites of Liberty and Works East (8.8 kilometers), and between the paired sites of Hopewell and Old Town (9.6 kilometers) later in the Middle Woodland Period, each fall within either the first, 3–6 kilometer mode for the distances between closely neighboring earthworks within a local symbolic community, or the second, 6–13 kilometer mode for the expanse of a single local symbolic community and its most distant earthworks. The occurrence of a pair of earthworks within each of the four local symbolic communities is implied. The distances between the nearest earthworks in adjacent local symbolic communities in the later part of the Middle Woodland period – between Baum and Hopewell (13.0 kilometers), and between Hopewell and Works East (14.6 kilometers) – fall within or close to the second, 6–13 kilometer mode for the expanse of a single local symbolic community's earthworks, including its most distant earthworks. This implies that the three local symbolic communities in main Paint Creek valley, the North Fork of Paint Creek valley, and the adjacent Scioto valley were not tightly packed together but, instead, had buffering lands between them. These buffers were approximately the size of the local symbolic communities, themselves. Again, for the later part of the Middle Woodland period, the distances between the centroids of the Seip-Baum local symbolic community and the Hopewell-Old Town local symbolic community (15.9 kilometers), between the Hopewell-Old Town local symbolic community and the Liberty-Works East local symbolic community (23.0 kilometers), and between the Liberty-Works East local symbolic community and the Seip-Baum local symbolic community (25.3 kilometers) fall within the third, 13–31 kilometer mode for the expanse of multiple local symbolic communities within a single, broader sustainable community. The three local symbolic communities in main Paint Creek valley, in the North Fork of Paint Creek valley, and in an adjacent section of the Scioto valley comprised a single sustainable community.

These relationships among earthworks and the identifications of local symbolic communities and a sustainable community in the later portion of the Middle Woodland period are captured in Figure 3.6. When catchments approximating the diameters (10 kilometers) of local symbolic communities in the Scioto-Paint Creek area are drawn around each of the six earthworks with tripartite symbolism, the catchments of earthworks within the same local symbolic community overlap and the catchments of earthworks in different local symbolic communities do not. The three local symbolic communities in main Paint Creek valley, the North Fork of Paint Creek valley, and in an adjacent segment of the Scioto valley are well defined. Together, these three communities formed a sustainable community.

That the three local symbolic communities in the later Middle Woodland did in fact constitute a coherent, sustainable community in functional terms, not simply in their geographic distribution – that is, that they constituted a regional social network within which mates, labor, food, and/or other material resources were regularly exchanged – is evident from a labor analysis made by Bernardini (1999, 2004) and other contextual information. For five of the six earthworks with tripartite symbolism, Bernardini calculated the number of person-hours it would have taken to construct the enclosure walls of each earthwork and the geographic sizes of the catchments from which laborers would have had to have been drawn to do so. The parameters that were used to make the calculations, and the resulting catchment diameters, are very conservative.[15] Nevertheless, the catchments overlap greatly – between 45% and 80% of

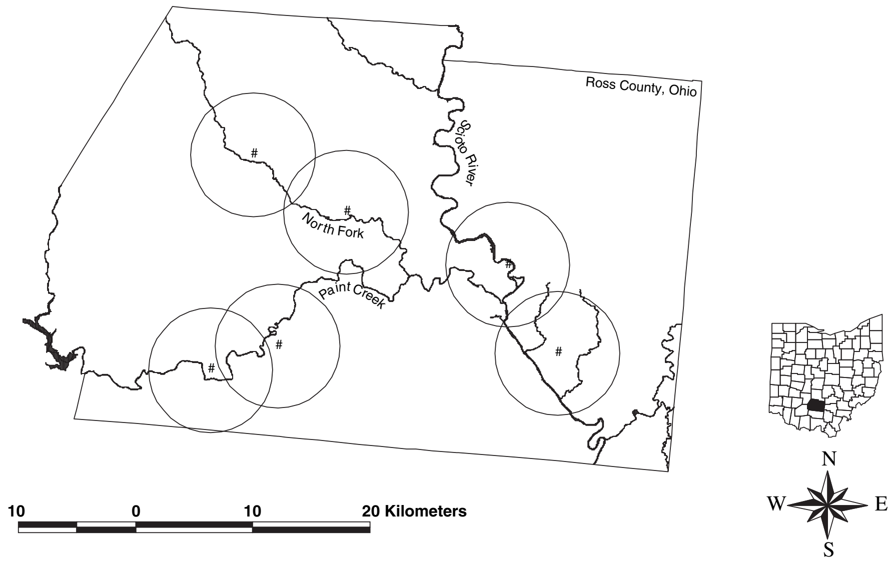


Figure 3.6. Ten kilometer diameter catchments around six tripartite earthworks in the Scioto-Paint Creek area: Seip, Baum, Old Town, Hopewell, Liberty, and Works East. The earthworks formed three local symbolic communities and one sustainable community.

their areas – showing that people from each of the three local symbolic communities in main Paint Creek valley, the North Fork of Paint Creek valley, and an adjacent section of the Scioto valley contributed substantial labor toward the building of each others' earthworks (Figure 3.7). In other words, the households in the local symbolic communities in the three valleys constituted a sustainable community.

A stylistic analysis of fabrics from the mortuaries at Seip, Liberty, Hopewell, and other sites in the three valleys that were home to the three local symbolic communities also shows their close social relations (Carr and Maslowski 1995:328–339). Certain distinctive stylistic traits were found to concentrate in each of the three valleys, characterizing the fabrics there and suggesting their manufacture in those valleys. However, cloths with the traits distinctive of one valley were occasionally found at sites in the other two valleys. This sharing of fabric styles among the three local symbolic communities in the three valleys suggests intercommunity exchange of fabrics and/or intermarrying among the three communities of persons who made the fabrics and/or the burial of clothed or shrouded persons from the three communities in each others' earthworks. Each of these possible interpretations implies that the three communities were closely tied together.

This conclusion is reinforced by strong similarities in the morphology of the tripartite earthworks in the three local symbolic communities (see above, Figure 3.4B–D, F–G). The similarities suggest at least the sharing of design details among the community leaders who planned the earthworks, and may point to the pooling of planning efforts, themselves. In particular, Seip, Baum, Old Town, Works East, and Liberty each have a large square, a large circle, and a small circle. These elements are not only the same in shape, but similar in size: an 11 hectare square, a 16 hectare large circle, and a 4 hectare small circle. The absolute dimensions of these features are very close in some cases: the small circles at Seip, Baum, Old Town, and Works East have diameters within 40 feet of each other (5.6% error); the squares at Old Town and Works East have sides within 10 feet of each other (1.0% error);

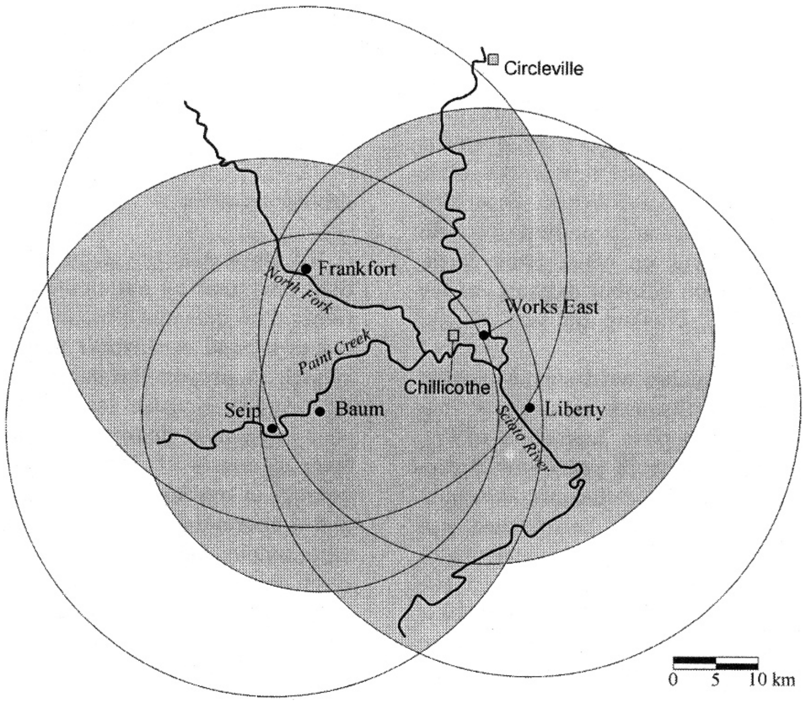


Figure 3.7. Overlapping catchments from which laborers likely were drawn during the construction of five of the six tripartite earthworks in Figure 3.6: Seip, Baum, Old Town, Liberty, and Works East. Assumes 350 laborers at a density of 0.5 laborers per square kilometer for 25 work-days per year. Catchments for 50 work-days per year are similar. See credits.

the squares at Seip and Liberty have sides within 15 feet of each other (1.3% error); and the large circles at Seip, Old Town, and Works East have diameters within 50 feet of each other (3.4% error), with those at Old Town and Works East being practically identical in size (Romain 2000:46–54). In addition, the dimensional similarities of the earthworks in turn allow the sharing among some of them of unusual and detailed geometric relationships. For both Old Town and Works East, their squares fit very closely within their large circles (i.e., the diagonals of their squares are close to the diameters of their large circles; Figure 3.8A). In addition, their small circles have a diameter approximately equal to the side of a square nested in their square (i.e., *ad quadratum* geometry; Figure 3.8B).[16]

Further, the charnel house under the Pricer mound in the Seip earthwork and that under the Edwin Harness mound in the Liberty earthwork, which occur in different local symbolic communities, had almost the same shape and were similar in size (see below, Figure 3.9A, C).[17] This strong architectural equivalence again suggests minimally the sharing of design details among the two community's leaders who planned the two charnel buildings, and perhaps the sharing of planning efforts and labor among the communities to construct the buildings.

Finally, close ties among the three local symbolic communities is suggested by the fully complementary celestial orientations of their tripartite earthworks. These differences in orientation suggest the possibility that the three local symbolic communities gathered together at one or another of each other's earthworks at different seasons of the year, to hold ceremonies with different purposes. No one local symbolic community contained the whole of the annual ceremonial calendar within its earthwork architectural repertoire, so

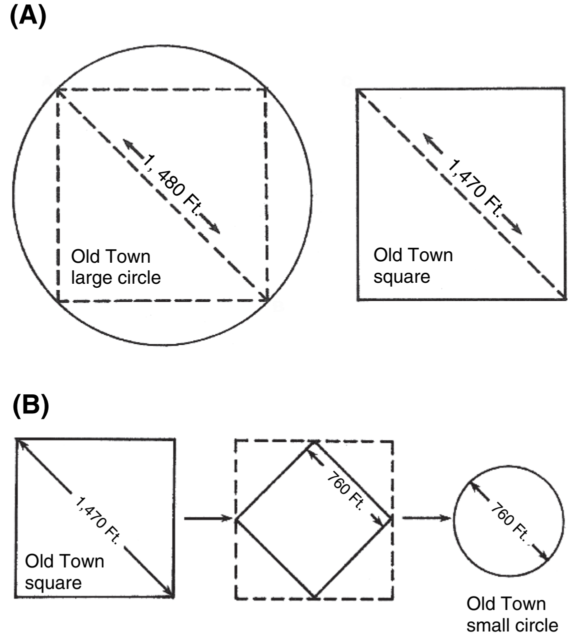
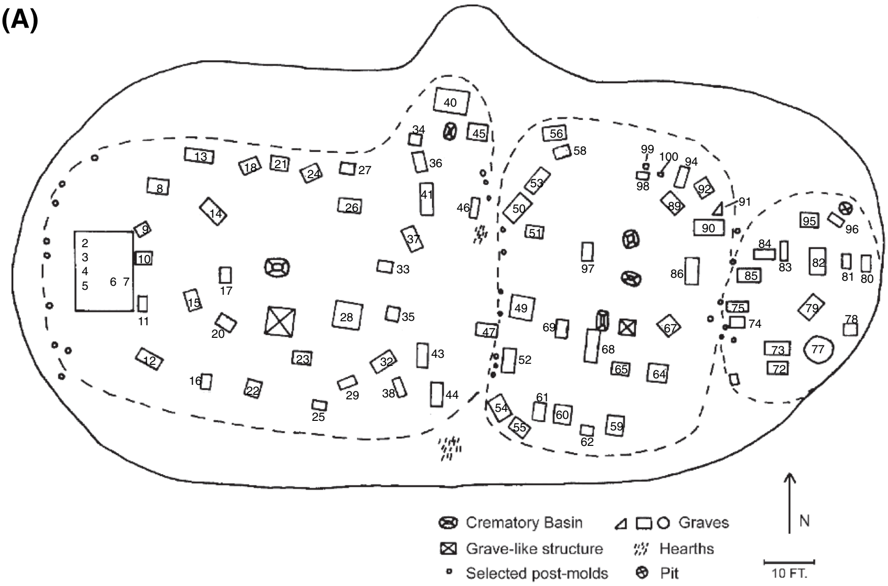


Figure 3.8. Geometric relationships shared by some tripartite earthworks in the Scioto-Paint Creek area. (A) The squares of the Old Town (Frank fort) and Works East earthen enclosures fit very closely within their large circles, i.e., the diagonals of their squares are close to the diameters of their large circles. (B) The small circles of the Old Town and Works East earthen enclosures have diameters approximately equal to the side of a square nested in their square, i.e., *ad quadratum* geometry. See credits.

each community depended on the other two for its ceremonial and spiritual completeness. Specifically, in main Paint Creek, the major diagonal axis through opposite corners of the Seip earthwork's square was oriented to the winter solstice sunrise. The major axis through opposite sides of the Baum earthwork's square was oriented to the winter solstice sunset. In the main Scioto valley, the minor diagonal axis through opposite corners of the Liberty earthwork's square was oriented to the spring/fall equinox. The square of Works East was oriented in a yet different direction, which cannot be specified for its exact celestial correlate for a lack of adequate survey data. In the North Fork of Paint Creek, the square of the Old Town earthwork was oriented in a yet different, fifth direction. It likewise cannot be assessed for its exact celestial correlate because of inadequate survey data (Romain 2004:104, table 6.11; 2005:appendix 3.1; see also Carr 2005b:86–87).

In all, the earthwork and charnel house geometry and symbolism shared by the three local symbolic communities suggest that, together as a sustainable community, they not only exchanged critical resources like labor as shown by the labor analysis, but also were a self-recognizing group and had a shared sense of identity. Further, because members of all three local symbolic communities were involved in the sharing of plans and the building of the earthworks within each community, it is likely that all three also joined together for ceremonies and other activities within the earthworks of each community. The complementary celestial orientations of the five tripartite earthworks within the three local symbolic communities

(A)



(B)

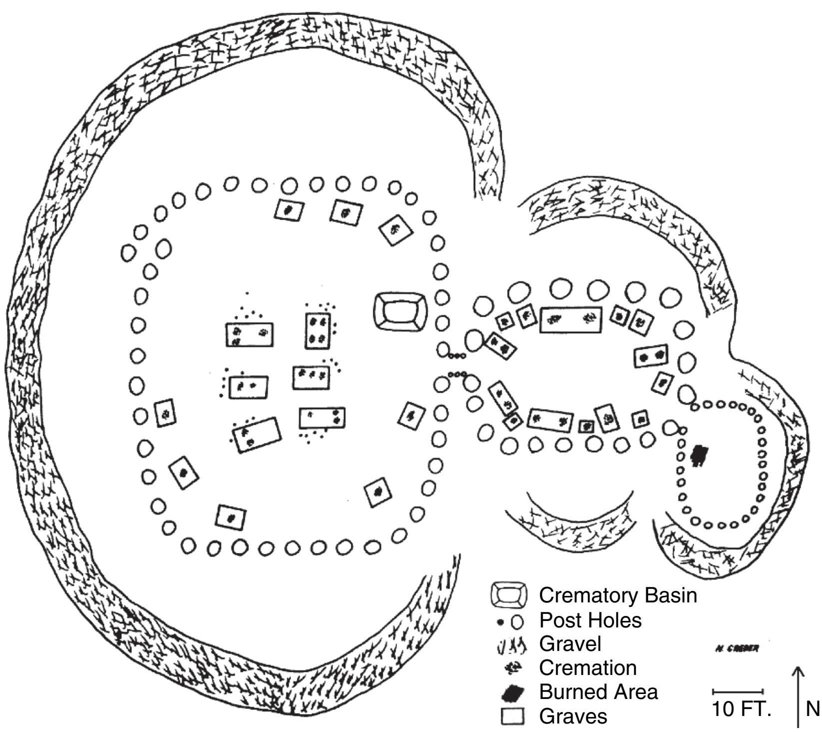


Figure 3.9. (A) Floor plan of the charnel house under the Pricer mound in the Seip earthwork. (B) Floor plan of the charnel house under the Conjoined mound in the Seip earthwork. (C) Floor plan of the charnel house under the Edwin Harness mound in the Liberty earthwork. (D) Floor plan of the charnel house under Mound 25 in the Hopewell site. See credits.

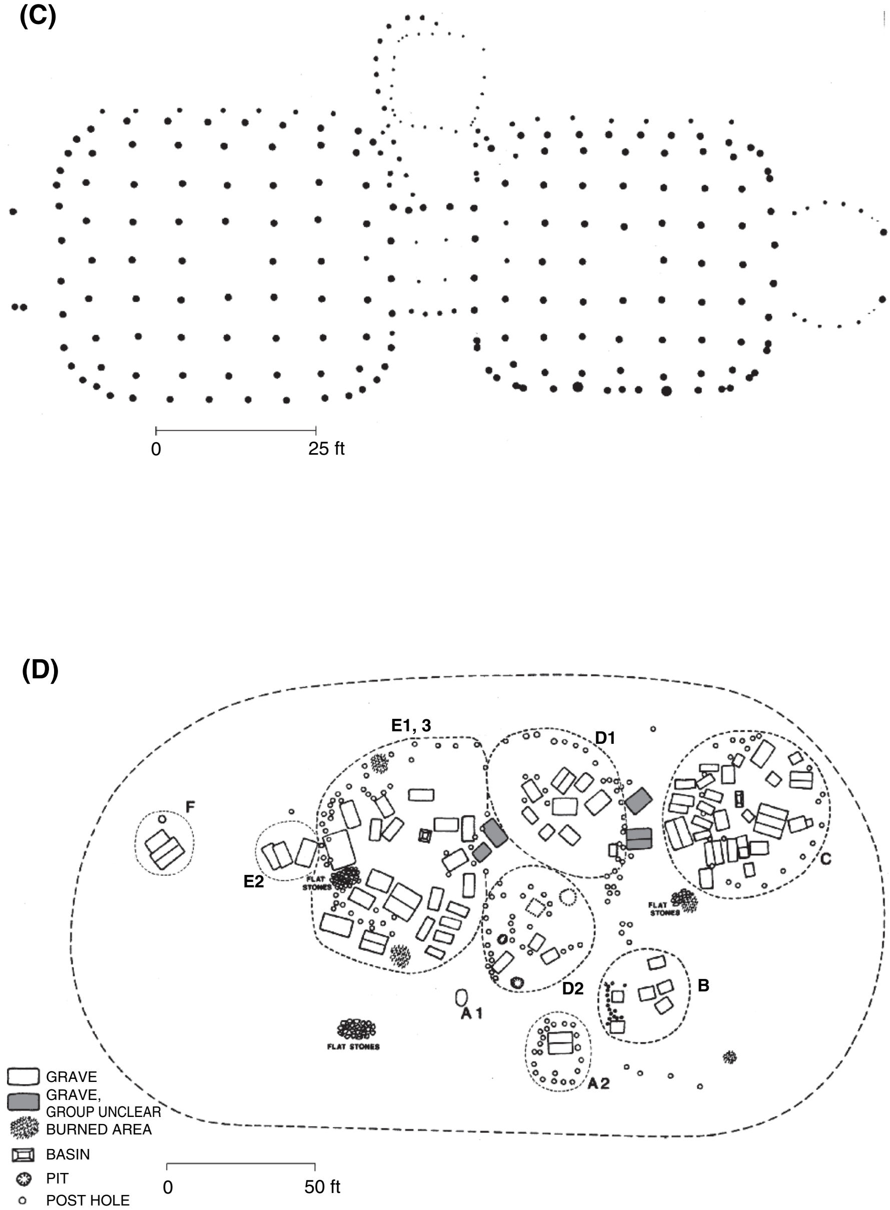


Figure 3.9. ***(continued)***

reinforces this inference. This idea is shown to actually have been the case with additional empirical evidence, provided in the example in the subsection immediately below.

For the early Middle Woodland, when the Tremper earthwork and then the Mound City and Hopeton (and Ginther?) earthworks were used, no equivalent organization of multiple local symbolic communities, each with earthworks within its own land that were planned, built, and used together by all of the communities as a sustainable community, is known. Instead, it appears that multiple local symbolic communities joined together for rituals and other activities as a sustainable community at only the one site of Tremper, within the land of one local symbolic community. Likewise, multiple local symbolic communities shared in ceremony and other activities as a sustainable community at the Mound City and Hopeton (and Ginther?) earthworks, within the land of one local symbolic community.

The degrees to which neighboring local symbolic communities in the Scioto-Paint Creek area were stable or fluid in their membership, and territorial or permissible about the use of their lands, is unknown at this time. Gatherings of people from several local symbolic communities in a ceremonial center, to build it and participate in rituals together there, would have provided contexts for community affiliation to be negotiated. Whether this was done is uncertain. Regarding territoriality, the three local symbolic communities in main Paint Creek valley, the North Fork of Paint Creek valley, and the adjacent Scioto valley were each separated and buffered from one another by good distances greater than the 6–13 kilometer modal expanse of a single local symbolic community and its earthworks in the Scioto-Paint Creek area.[18] These separations seem to represent light population densities and communities that were not packed together. Alternatively, the spatial pattern might indicate the contraction of communities at their edges in response to each other.

An Example of a Sustainable Community

Beyond the basic archaeological task of identifying a sustainable community, it is essential to understand the particular activities, relationships, and cultural principles by which households of a sustainable community were bought together, integrated, and coordinated, and perhaps expressed a common identity – the dynamic life of the community. For the sustainable community identified above, comprised of three local symbolic communities whose earthworks had a tripartite symbolism, households in different local symbolic communities were found to have been integrated through jointly building earthen ceremonial centers, and perhaps charnel houses, in one another's lands, and probably through jointly participating in ceremonies there. They expressed their shared identity through the similar geometries of the earthworks and charnel houses they built. Here, archaeological evidence that the three local symbolic communities did, in fact, join together for ceremonies in earthworks in each other's lands is presented. The ceremonies involved the communities burying their deceased relatives together in shared cemeteries.

Below each of the Pricer mound within the Seip earthwork, the Edwin Harness mound within the Liberty earthwork, and Mound 25 within the Hopewell site, deceased persons were laid to rest in three major groups within charnel houses that were divided into three major rooms along their length (Greber 1976, 1979a,b, 1983; Greber and Ruhl 1989) (Figure 3.9A–D). A three roomed charnel house was also built under the Conjoined mound within the Seip earthwork, although only two of the rooms came to be filled with burials (Greber 1976, 1979a). Within the Old Town earthwork, a similar three-fold layout of burials probably occurred below three conjoined mounds, although only one of the mounds and its burials has been excavated (Moorehead 1892:133–143; see also Greber 2003:91).[19] These tripartite divisions of burials and charnel houses strongly reiterated the tripartite design of the earthworks in which they were constructed or, in the case of the Hopewell site, a complementary earthwork (Old Town) within the same local symbolic community.

In each of these mounds, the three major clusters of burials and/or the three rooms of the charnel house represented the three local symbolic communities in main Paint Creek valley, the North Fork of Paint Creek valley, and the Scioto valley. Persons from different local symbolic communities were buried in the different clusters or charnel rooms below a mound, segregated from one another. The totality of the mound or charnel house symbolized the shared identity of these persons as members of a single sustainable community, while not erasing their affiliations in different local symbolic communities. These cemetery statements of local social distinctions yet supralocal ties were distributed across all three of the river valleys that were home to the three local symbolic communities. In anthropological terms, the three local symbolic communities did not constitute a formal polity but, rather, were three separate social groups linked by alliance and a developing sense of mutual identity. The alliance was forged and maintained by the communities coming together to bury representatives of their deceased together in the same burial mounds, thereby creating "permanent" spiritual ties among their relatives and, by extension, also among the living. This means of alliance was buttressed by many other forms of supralocal connection, including dyadic economic partnerships, intermarriage, mortuary and nonmortuary ritual sodalities, complementary leadership roles, complementary clan roles, nonlocalized clan organization, and an incipient form of supralocal, centralized leadership (Carr, Chapter 4). However, in the eyes of the Hopewell people in the Scioto-Paint Creek area, spiritual alliance was the most important form of supralocal connection, and it was on this connection that they placed primary symbolic attention in the layouts of their geometric earthworks and charnel houses (Carr 2005a:318–319).

The identity of the separate clusters of burials under each of the five mounds as members of different local symbolic communities can be concluded from several archaeological patterns. The social composition of the population of deceased persons in each cluster under the Pricer, Conjoined, Hopewell 25, and Edwin Harness mounds, to the extent known, had the characteristics of a community. Each cluster had persons of a wide range of social roles, clans, prestige, ages, and both sexes. Some burial population characteristics varied among the clusters of a mound in ways one might expect them to vary among communities: the particular clans present, assuming that some clans were localized; the proportions of adults to subadults and males to females selected for burial to represent their community; the proportion of prestigious burials and overall community wealth; the number of individuals buried in a cluster and thus the inferred size of their community and the diversity of clans as related to cluster population size and inferred community size.[20] Other interpretations of the burial clusters as other kinds of social groups – rank groups, leaders of different kinds, leaders versus followers, sodalities of different kinds, clans with different eponym species, age sets, genders, people who differed in the circumstances of their deaths, people bound to different afterlives – can each be ruled out for reason of contradictory patterns in the mortuary record (Carr 2005a:287–293).

The interpretation that each mound and charnel house with its three clusters of deceased persons symbolized their shared identity as members of a single alliance unit is well supported by a widespread metaphor of historic Native Americans in the Eastern Woodlands. Historic peoples of the Woodlands drew an equation between the domestic dwelling, on the one hand, and a large ceremonial building, a mound, a ceremonial dance ground, or a whole ceremonial center, on the other. In turn, these correspondences equated the family with the community, a multicommunity cooperative unit, or the cosmos at large, and implied the appropriateness of family-like ties and cooperation at these broader social scales. For example, in the Shawnee language, the word for a ceremonial building or stomp ground means "Big House" (Greber 1979b:28; 1983:26–27). In the 18th Century Muskogee language of the Creek in Alabama and Georgia, domestic dwelling and mound are equated (Knight 1989:280). Among Muskogee, Yuchi, Iroquoian, Siouan, Caddoan, and Algonkian speakers, the domestic dwelling was likened to the entire village or a congregation of bands or tribal segments (DeBoer 1997:229). By analogy, the Scioto Hopewell practice of different local symbolic communities burying their dead together in one charnel house or "Big House" under one mound would have symbolized the family-like cooperation among those communities (see Galloway and Kidwell 2004:508 and Swanton 1931:170–194 for this logic among the Choctaw) and the social identity they shared as members of an intercommunity alliance.

The act of the three Scioto Hopewell local symbolic communities burying their dead together, by its mortuary and spiritual nature, would have been a structurally substantial, ideologically potent, and long-lasting means for the communities to foster cooperation among themselves and a sense of mutual identity. Specifically, the burial of their deceased relatives within one charnel house could have symbolized the eternal cooperation of the relatives from the three communities with each other – a sacred contract. In turn, this cooperation at the spiritual level would have served as a model for behavior among the living, with potential consequences from deceased elders for those living descendants who violated the contract. This cultural logic is reasonable to propose for the Scioto Hopewell situation, given that it was the religious-ideological foundation for the historic Huron and Algonkian Feasts of the Dead (Heidenreich 1978:374–375; Hickerson 1960; Trigger 1969:106–112), which involved the burying together of the dead from multiple communities and/or tribes in order to build alliances among them, and given that this strategy for alliance building has great historical time depth in the Woodlands, going back to the Late Archaic in northern Ohio (Stothers and Abel 1993).

In sum, diverse mortuary evidence, an analogy to a broadly spread historic Woodlands Native American metaphor, and an analogy to the symbolic logic of Huron and Algonkian mortuary rites all point to three Scioto Hopewell local symbolic communities having joined together for ceremonies in each other's lands, having solidified and maintained an alliance with one another, and having developed a sense of social identity. The three communities had formed a "sustainable community" in more than the minimal ways defined at the beginning of this chapter.

Within the ceremonial landscape of the three symbolic communities, the Hopewell site in the North Fork of Paint Creek valley had a special role compared to those of Seip, Baum, Old Town, Liberty, and Works East. It was the burial place of largely a select group of important persons who filled key social roles of responsibility in each of the three local symbolic communities. In contrast, the cemeteries in Seip, Old Town, and Liberty contained a somewhat broader, yet still prestige-biased spectrum of persons from the three local symbolic communities. Several lines of archaeological evidence suggest this interpretation. The Hopewell site, especially Mound 25, stands out relative to Seip, Old Town, Liberty, and all other Scioto Hopewell mortuary sites in the richness of many aspects of its material record: total mound volume, total amounts and diversity of Hopewell Interaction Sphere finished artifacts and exotic raw materials (e.g., Seeman 1979a:392–393), the very large number and sizes of nonburial deposits ("caches") of ceremonial paraphernalia, and the quality of crafting of some ceremonial artifact forms (e.g., obsidian bifaces, copper cutouts). These material accumulations point to the prestige of those buried at Hopewell. So, too, does the very high proportion of extended inhumations compared to cremations at the site. In the Scioto-Paint Creek area, inhumation was more commonly accorded to leaders and other persons of high prestige, who were buried with copper headplates, celts, breastplates, and earspools, than was cremation. In other Hopewellian cemeteries in the Scioto-Paint Creek area, few persons were inhumed and most were cremated.[21] The Hopewell site also has a demographically unique burial population. Subadults are almost completely missing, and males are more common than females on the order of 3 males to 2 females. In social terms, the Hopewell site was a place of burial for persons who had lived to be old enough to accumulate prestige or to demonstrate the prestige they might have inherited. In contrast, the burial populations of the Seip, Liberty, and Ater cemeteries do not show biases toward adults, and the sex distribution of deceased persons at Seip is even; these cemeteries were open to a wider range of community members. All of these lines of evidence converge on the conclusion that the Hopewell site was a special cemetery for the burial of primarily key social figures from the region and its three allied, local symbolic communities, once that alliance had formed.

Centralized Leadership, Identity, and Alliance

The specific manners in which people in the three local symbolic communities were interconnected, and how they conceived of their relationships with one another, are necessary to understand because they would have had bearing on the form and quality of workings of many aspects of Scioto Hopewell life. Three most basic alternatives are possible, which I have begun to define and distinguish in the above discussion. People in the three communities might have thought of themselves as a whole, single, self-recognized polity[22] and society, if they were both governed by a centralized leadership and closely knit by kinship, marriage, spiritual ties, religious beliefs, and essential activities. Alternatively, they might not have been centrally governed, yet had a mutual sense of social identity and been well integrated by other social and cultural means of cooperation. Finally, the three local symbolic communities might not have had any single sense of identity but, instead, thought of themselves as separate but cooperating peoples – as allies, alone.

There is no evidence that the three local symbolic communities were integrated through one or a few centralized leadership positions that had strong supralocal domains of political and/or religious power, and/or that were solidly symbolic of the unity and well being of the communities at large – chiefs, chief-priests, priests, or divine kings (e.g., Earle 1997; Frazer 1935, vol 4; Huntington and Metcalf 1979: 123–124, 153–183; Netting 1972; Peebles and Kus 1977; Winkelman 1992: 69–75). Such positions in chiefdoms and kingdoms are commonly symbolized by elite residence and/or burial in the polity's geographic center, sometimes conceived of as the center of the cosmos (e.g., Huntington and Metcalf 1979:123). To the contrary, the Hopewell site is located in the narrow, North Fork of Paint Creek valley, away from the geographic center of the three local symbolic communities. Also, the redundant construction of tripartite earthworks in the lands of each of the three local symbolic communities suggests a geographically dispersed ritual-political organization. Further, the tripartite division of these earthworks, and of the large charnel houses and mounds within them, as well as the separation of deceased individuals within a charnel house by local symbolic community, all point to the retention of local community identities while expressing the process of unifying rather than unity, itself.

Leaders with incipient, supralocal domains of power, marked by plain copper headplates lacking animal referents along with stone celts, and by conch shell dippers along with shell spoons, are evident from the distributions of these artifacts within charnel houses (Chapter 4, Geographic Domains of Power of Leadership Roles; Carr and Case 2005b: 221–223, table 5.6). However the political strength of the individuals who filled these roles appears to have been weak (Chapter 4, The Question of Priest-Chief), and their roles were poorly institutionalized (Chapter 4, The Nature and Organization of Leadership Roles), as measured by several kinds of archaeological evidence. In addition, these leaders were not buried in the regionally most prestigious charnel house, under Hopewell Mound 25, but instead in the charnel house under the Seip-Pricer mound.

All of these pieces of evidence together suggest that the three local symbolic communities did not constitute a formal "polity" and think of themselves as such. Nevertheless, the three communities do appear to have had a shared sense of social-spiritual identity and of being more than a suite of allies, alone. Evidence of multiple kinds point to this self-recognition: the communities having buried their dead together in each of several charnel houses that, by historic analogy, symbolized their family-like and spiritual ties; the covering of each three-room charnel house by a unifying mantle of soil rather than three distinct caps in all cases where mound construction reached completion; the very similar layouts and sizes of the five tripartite earthworks in the different communities; the very similar sizes and shapes of two of the charnel houses (Seip-Pricer, Edwin Harness) in two of the communities;

and the complementarity of the earthworks in their celestial orientations and likely ceremonial functions and times of use by the regional population.[23]

The sense of social identity but not polity that the three local symbolic communities seem to have shared was succinctly represented by them apparently in a pair of copper geometric cutouts from the Copper Deposit under Hopewell Mound 25 (Figure 3.10). The sociological meaning of the geometrics can be understood as follows. The three lobes of each of the geometrics obviously represented something quite unique to Scioto Hopewell peoples. The cutouts are the only Scioto Hopewell artifacts of which I am aware that have a three-part design and symbolism, rather than a dualistic or four-part symbolism. Scioto Hopewell art emphasizes dualities such as light versus darkness and rough versus smooth, which were essential qualities of their cosmos, as well as four-part layouts, which refer to the four Cardinal Directions, Semi-cardinal Directions, and/or Solstice lines of their cosmos (Carr 1998, 2000b; Greber and Ruhl 1989:78–84; 275–283). I suggest that the three lobes of each of the geometrics represented the three local symbolic communities that had joined together to bury their dead and for other social and ritual activities. Just as tripartite earthworks, mounds, and charnel houses are unique to the time in Scioto Hopewell history when the three local symbolic communities forged close relationships and expressed those relationships, so the trilobate copper geometrics are unique to this time and likely expressed those relationships.

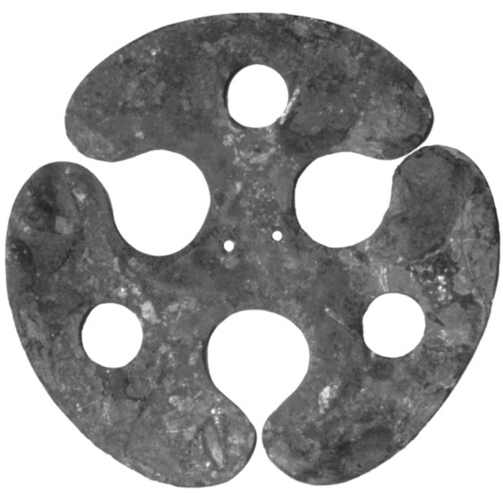


Figure 3.10. One of a pair of copper geometric cutouts from the Copper Deposit under Mound 25 in the Hopewell earthwork. See credits.

The circular shape of each of these two copper geometrics most likely represented the cosmos as a whole, as did other circular artifacts with four or eight-directional symbolism (e.g., Figures 1.8B right, 4.1S, 4.17B, C). If my identification of the three lobes is correct, the circle would also have represented the unification of the three local symbolic communities. This logic accords well with historic Woodland Native American symbolism, in which the circle is commonly layered with multiple meanings of different scales, such as domestic building, ceremonial building, ceremonial dance ground, a whole village, a congregation of bands or tribal segments, and/or the cosmos at large (see above).

Significant to the sense of social identity but not polity that architectural and mortuary evidence indicate the three local symbolic communities shared, each of the three lobes of the geometrics has its own center (a hole) – seemingly a representation of the three separate centers of the three communities and their retaining their individual political identities while nevertheless falling within the same circle of social, ceremonial, and spiritual ties. Also, there is no hole in the center of the geometric, implying no one center upon which all three communities focused politically. The absence of a center hole contrasts with the layouts of some circular symbols of the cosmos (e.g., Figures 1.8B right, 4.1S, 4.17B), which have a hole or depression at their center where lines of the Four Directions meet. Finally, the three community's perception of themselves as politically distinct is also implied by the physical separation of the three lobes of the geometric from one another and the lack of a continuous circular band around them. This format contrasts to Scioto Hopewell circular symbols of the cosmos with a continuous, circular circumference (e.g., Figures 1.8B right, 4.17B, D).

In all these regards, the trilobate copper cutouts conform well in their symbolism to the developing sense of social identity that the three local symbolic communities seem to have shared yet their lack of political unification. Other aspects of the cutouts may also reflect these social and political characteristics.[24]

A Second Example of a Sustainable Community

In the later portion of the Middle Woodland period in the Scioto-Paint Creek area, as just described, three local symbolic communities joined together to build earthworks and hold rituals in each other's lands. In the early Middle Woodland, the regional ceremonial landscape was simpler. Multiple local symbolic communities joined together for ceremony within one or a few earthworks within the land of only one of the local symbolic communities. This was the case for the sustainable community that used the Tremper mound, and another that used the Mound City and Hopeton earthworks and perhaps the Cedar Banks-Ginther-Shilder complex. Here, let us focus on the Tremper community.

Tremper (Mills 1916) is a comparatively small, earthen, subrectangular enclosure of 1.4 hectares that is located in the Scioto valley some 35 miles south of the large 16–31 hectare enclosures around Chillicothe. It is the earliest known geometric earthwork with a large charnel house and burial population in the valley, and seems to mark the beginning of Scioto Hopewellian forms of mortuary practices and their use to solidify alliances among large numbers of people.[25] Earlier Adena mounds and ritual enclosures appear to have typically been built by one or a few adjacent, small local residential groups to bury their own kin and/or persons of importance, to reaffirm intra-group ties, and perhaps to renew relationships with close neighbors (Clay 1987:53–54; 1992:80; see also Aument 1990). Most Adena mounds covered just one to a few persons (e.g., Dragoo 1963:147, 151, 152, 158, 161; Greber 1991:11; Webb and Snow 1974: 110–131). The largest burial populations found within Adena mounds range between only about 30 and 55 individuals, with one outlier at 86 individuals; most were amassed over extended time, with different subsets of persons buried in different vertical mound strata over the course of multiple episodes of interment, implying the burial of smaller numbers of deceased persons at any one time. In contrast, Tremper appears to have been the burial place for a whole, sustainable community. Tremper came to hold the cremated remains of about 375 individuals, which approaches the size of a sustainable community as a viable breeding population in perpetuity. The individuals were placed on one floor, implying the processing of many individuals at one time. The approximately 375 individuals buried at Tremper is more than the numbers of excavated individuals buried at the Hopewell earthwork (n = 218), in the Edwin Harness and Russell Brown mounds in the Liberty earthwork (n = 183), and in the Pricer and Conjoined mounds in the Seip earthwork (n = 171) (Carr et al. 2005:484), which represented sustainable communities. Tremper was constructed not far from the confluence of the Scioto and Ohio rivers, providing easy river access to it as a gathering place for potentially multiple local symbolic communities as a sustainable community. All these characteristics point to Tremper having served a large, sustainable community.

As at Hopewell, Seip, and Liberty, a large, multi-room charnel house was built at Tremper (Figure 3.11). The building contained up to 12 crematories, which were often separated from one another in different rooms of the charnel house or by rows of posts that may have supported screens, ensuring the privacy of cremation rituals performed by different social groups. Cremated remains were then aggregated into four depositories, one of which contained about three-quarters or more of the individuals, with the remaining persons having been divided roughly equally among the other three depositories (Mills 1916:277–278). The large depository was located in the east end of

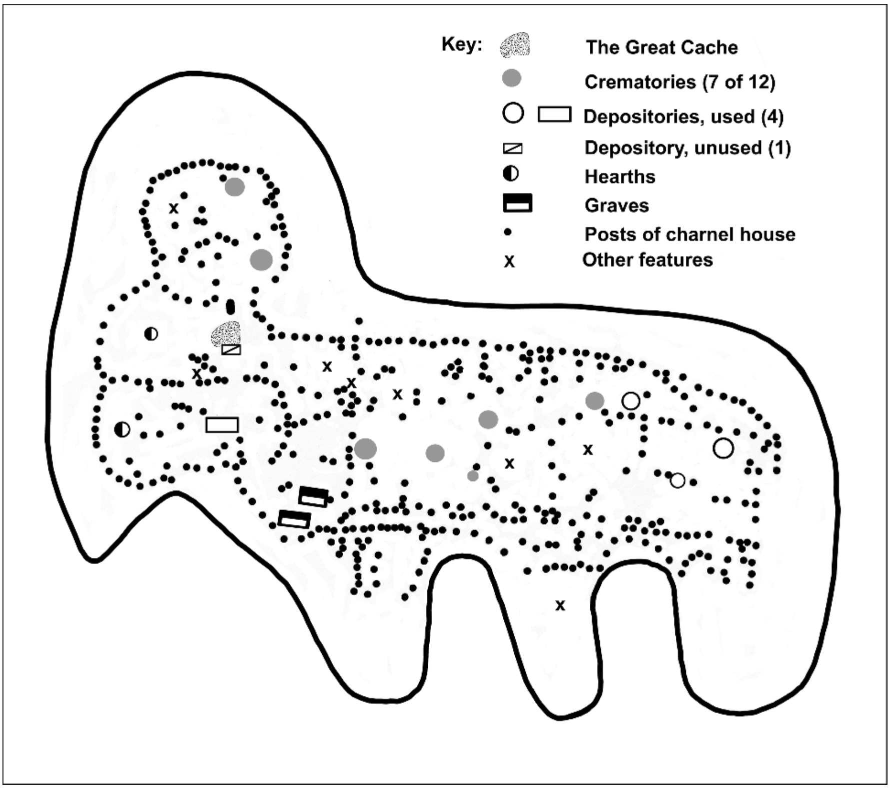


Figure 3.11. Floor plan of the charnel house under the Tremper mound. See credits.

the building. Situated close to it was the "Great Cache" – a deposit of over 500 objects, mostly ceremonial or ornamental in nature, which were decommissioned by breaking them, apparently after the cremation rituals had been completed or in the course of completing episodes of the rituals (Mills 1916:284). The charnel building was then burned in place and quickly covered with a mound (Mills 1916:273).

In contrast to the later Middle Woodland charnel structures at Seip, Hopewell, and Liberty, where the deceased persons were positioned across the mound floor by local symbolic community, the deceased at Tremper appear to have been organized spatially by clan. The four depositories of cremated remains most likely represent four geographically dispersed clans who came together at Tremper to lay their deceased to final rest. Four clans, as opposed to other kinds of social units like sodalities or communities, are implicated by the contents of the Great Cache. It contained 110 pieces of animal jaws attributable to exactly four animal groups: bear, wolf/coyote, puma, and bobcat (Thew n.d.). At least some of the jaws were made into pendants, similar to the necklaces and pendants made from animal power parts and worn by historic Eastern Woodlands clanpersons to display their clan eponyms (e.g., Figure 4.13; Callender 1978a:641). Significantly, bear, wolf/coyote, puma, and bobcat were common clans in the historic Woodlands. The identification of four clans is also suggested by the fact that the bear and wolf/coyote jaws were almost completely maxillary elements whereas the puma and bobcat jaws were all mandibular elements. These complementary power parts are most easily read as complementary social relationships between two phratries, dual divisions, or moieties that divided the bear and wolf/coyote "upper" clans from the puma and bobcat "lower" clans.

The four clans were composed of as many as 12 subgroups, such as lineages or local symbolic communities, who separately cremated their deceased members in the up to 12 crematories at Tremper, before the cremation remains were combined by clan into the four depositories.

It is likely that Tremper was built and used by multiple local symbolic communities, given the numbers of deceased persons and artifacts contained within its charnel building and the probable duration of use of the building. The cremated bodies and decommissioned artifacts in the Great Cache were more likely deposited as part of one extended, stepwise mortuary ceremony, over the course of weeks or years rather than over generations.[26] If each deceased person at Tremper was mourned by two to three persons–the known median number of gift givers at Scioto Hopewellian mortuary ceremonies generally (Carr, Goldstein, et al. 2005) – then 750–1,125 mourners, at once or over a limited time, are implied. The best estimate of the number of gift givers, alone, who contributed ornaments and paraphernalia to the Great Cache, is estimated at 191 (Carr, et al. 2005). The number of sociopolitical leaders who gave gifts is estimated at 30, which would imply a considerable dependent population of potential mourners, on the order of hundreds. Finally, the several artistic styles and elemental chemistries of the 136 pipestone smoking pipes found in the Great Cache (Weets et al. 2005; see also Emerson et al. 2002) indicate several different social groups who procured pipestone and/or pipes from different and widely separated sources. Pipestone and/or pipes were derived from northwest Illinois, southwestern Minnesota, across the river from Tremper, and an unknown location (Emerson et al. 2002). All of these archaeological data suggest the gathering of multiple local symbolic communities at Tremper.

Tremper was probably built within the lands of one local symbolic community that included the confluence of Pond Creek and the Scioto river, where the site is located. Analogous ceremonial sites were not built in the lands of the other local symbolic communities that gathered at Tremper. No geometric earthwork similar in shape to Tremper is known in its vicinity and, in fact, no earthwork contemporaneous with Tremper is known in the area.[27] This focal organization of ritual over the landscape and asymmetry of relationships among local symbolic communities differs from that in the Chillicothe area later in the Middle Woodland. There, together, each of three local symbolic community appears to have built and used ceremonial centers in each other's lands.

The logic of the historic Algonkian and Huron Feasts of the Dead for creating alliances among communities, described above, applies to the Tremper case even more closely than it does to the Seip, Liberty, Hopewell, and Old Town ceremonial centers. At Tremper, the cremated remains of the deceased from different local symbolic communities were physically placed together in the same depositories, just as historic Algonkian and Huron peoples from multiple communities and neighboring tribes buried the bones of their deceased together in one ossuary pit. To Algonkian and Huron peoples, this act was thought to involve an intermingling of the souls of the deceased persons, in that a person's bones were thought to house one of the person's two souls (Trigger 1969:103). The Huron emphasized this metaphor by actually physically stirring together the bones of the deceased as they were placed in an ossuary (Trigger 1969:111). These beliefs and practices allowed the creation of alliances among communities and tribes through the souls of deceased relatives, and reinforced the sacred and permanent qualities of the alliances. The same explicit metaphors seem to have been employed at Tremper. In contrast, at each of Seip, Liberty, Hopewell and Old Town, the bones of members of different local symbolic communities were kept separate, in different compartments of a charnel house, rather than placed in intimate contact with one another. The bones were, however, laid to rest under the roof of one, unifying charnel house and buried under one mound. In the case of the Pricer mound in Seip earthwork, at least, the bones in all compartments were laid to rest on the same, continuous, sand floor (Figure 2.8; Shetrone and Greenman 1931:364).

CONCLUSION

Hopewell people in the Scioto-Paint Creek area spent much of their life alone or in small groups of kin while hunting, gathering, cultivating, and processing foods, raising and teaching their young, and holding rituals of their own concern. They also, at times, gathered in much larger groups of kin and/or nonkin to attend to broader societal, cultural, and demographic matters, such as ceremonial rites to maintain their cosmos and ensure societal well being, rites for burying deceased relatives and helping them to pass to an afterlife, enculturating and initiating youngsters into adulthood, arranging and having marriages, developing ritual exchange partnerships, crafting and decommissioning the ceremonial paraphernalia necessary to these social tasks, and building and maintaining the ceremonial centers in which these activities could be appropriately and safely done.

Going about these affairs, a Scioto Hopewell person participated in three different kinds of communities of different geographic and demographic scales: a residential community of one or two extended families who inhabited one or a few buildings in a small area of valley terrace or bottom land; a local symbolic community typically comprised of about one hundred persons who lived in many, geographically dispersed residential communities, the most distant residences being 6–13 kilometers apart; and a sustainable community typically comprised of several hundred people from two to several local symbolic communities within 13–31 kilometers of each other.

Residential communities varied considerably in their household sizes, with residences ranging between 5 and 25 persons. These variations probably reflect the life cycles of births, marriages, and deaths within households, as well as functional differences between primary residences and seasonal field camps. A residential community moved to a new location every few years to a decade or two, and sometimes reoccupied an old habitation site two to three hundred years later, in response to the changes it made in the locations of its swidden horticultural plots. Some or all of a family left its valley residence for a part of the year to hunt and/or gather while on logistical trips and longer, seasonal stays in upland settings. Logistical mobility was the more common strategy in the resource-rich Scioto-Paint Creek area, whereas residential mobility and the use of seasonal base camps were common in less productive parts of the Scioto drainage to the north and south. In the Scioto-Paint Creek area, a valley residence was probably occupied by at least some of an extended family at least six months of the year, during spring, summer, and fall.

A local symbolic community was a corporate, self-identifying, decision making unit that was composed of multiple, dispersed residential groups, which were integrated in part by jointly building ceremonial centers and by participating together there in burial rites and other ceremonies. In the Scioto-Paint Creek area, a local symbolic community commonly built and used simultaneously several ceremonial centers of differentiated functions within its lands. Example communities, not all contemporaneous, include one that encompassed the Mound City and Hopeton earthworks and possibly the Cedar Banks complex; a second that included the Seip and Baum earthworks and possible the Spruce Hill enclosure and the Rockhold and Bourneville mound centers; a third that included the Liberty earthwork and Works East; and a fourth that centered on the Old Town and Hopewell earthworks. Local symbolic communities were liberally spaced apart from one another, with vacant or largely vacant lands between them.

A sustainable community was a corporate decision making unit comprised of a number of local symbolic communities that were integrated by alliance and within which labor, mates, and probably food and other material resources were exchanged. These exchanges buffered each local symbolic community from demographic and subsistence variations within it. Alliances among local symbolic communities were social-spiritual in nature. They involved communities burying some or all of their dead relatives together in one to several shared cemeteries and, in one instance, placing together the human cremations from multiple communities in common ossuaries. These practices closely resemble the alliance-making efforts of historic Algonkian and Huron Nations of the Eastern Woodlands. The Algonkian and Huron believed that by mixing and burying the remains of their deceased relatives together in a single ossuary, the souls of the relatives that were resident in the bones were intermingled, creating strong, sanctified ties of cooperation among the deceased as well as the living of different villages and tribes. Spiritual alliances among Scioto Hopewell local symbolic communities in the last third of the Middle Woodland period also may have involved an annual ceremonial calendar. Communities may have joined together in the earthworks in each other's lands sequentially, in different earthworks at different seasons for ceremonies with different purposes.

Throughout most of the Middle Woodland period, spiritual alliances among Scioto Hopewell local symbolic communities took the place of their being integrated politically under one strong, centralized leadership position. One or two leadership positions with domains of power spanning multiple local symbolic communities arose only at the very end of the Middle Woodland period, and the power of individuals in these positions was restricted to specific matters and complemented by the responsibilities of other local leaders in other roles. The spiritual alliances that joined multiple local symbolic community were, however, reinforced by many other ties of a social nature. These are described in detail in the next chapter, and include dyadic economic partnerships, intermarriage, mortuary and nonmortuary ritual sodalities that may have had memberships that spanned multiple local symbolic communities, crosscutting membership among sodalities, a nonlocalized clan organization, and clans with complementary social-ritual roles.

The organization and operation of Scioto Hopewellian people and their practices within residential, local symbolic, and sustainable communities was more complex and varied than researchers have envisioned over the last forty years. Models of the community organization of Hopewellian peoples in the Scioto-Paint Creek area and neighboring locales have held that residential communities were stable in location, with lengths of occupation of about a century; that annual residential mobility was not a part of the subsistence strategies of Hopewell peoples; that multiple residential communities within a locale integrated themselves socially by building a single ceremonial center within their territory and holding ceremonies within it; and that persons buried within the mound(s) of a ceremonial center came from that one locale (Dancey 1991; Dancey and Pacheco 1997a; Greber 1979a; Prufer 1964a, b; Prufer et al. 1965; Smith 1992).

Hopewellian community life in the Scioto-Paint Creek area was richer in social and ritual ties, had more scales of organization, involved more movements of people over the landscape, and was more varied in form over space and time than previously thought. Detailed mortuary, geographic, labor, stylistic, and other analyses have revealed this complexity. Among the most key, newly understood characteristics of Scioto Hopewell community life that have been presented in this chapter are nine. (1) Residential communities moved their locations in response to their cycles of swidden horticulture every few years to decade or so, rather than remained stable in location for several generations. (2) Residential and logistical mobility patterns varied between the Scioto-Paint Creek area and portions of the Scioto drainage further north and south. Some or all of a household commonly moved seasonally between valley bottom habitations and valley-edge and upland habitations in the northern and southern Scioto drainage. In the Scioto-Paint Creek area, valley bottom residences were occupied more continuously if not continuously through the year, and logistical trips were used instead to exploit valley-edge and upland resources. (3) In the Scioto-Paint Creek area, Hopewell people were organized into communities of three different scales – residential, local symbolic, and sustainable communities. The latter, broadest level of community organization, was not an aspect of previous models posed by Prufer, Greber, and Smith, and was not defined substantially for its nature by Dancey and Pacheco. (4) A local community formed from multiple residential groups commonly had not just one, but multiple earthen enclosure ceremonial center in its lands and used them contemporaneously (e.g., Seip, Baum). The different earthworks had different ceremonial functions. (5) At least some single earthen enclosures were constructed and used not by just one local symbolic community, but by multiple, as a means for fostering intercommunity cooperation and forging wider, sustainable communities. The sites of Tremper, Hopewell, Seip, and Liberty each document this practice. (6) Cooperation among the local symbolic communities within a sustainable community in building ceremonial centers was sometimes symmetrical, with each local symbolic community helping to build a ceremonial center or two in the lands of each other local symbolic community (e.g., Seip, Liberty, and Hopewell). In other cases, cooperation was asymmetrical, with the local symbolic communities joining together to build a ceremonial center or two in the lands of only one of the communities (e.g., Tremper; Mound City and Hopeton). Symmetrical cooperation characterized the later portion of the Middle Woodland period, asymmetry the early portion. (7) A local symbolic community handled its dead in a variety ways. Some social segments received cemetery burial while others did not–a pattern that was recognized by Prufer (1964a:74) but not carried through in subsequent models. (8) Some local symbolic communities buried their different social segments in different cemeteries. For example, the local symbolic community focused on the Seip and Baum earthworks buried some of its members of a broad spectrum of social prestige at Seip, and others of high social prestige at the Hopewell site. (9) The local symbolic communities that comprised a sustainable community not only exchanged critical resources such as labor, mates, and probably food and other material resources among themselves, but also shared a sense of identity. That identity was foremost spiritually based, through the burial of their deceased relatives together. The local symbolic communities of a sustainable community were not formally integrated by strong, centralized and institutionalized leadership roles.

NOTES

1. Excavations in the Scioto-Paint Creek area include those made at the McGraw site near Chillicothe and on the Scioto valley bottoms (Prufer 1975, Prufer et al. 1965); the Overly and Triangle tracks adjacent to the Hopeton earthwork and on a terrace of the Scioto valley (Dancey 1996b, 1997; Lynott 1998a,b, 2001); Brown's Bottom #1 on the flood plain of the Scioto valley adjacent to the Liberty earthworks (Pacheco et al. 2005; Paul Pacheco, Jarrod Burks, and DeeAnne Wymer, personal communication 2005; see also Burton 2006); the Ilif Riddle I and II sites, southeast of Londonderry, on terraces of Salt Creek, a good-sized tributary of the Scioto river (Prufer 1997); and the Wade site, southeast of Chillicothe, in the flood plain of Salt creek (Church 1989; Church and Ericksen 1992, 1997; Ohio Department of Transportation 1993). Minor investigations have been made of the Starr's Knoll site, on a kame in the upper reaches of the North Fork of Paint Creek (Baker 1979, 1993; Ohio Department of Transportation 1993). Surface surveys have been made in an opportunistic fashion over various parts of a 26 river-mile stretch of the Scioto valley from four miles north of Chillicothe southward to Waverly, Ohio (Prufer 1975) and more systematically in the vicinity of the Liberty earthwork (Coughlin and Seeman 1997). Excavations in the Scioto drainage north of the Scioto-Paint Creek area include those made at the Marsh Run site just southwest of Columbus and on an upland rise a few kilometers from the drainage divide between the Scioto river and Big Darby creek, which flows into the Scioto (Aument 1992; Aument et al. 1991); the Clarence Ford site just east of Columbus and on a bluff edge overlooking the floodplain of Sycamore creek, a tributary of Big Walnut Creek, which flows into the Scioto river (Aument 1992); the Haven site just north of Columbus and on the Olentangy river flood plain (Weller and Eriksen 2005); and the Gilead site north of Columbus near the town of Mt. Gilead and on an upland flat near the divide between Whetstone Creek, which flows into the Scioto river, and the Kokosing river, which is a tributary to the Muskingum (Baker 1978; Bush et al. 1992). Excavations in the Scioto drainage south of the Scioto Paint Creek area have been made at the Madeira-Brown site in the Scioto valley, itself, about 30 kilometers south of the Scioto-Paint Creek confluence (Bush et al. 1989, 1992). In the Licking drainage near the Newark earthworks, well northeast of the Scioto-Paint Creek area and to the east of Columbus, excavations have been made at the Murphy, Campus, and Nu-way sites in Raccoon creek, a tributary of the Licking (Dancey 1991; Wymer 1996, 1997); and at 33 Li 79 (Hale's House) on the

Licking flood plain (Hale 1980). In the Dresden area of the upper Muskingum valley, into which the Licking flows, the Cox C site has been excavated (Morton and Carskadden 1987). Surface surveys in the vicinity of the Newark earthworks have been undertaken in the Granville area of Raccoon Creek valley (Pacheco 1993, 1996), the Dresden area of the upper Muskingum valley (Pacheco 1996), and the upper Johnathan Creek valley, a tributary of the Muskingum valley (Pacheco 1996).

2. All of the population estimates in this paragraph are based on Cook's (1972:16) rule of thumb: "count 25 square feet for each of the first six persons and then 100 square feet for each additional individual".
3. Material criteria that define and distinguish primary multi-season habitations, auxilliary seasonal habitations/base camps, and logistical sites are given in Table 3.1, Footnote 1.

Characteristics of the Brown's Bottom #1 site that clearly indicate it was a multi-season habitation include: its location in the bottoms of the Scioto valley, surrounded by land suitable for horticulture; one very large building with big (25 centimeters in diameter) and deep-set (45 centimeter) posts that were regularly placed, an interior storage pit, interior hearths, and three pairs of interior indirect heating features; many processing pits for the one house, including 8 excavated, Middle Woodland earth ovens, possibly 15 to 20 more unexcavated earth ovens, and 13 other processing pits; well-structured activity space, with the house, an area around it swept clean of magnetometry-sensitive materials, an arc of earth ovens, and an open area; dense faunal remains (5.6 kilograms of deer, 15.9 kilograms of fresh water mollusk shell); dense and diverse floral remains harvested in spring and fall (erect knotweed, maygrass, thin-testa goosefoot, sumpweed, squash, hickory, black walnut, acorn, mulberry, hackberry, elderberry, sumac; nutshells 75% ubiquity; seeds 70% ubiquity); emphasis on cultigens in the seed assemblage (knotweed, maygrass, and goosefoot compose 83% of identified seeds); a large ceramic and lithic assemblage, with a minimum of 61 ceramic vessels, 82 "tools", and 185 bladelets; a dog burial and two human burials that may date to the Middle Woodland component; and two possible refuse deposits suggested by surface artifact and magnetometry survey (Pacheco et al. 2005, 2006, personal communication 2007; Steinhilper and Wymer 2006; see also Burton 2006). The site, at 0.5 to 0.85 hectares, is somewhat larger to double the size of the Murphy I site (0.4 hectares minimum), which can be considered a border-line case for a multi-season habitation.

Indicators of multi-season residential stability found at the McGraw site include: a large, discrete midden area, on average 17 centimeters thick, with a dense and diverse artifact inventory representing maintenance and extractive activities, and many subsistence remains harvested in spring, summer, and fall. Artifacts found in the midden include: nearly 9,946 sherds, 57 cores and core chunks, 12 Middle Woodland projectile points/knives, 60 complete blades, 2 celt fragments, 45 awls and awl fragments, 48 antler tools and tool fragments, 18 bone needles and needle fragments, 160 worked freshwater shells, and ceremonial equipment (1 cone, 5 figurine legs, fossils, concretions, 3 palettes for grinding red pigment). Plant food remains recovered from the midden, without the benefit of flotation, include: walnut, hickory, acorn, hackberry, and plum. The mininum number of individuals of mammals recovered include 10 deer, 37 other large and small mammals, 22 fish, 22 reptiles, and 17 birds, A total of 1,987 freshwater mussel shells and fragments were recovered (Prufer et al. 1965). The size of the site was probably large, with the midden alone having been about 0.12 hectares and other components of the occupation having been either buried by flood deposits or eroded away.

The Wade site's characteristics, taken together, suggest it to have been either a logistical site or a seasonal habitation/base camp, the former being more likely. It's 2 earth ovens and 434 sherds (Middle Woodland by their thickness, and cordmarking on half) indicate maintenance activities associated with residence. Late spring, summer, and fall use of the site is evidenced by the paleoethnobotanical record, which includes maygrass, blueberry, and goosefoot seeds, and hickory and walnut shells. However, the remaining aspects of the site, for the fairly large percentage (25%) of it that is known by excavation (Church and Ericksen 1997:350), suggest ephemeral use. The site lacked a building or wind break (only one post hole), had no midden, and had no storage pits. It had only twelve features: shallow basins, hearths, fire-cracked rock concentrations, and the mentioned earth ovens. These were not structured in space. Artifact density, like feature density, was light. Beyond the pottery sherds, only 6 bladelets, 1 biface, 1 scraper, and 11 cores were recovered through excavation. The paleoethnobotanical remains were also very sparse: only 3 goosefoot, 4 maygrass seeds, 1 blueberry seed, and 9 nutshell (Church 1989; Church and Ericksen 1997). The site is only 0.09 hectares (Church and Nass 1989:21, map 2; misstated by Church and Ericksen [1997:341, 356] and Dancey and Pacheco [1997a:27] to be 0.9 hectares) – one-fourth the size of the Murphy I site. A microwear analysis of a small sample of the lithic artifacts from the site found evidence of both extractive activities (meat knife, hide knife, hide deflesher/scraper) and maintenance activities (wood sawing, bone/antler scraper, bone/antler wedge) in roughly equal proportions (Church 1989:80), rather than heavily weighted toward maintenance activities as one would expect to find in a multi-season residential site or a seasonal auxilliary residential site. The small size of Wade, its ephemeral material record, and its lack of internal spatial pattern, combined with its activity distribution, suggest that it may have been used discontinuously and briefly as a logistical site at various seasons of the year rather than continuously from late spring through fall. This kind of use would not be unexpected, given the peripheral position of Wade: near the headwaters of Salt Creek, 16 kilometers from its confluence with the Scioto, in a narrow (0.7 kilometer wide), deeply-entrenched valley surrounded by rugged uplands of the unglaciated Appalachian plateau.

The Ilif Riddle I site has characteristics that, together, suggest it to have been a residential site, but occupied only seasonally. It's 325 sherds indicate maintenance activities. Only summer occupation is evident from the faunal remains, which include turtle, freshwater mussel, and nondiagonistic deer. Repeated surface pick up of the site and a 16% excavation sample of its densest 100 square meters revealed only seven shallow basin-shaped pits and one post mold in no spatial pattern, no indications of a building, no midden, no storage pits, no blade cores, 340 expediently used, unretouched bladelets, 7 Middle Woodland projectile points, and only fragments of faunal remains. The Middle Woodland component of the site, which is dominated by a much bigger Archaic occupation, is only 0.25 hectares–about half the size of the Murphy I site (Prufer 1997; see also Church and Ericksen 1997). The less than multi-seasonal, residential usage of the site accords with its peripheral location, half way up Salt Creek, 9.6 kilometers from its confluence with the Scioto, in a narrow valley deeply entrenched within the unglaciated Appalachian plateau.

The Ilif Riddle II site, located 500 meters from the Ilif Riddle I site in Salt Creek valley, is much more ephemeral than its sister site and suggests only a logistical camp. Surface survey recovered only 7 bladelets, 1 exhausted core, 1 sherd, and 1 Middle Woodland projectile point. The only clear evidence of maintenance activity is one sherd. Note the lack of accompanying fire-cracked rock. No concentration of surface artifacts, which might indicate a midden deposit below, was observed. The thin Middle Woodland scatter was embedded in a larger Archaic component, and was no larger than 0.56 hectares, somewhat larger than the Murphy site (Prufer 1997; see also Church and Ericksen 1997).

Characteristics of the Starr's Knoll site that suggested to its investigator its use for hunting and collecting, i.e., a logistical function, are the site's upland location, limited horticultural ground and aquatic resources in the area, the placement of the site for viewing the valley below and surroundings, and the site's ephemeral nature. The site is located on the upper reaches of the North Fork of Paint Creek valley, some 30 kilometers northwest of its confluence with main Paint Creek valley. It lies on a bluff edge overlooking the narrow, deeply entrenched flood plain where the North Fork and Herrod Creek converge, within the northernmost extension of the glaciated Appalachian Plateau into the Till Plain. Over 70% of the site's catchment is in uplands. Artifacts found on the surface of the site were limited to 23 bladelets, 6 cores, 6 bifaces, 1 graver, and light debitage, only the bladelets and cores of which can be attributed with certainty to the Middle Woodland occupation of this multicomponent site (Baker 1979, 1993;Ohio Department of Transportation 1993; Ohio Archaeological Inventory Form for 33R0159C; Stanley Baker, personal communication 2007),

4. Material criteria that define and distinguish primary multi-season habitations, auxilliary seasonal habitations/base camps, and logistical sites are given in Table 3.1, Footnote 1.

Characteristics of the Clarence Ford site that combine to suggest it was a seasonal habitation/base camp include: its upland location remote from horticultural land, on a bluff-edge overlooking the headwaters of a small stream tributary to the Scioto; an exclusively wild paleoethnobotanical assemblage emphasizing nuts (hickory, black walnut, acorn) and including sumac seeds, which suggest fall harvesting; extractive activities represented by groundstone celts and pitted nutting stones; few chipped stone tools and sherds for maintenance activities; lack of midden by surface indicators; yet, at the same time, the remains of a building with substantial posts (30 centimeters in diameter, 50–60 centimeters deep) chinked for maintenance, a hearth, and an earth oven at a distance (Aument 1992). The site is less than 0.35 hectares – smaller than the Murphy I site (0.4 hectares minmum), which is a marginal case for a multi-season habitation.

Aspects of the Marsh Run site that together suggest it was a seasonal habitation/base camp include: its upland location remote from horticultural land, a largely wild plant food assemblage, light artifact and feature density without spatial arrangement, yet also buildings that were substantial but not highly formal, and pits that may have been used for storage. Specific site characteristics include: its position on a rise a few kilometers from the drainage divide between the Scioto river and Big Darby creek; a paleoethnobotanical seed assemblage dominated by wild sedges and rushes from the adjacent wetland, with minimal amounts of goosefoot and maygrass, both wild, but one cucurbit rind; some hazelnut, hickory, and walnut; extractive activities indicated by 4 groundstone celts, 2 pitted nutting stones, and 1 Middle Woodland projectile point; maintenance activities represented by 149 sherds, 2 drills, and 5 endscrapers; a lack of midden deposits, which is known by mechanical stripping of much of the site; the remains of one Middle Woodland building or two overlapping buildings with deep and big posts (50–60 centimeters deep, 20–30 centimeters in diameter) but widely spread and irregularly patterned; the remains of a line of posts that were equally deep and large and that could have been a wind break or remnant of a building; one hearth per building, and exterior where building outline could be determined; two deep pits ($1.5 \times 1.0 \times .75$ meters deep), one per building, that by size could have been for storage but that were exterior rather than within a building's protection, unlike the interior one at Brown's

Bottom #1; only three other shallow processing pits, one per structure; and a functionally undifferentiated site layout, with each structure, its associated pits, and surface debris having been clustered together in one node. The concentration around the one building or two overlapping buildings was 0.7 hectares, about one and a half times the size of the Murphy I site. The artifact concentration around the one possible windbreak or building remnant was 0.14 hectares, only about one-third the size of the Murphy I site. (Aument 1992; Aument et al. 1991).

The characteristics of the Gilead site that suggest it was a seasonal habitation/base camp include: its upland location on a flat near the divide between two small streams, Whetstone Creek and the Kokosing river, remote from horticultural land and proximal to forests bearing acorns, hickory nuts, and chestnuts; yet its discrete midden area and a diverse artifact assemblage that reflects maintenance activities more so than extractive activities. Artifact classes used in maintenance tasks include a few classic Hopewell and utilitarian Middle Woodland pottery sherds, 7 bifaces, 6 scrapers, 3 perforators, and 1 wedge/gouge. Extractive activity is represented by 6 projectile points. Also recovered were 36 bladelets, and debitage that resulted from decortication almost as frequently as from final tool production. All of these remains are known from surface survey, only. The size of the site is very small, with the bulk of material coming from an area of 0.02 hectares (Baker 1978; Bush et al. 1992).

The Madeira-Brown site was most likely a seasonal habitation/base camp, with much less probability of it having been a multi-season habitation. Although located in the Scioto valley on a low terrace surrounded by land suitable for horticulture and having buildings, it is a very small site with light artifact and feature density, low artifact and feature diversity absolutely and per building, and buildings with small posts. Specific characteristics of the site that suggest it was a seasonal habitation/base camp include: two round buildings and one square building each with small, shallow posts (12, 15, and 16 centimeters in diameter and 12, 15, and 17 centimeters deep, respectively); only 5 shallow basins and 1 earth oven despite 24% excavation of the site; only 14 sherds, 11 bifaces, and 7 bladelets; low artifact diversity, including these three kinds of artifacts, 3 pitted stones, 1 piece of ground stone, plus 18 pebble cores and 252 primary decortication through thinning and sharpening flakes; and no identified midden despite backhoe trenching in a swale, although there remains the possibility of deeply buried, yet unfound midden elsewhere. The site was only 0.18 hectares, about one-third the size of the Murphy I site (Bush et al. 1989, 1992).

The Haven site, like Madeira-Brown, is located on land suitable for horticulture, but its characteristics clearly point to it having been a seasonal habitation/base camp rather than a multi-season habitation. The site occurs on the flood plain of the Olentangy river flood plain. Its five Middle Woodland buildings, built during at least two occupations, each had posts of small average diameter (16, 11, 8, 14, and 16 centimeters) and shallow average depth (20, 14, 7, 13, 16 centimeters, respectively). Little midden build up, a light artifact inventory, a lack of storage pits, few hearths (only a couple internal to buildings), small numbers of pits per building (about 1 earth oven and several pits per building), and emphasis on one cultivated species available in the spring (maygrass) rather than a wide spectrum of spring and fall harvested seed and nut species indicate seasonal occupation (Weller and Eriksen 2005). The large size of the site, about 1.8 hectares (Ryan Weller, personal communication 2007) is attributable considerably to its having served as a seasonal base camp multiple times during the Early and Middle Woodland periods.

5. Since Dancey (1991) estimated the length of occupation of the Murphy I site, he and P. Pacheco have not revised this estimate in print or made any further quantitative estimates of the lengths of occupation of Ohio Hopewell habitations. They have, however, reiterated the view of the long-term use of habitations, on the order of two or three generations (i.e., about 40–60 years). "The household is a stable unit that does not vary significantly in size through time. However, the number of households may increase [in the vicinity/hamlet] as children leave the parental household to form independent residences." (Dancey and Pacheco 1997a:8). The implication, here, is occupation of the parents' structure from their social maturity until death, or about 40 years or more. "Documented structures, when excavated, are relatively large. In some cases, individual households appear to have grown through time to include several generations of the reproductive unit." Here, the implication is occupation of a house for about 40–60 years.

Elsewhere, Dancey and Pacheco have pointed out that Ohio Hopewell habitations were occupied variable amounts of time, but have not attempted to estimate a range of durations of occupation. The focus of their argument has been on the different archaeological signatures of habitations occupied for different lengths of time, rather than estimating the absolute time. "Notable differences between sites are best explained as the product of site duration (Dancey 1992a). The effect of differential duration can be seen in variations among settlements, with deposits losing clarity the longer they are continuously occupied . . . . Some sites consist of only one or two structures with a few cooking pits, various basin-shaped facilities, and small low-density refuse dumps (for example, Decco and Madiera Brown). At the other end of the scale are those sites with dozens of pit features, rebuilt structures, and dense refuse deposits (e.g., Murphy and Twin Mounds). The other cases are intermediate between these two extremes (e.g., Marsh Run, Cox B, Murphy III, and Jennison Guard)" (Pacheco and Dancey 2006:13). Also, "Variation among documented households is best explained as the product of duration as opposed to seasonality (Dancey 1992a)" (Pacheco and Dancey 2006:6).

6. The one, 188 square meter house at Brown's Bottom #1 would have been occupied by about 25 persons, according to Cook's (1972:16) rule of thumb (see above, Note 2). The three houses at Smiling Dan were 80 square meters, 56 square meters, and perhaps 80 square meters to estimate by the longest wall of this third house. These would have been occupied by about 13.5, 10.7, and 13.5 persons, respectively, using Cook's rule, for a total of 36.5 persons. The additional approximately 10 individuals who occupied Smiling Dan compared to Brown's Bottom – about 1.4 times the number of persons – is very small compared to the 20 times the ceramics density, 20 times the lithic debitage density, and 8 times the lamellar blade density found at Smiling Dan.

   No house was found at the Murphy I site, precluding a comparable population estimate for this site to Smiling Dan.

   The robustness of the comparison made of artifact densities at Brown's Bottom #1 and Murphy I to those at Smiling Dan is illustrated by a simulation suggested by P. Pacheco (personal communication 2007) and carried out by Bret Ruby and Chris Carr. It might be argued that artifact densities calculated for the Murphy I and Brown's Bottom #1 sites are not directly comparable to those calculated for the Smiling Dan site because the presumed midden component at Murphy was completely eroded away and two possible midden deposits at Brown's Bottom were not excavated, whereas the midden component of Smiling Dan was excavated. To approximately compensate for these differences, for the sake of argument, it is possible to add the artifact assemblage from the midden excavated from the McGraw site to the artifact assemblages obtained from the features, plowzone, and surface of Brown's Bottom in order to approximate a "complete" site in the Scioto-Paint Creek area. The two sites are functionally analogous and fairly close to one another, in the bottomland of the Scioto valley, making this compositing reasonable. The combined artifact counts for the model site's midden, features, plowzone, and surface might then be compared to the counts from Smiling Dan's midden, features, plowzone, and surface. In addition, because Smiling Dan was generated by three households, whereas Brown's Bottom was generated by only one and the McGraw midden is presumed to have been generated by only one, the artifact counts from Brown's Bottom and from McGraw can be multiplied by three to make them approximately comparable to the counts from Smiling Dan. This procedure attempts to remove from the analysis the effect of differences in population between the two sites and to focus attention on differences in their duration of occupation alone. The procedure overcompensates to the advantage of the model Brown's Bottom-McGraw site because the population estimate for Smiling Dan is only about 1.4 times that of Brown's Bottom, not 3 times (see above). The table below presents the results of the simulation:

   As can be seen, even when accounting liberally for the differences of Brown's Bottom and McGraw from Smiling Dan in their site formation processes, excavation representativeness, and occupant population, the assemblage from Smiling Dan is much denser than that from the "complete" Brown's Bottom-McGraw model site–about three times more dense. This suggests the substantially greater duration of occupation of Smiling Dan than Brown's Bottom and McGraw, and the much greater long-term sedentism of Hopewell people in the Havana region than in the Scioto-Paint Creek area.

7. The Shriver Circle, just south of Mound City, could conceivably belong to an earlier phase, given its Adena-like spatial structure. However, one AMS radiocarbon date obtained from the clay liner of the Shriver ditch would place it temporally coeval with Mound City and Hopeton. The date is A.D. 195+/−40, from Block 1,

Comparison of Artifact Density at the Model Brown's Bottom-McGraw Composite Site, Ohio, and the Smiling Dan Site, Illinois[1]

	Brown's Bottom #1[2]		McGraw[3]		Model Brown's Bottom-McGraw Composite Site		Model Composite Site x 3		Smiling Dan[4]	
	Total	Items/m^2	Total	Items/m^2	Total	Items/m^2	Total	Items/m^2	Total	Items/m^2
Site Area (m^2)	5,000		1,236		5,000		5,000		6,705	
Ceramics	4,502	0.9	9,946	8.05	14,448	2.89	43,344	8.67	138,350	20.63
Debitage	2,237	0.45	1,691	1.37	3,928	0.78	11,784	2.35	65,355	9.75
Lamellar Blades	185	0.04	233	0.19	418	0.08	1,254	0.25	2,254	0.34

[1] Table constructed by Bret Ruby and Christopher Carr, with counsel from P. Pacheco (personal communication 2007).
[2] Brown's Bottom #1 data from Pacheco et al. (2006; Pacheco, personal communication 2007).
[3] McGraw site data from Prufer (1965:10, 60, 85, table 3.1).
[4] Smiling Dan site data from Stafford and Sant (1985:39, table 11.1). Ceramic total includes minor Late Woodland and Black Sand components, totaling approximately 1691 sherds. Debitage total includes flakes plus cultural blocky fragments.

Unit 4, Level 10e, Zone 10, Clay Liner (Picklesimer et al. 2006). This date fits well within the spread of radiocarbon dates from each of the Mound City earthwork and the Hopeton earthwork (Ruby et al. 2005:161, figure 4.6). The open circular earthwork south of the Cedar Banks earthwork and north of Hopeton also might belong to an earlier phase than Mound City, given its Adena-like form. It is undated. The Cedar Banks earthwork, north of Hopeton, may belong to a later phase, given the large size of its square compared to the sizes of those within DeBoer's (1997) temporal seriation of earthworks. The two, rectangular platform mounds associated with the Cedar Banks earthwork may also suggest a later date for it (see Ruby et al. [2005:142] for the A.D. 420+/−45 uncalibrated date from the flat-topped mound IU9 at the Mann site; but also Greber [2003:103] for the wide range of uncalibrated dates between A.D. 70–190 obtained from the Capitolium Mound at the Marietta earthworks).

8. The Junction Group is comprised of nine enclosures – seven circular and two subrectangular – in a circular arrangement (Squier and Davis 1848:Plate XXII, top). The subrectangular enclosures recall the shape of the enclosure at Mound City. The circular arrangement of the nine enclosures, and the seven circular enclosures themselves, are reminiscent of Scioto Adena circular earthworks that predate Scioto Hopewell earthworks.
   The Anderson square enclosure, with its 7.4 hectares, is similar to the Mound City subrectangular enclosure, with its 5.2 hectares, and to the Hopeton square, with its 8.0 hectares. These areas are significantly larger than the early, 1.4 hectare, subrectangular enclosure of the Tremper site, and smaller than the later, 10.8 hectare squares of Seip, Baum, Works East, Liberty, and Old Town. The seriation of these sites by the sizes of their squares suggest the approximately similar age of Mound City, Hopeton, and Anderson, to extend the logic of DeBoer's (1997:232) seriation of some earthworks in the Scioto valley.
9. Between Liberty and Works East is the High Bank work with its open square and octagon. This may belong to an earlier phase; see DeBoer's (1997:232) seriation of earthworks. High Bank also has its strongest geometric connections not with Liberty or Works East, but with the distant Newark earthworks, where an enclosure is also comprised of a open circle and an octagon. The circle of High Bank and that at Newark (the Observatory Circle) are the same size (8.0 hectares) and the two circle-octagon works are aligned in a complementary fashion, with their main axes rotated 90° degrees from each other. The major site axis of the Newark circle-octagon aligns with the moon maximum north rise, while the minor axis through the vertices of the High Bank work aligns to this celestial event (Hively and Horn 1984; Romain 2004:104, table 6.11).
10. For a discussion of Dancey and Pacheco's, Greber's, and Smith's assumption that each geometric earthwork was the center of a community of hamlets dispersed around it, see Carr (2005b:79–83).
    In the explication of their model on Ohio Hopewell community organization, Dancey and Pacheco (1997a:8, 21, figure 1.2), described and drew each geometric earthwork as the center of a community of dispersed households. "At or near the center of the community is a ritual precinct – the sacred center of community life." (Dancey and Pacheco 1997a:8). Their figure 1.2 (1997a:21; reproduced from Pacheco 1993:22, figure 2) depicts a dispersion of hamlets with an earthwork in the center and labels it a community. Neighboring, similar units, with one earthwork per unit, are depicted in the figure as strung along a river valley and labeled "contінguous communities along a river". Thus, Dancey and Pacheco did not envision that a single local symbolic community of dispersed hamlets might have included multiple, functionally differentiated and contemporary earthworks, rather than only one.
    At a broader scale of social grouping, a large number of earthworks and their associated hamlets within a wide area – such as the entire Scioto-Paint Creek area around Chillicothe, or the broad area around the Newark site in the Licking valley, or much of the Scioto and Olentangy rivers in Franklin county – were grouped together by Dancey and Pacheco to define what they called a "polity". Pacheco and Dancey (2006:17, figure 1.6; reproduced from Pacheco 1993:14, Figure 1) illustrate these units on a map of Ohio, label each a polity, and also describe them: "Above the scale of individual communities, functionally similar, contiguous communities may form peer polities (Braun 1986) anchored in centrally located public works, such as represented by the Hopewell, Newark, Portsmouth, and Turner earthwork groups, to name a few. These polities are located at the intersection of major physiographic provinces…" (Dancey and Pacheco 1997a: 9–10). "Each community was the principal economic unit of the tradition, and when a community was linked with its neighbors to form a polity…. An additional scale exists at the level of regional groups of peer polities…. It is unlikely that the Hopewell Earthworks functioned at a purely local scale. Instead, the site's importance appears to be more like that of a regional polity center and an interregional transaction center, perhaps even of the kind envisioned by Struever and Houart (1972)." (Pacheco and Dancey 2006:21). Thus, Dancey and Pacheco have related many contiguous earthworks to each other as constituents of a large "polity", but again did not envision a single, small, local symbolic community of dispersed hamlets as possibly including included multiple, functionally differentiated and contemporary earthworks.
11. The West mound, west of the Seip earthwork by a good distance, was probably not a part of the local symbolic community centered around Seip and Baum, or at least not contemporaneous with them. Both Ruhl's (1996:figure 9; Ruhl and Seeman 1998) earspool seriation and radiocarbon dates place the West

mound early in the Middle Woodland period (see Carr, Chapter 15, Chronological Uncertainties in the Scioto-Paint Creek Area).

12. The exercise of assessing the age-sex profile of the Seip-Pricer burial population for whether a representative sample of "a community" was buried there is informative, in spite of the fact that three local symbol communities, rather than one, contributed persons to the cemetery. The result of the age-sex profile study still shows that a representative sample of the local symbolic community situated around the Seip and Baum works was buried at Seip – along with representative samples of the other two local symbolic communities buried there.
13. It is possible that the distinction between mound burial, itself, and disposal without mound burial indicated differences in social rank at some sites and in some times in the Scioto-Paint Creek area, if societies there did exhibit ranking (Carr 2005a:317–319). The issue of ranking remains open.
14. The ten sites for which there is chronological information and that are included in this study are: Baum, Old Town, High Bank, Hopeton, Hopewell, Liberty, Mound City, Seip, Works East, and Anderson. For their chronology, see Ruby et al. (2005:161, figure 4.6), Carr (2005a:305–307), Greber (1983, 2000, 2003), Prufer (1961, 1964a:48–52), Ruhl (1996), and Ruhl and Seeman (1998).
15. For the five earthworks of Seip, Baum, Old Town, Liberty, and Works East, Bernardini calculated the volumes of soil in their enclosure walls. He also estimated the number of person-hours it would have taken to excavate the soils with a digging stick and transport them from the places from where they likely were derived. Knowing from crosscultural data that in societies of middle range complexity around that globe that members of a community are generally willing to offer between 25 and 50 hours of labor per year for public projects without coercive force, Bernardini calculated the numbers of people it would have taken to build each of the five earthworks over ten years. The estimates range between 140 and 400 persons. They are conservative because they do not include the building of charnel buildings or burial mounds, or the dumping and packing of earth. Assuming the very conservative population density of 0.5 people per square kilometer in the Scioto-Paint Creek area allowed the drawing around each earthwork of very conservatively sized catchments from which laborers would have had to have been drawn to build each earthwork.
16. Although the sites of Seip, Baum, Old Town, Works East, and Liberty each have a large square, a large circle, and a small circle, with equivalent elements being similar in area across sites, the proportional size relationships cited above between squares and large circles, and between squares and small circles, are close only for the sites of Old Town and Works East. The diagonals of the squares and the diameters of the large circles of the five sites are respectively as follows: Old Town (1470 feet, 1480 feet), Works East (1480 feet, 1480 feet), Seip (1607 feet, 1530 feet), Liberty (1566 feet, 1700 feet), Baum (1589 feet, 1320 feet). The diameters of the small circles at these sites are: Old Town (720 feet), Works East (760 feet), Seip (750 feet), Liberty (800 feet), Baum (760 feet). The sides of the squares at these sites are: Old Town (ca. 1039 feet), Works East (ca. 1046 feet), Seip (1136 feet), Liberty (1121 feet), Baum (1124 feet). Lengths for the sides of the squares of Old Town, Works East, Seip, and Liberty have been estimated from the lengths of their hypotenuses, as reported by Romain. All of these data are taken from Romain (2000:46–54), who measured them from maps of the sites published by Squier and Davis (1848). Squier and Davis' published measurements can have errors from ground measurements verified today by as much as 10% (W. F. Romain, personal communication, 2005).

    The Hopewell site's enclosure differs in shape from that of the enclosures of the five tripartite earthworks. Its construction was initiated before the planning and building of the five tripartite earthworks (Carr 2005a:305–307). However, Hopewell Mound 25 was altered in its shape, after its raising, in order to incorporate some tripartite symbolism. Specifically, to the central mound that covered its burial clusters were added two smaller mounds on its northeast and southwestern sides (Greber and Ruhl 1989:42), giving it a tripartite form. This form mimics those of the Pricer and the Conjoined mounds at the Seip earthwork and aspects of the Harness mound at the Liberty earthwork. Three clusters of burials under the Pricer mound were each covered by their own mound before being capped with a joining gravel layer and subsequent layers into one mound (Greber 1979a:41). The three sections of the charnel house under the Conjoined mound were each covered with a mound, and the mounds overlapped, forming one trilobate mound that was never capped. For the Edwin Harness mound, a submound was built over the middle cluster of burials, but it is not known whether two other submounds over the remaining two clusters were also built (Greber 1979b:28). However, three stone circles were constructed at a higher level of the mound, apparently over the three burial clusters.
17. A visual comparison of the shapes of the pattern of posts that formed the charnel house under the Edwin Harness mound to the pattern of graves within the charnel house under the Pricer mound has been presented by Greber (1983:88, figure 10.1). They are nearly identical. The sizes of the two charnel houses are not the same, contrary to what one might be led to believe from this figure, its caption, and associated text (Greber 1983:87). The posts under Edwin Harness mound form a charnel house approximately 136 feet in length, per Greber (1983:17, figure 2.4; scale is not specified but is in meters). The graves and platforms under the Pricer mound form a pattern approximately 160–162 feet long, per two maps by

Greber (1983:88, figure 1; 1979a:65, figure 6, respectively). This difference in the lengths of the two charnel houses is reflected in the lengths of the mounds that covered them. The Edwin Harness Mound was approximately 160 feet long (Putnam 1885; Squier and Davis 1848:56), whereas the Pricer mound was about 250 feet long (Shetrone and Greenman 1931:354).

18. From the Baum earthworks in main Paint Creek valley to its confluence with the North Fork of Paint Creek valley is about 17 river kilometers. From the Hopewell earthworks in the North Fork of Paint Creek valley to its confluence with main Paint Creek is 9.2 river kilometers. From the confluence of Paint Creek valley and its North Fork to the Scioto valley is another 11 river kilometers, and from there to Works East is an additional 4 kilometers, totaling 15 kilometers. See also Chapter 15, Note 31.
19. The probability is a good one. The three conjoined mounds at Old Town resemble the three lobes of the Seip-Conjoined mound over its tripartite charnel house, the three primary mounds of the Seip-Pricer mound over its three groups of burials, the three lobes of Hopewell Mound 25, and the three stone circles of the Edwin Harness mound over its tripartite charnel house.
20. The specifics of these patterns that indicate each cluster of burials to have been constituted by members of a community, rather than some other one kind of social unit, are as follows. Each cluster has persons of a range of leadership roles, sodalities, clans, and prestige, as one would expect of a community. In the Pricer mound, for example, each lobe has society-wide leaders marked by copper headplates, copper celts, and/or conch shell cups, sodality leaders or persons of high achievement within sodalities marked by copper breastplates and earspools, and other ceremonial leaders of importance. All three of the burial clusters had adults, subadults, and both sexes, as communities have. Variations among the clusters under each of the Pricer mound, Edwin Harness mound, and Hopewell Mound 25 are also indicative of their representing communities. Under Pricer, members of specific clans, marked by pendants made of the power parts of their animal eponyms or totems, were sometimes buried in all three burial clusters (feline, bear clans), sometimes in one or two burial clusters (other clans) – in accord with the expectation that clans can be localized within a community, dispersed among communities, or both. Also, under the Pricer mound, the burial cluster with the greatest number of deceased persons, which apparently represents the largest of the three local symbolic communities, had the greatest diversity of clans, as expected. Under each of the Pricer mound, Edwin Harness Mound, and Hopewell Mound 25, burial clusters with more persons had higher proportions of persons buried with prestigious goods, in line with the expectation that larger communities would have been wealthier because they had bigger labor pools for acquiring material resources and for organizing public efforts, as well as more potential mates. This positive correlation between burial cluster size and wealth across burial clusters in a mound is the inverse of the pyramidal distribution of wealth expected if different burial clusters had represented different rank groups. In that case, higher rank groups would have been represented by burial clusters with fewer individuals yet more wealth. Finally, under the Pricer mound, the particular balances of adults to subadults and of males to females apparently varied significantly from burial cluster to burial cluster. This diversity is not what would expect among different social segments such as lineages or clans within a community, where rules about who should be buried where – within a charnel house or elsewhere – should have been similar among closely interacting social groups. In contrast, different communities might have varied significantly in their rules of burial, particularly in the case of a community burying some of its dead in a charnel house of a different community.
21. At the Hopewell site, in the large Mounds 25 and 23, 75.5% and 93.8% of their deceased persons were inhumed, respectively. Seven of fifteens other, excavated smaller mounds had only inhumations, and an additional five had between 54.5% and 66.7% inhumations. Only three small mounds with four persons total had just cremations. In contrast, deceased persons at the Seip-Pricer, Seip-Conjoined, Edwin Harness, and Ater mounds were primarily cremated. Inhumations constituted only 8.9%, 10.4%, 6.2%, and 13.3%, respectively, of the burials in these mounds. For detailed information on the association of inhumation with various material symbols of important social roles, see Carr (2005a: 279–280).
22. Here, I use the term "polity" for a unit integrated and defined territorially by political institutions and processes – that is, a state, a chiefdom, and divine and secular kingdoms. This meaning fits closely to the meaning of the term "polity" in common parlance. According to Webster, a polity is "a particular form or system of government", "a state or other organized community or body", "the condition of being constituted as a state or other organized community or body", and "government or administrative regulation".
23. The conclusion drawn here, that the three local symbolic communities did not constitute a formal "polity", differs from a characterization made by Pacheco and Dancey (2006:17, figure 1.6; reproduced from Pacheco 1993:14, figure 1). They have grouped together all earthworks in the Scioto-Paint Creek area, based on their geographic clustering there, and identified them a "polity". Dancey and Pacheco also defined other Hopewell "polities" elsewhere in Ohio, based solely on clustering of earthworks in those regions.

    Dancey and Pacheco's reconstruction of the Ohio Hopewell sociopolitical landscape is misleading in two ways. First, the word "polity" denotates state, chiefly, or kingly-level organization and centralized political administration. See the previous Note. The three local symbolic communities in the Scioto Paint

Creek area who buried their dead together were clearly not organized in any of these ways. Dancey and Pacheco follow Renfrew and Cherry's (1986) broad-sweeping and sociologically muddled definition of a polity. Second, the polities that Dancey and Pacheco define are not drawn sharply enough, with chronological evidence of the contemporaneity of the earthworks they use to delimit a polity and with sociological evidence of the forms of relationships and interactions that joined together the communities within a polity. Thus, for example, the "polity" that Dancey and Pacheco define for the Scioto-Paint Creek area includes all earthworks in the entire region, rather than just those that were used contemporaneously in one time plane and by communities joined together by specific, documented means. Dancey and Pacheco's Scioto-Paint Creek polity is defined much too large for any single time plane in the Middle Woodland period.

24. The symbolizing of both the cosmos and the three local symbolic communities by the trilobate copper geometric from Hopewell Mound 25 may have been achieved in additional ways, beyond the geometric's round outline and three lobes. Each lobe may have represented two bird's heads, facing outward from one another and with a common eye, and circling the cosmos. Circling birds of the cosmos are found in other round, copper geometrics (e.g., figures 4.17C, D), and birds are commonly represented in Ohio Hopewell art, generally. Further, the possible bird symbolism for the three communities may have recalled their conception of the three river valleys in which they were located as the three forward talons of a single bird's foot – main Paint Creek valley, the North Fork of Paint Creek valley, and the Scioto valley north of Chillicothe. The section of the Scioto valley south of Chillicothe would have constituted the bird's foot rear talon. These additional, possible symbolic meanings are conjectural, and offered here as food for further thought and research.
25. The large charnel house that may have existed and been covered by the Carriage Factory mound (Moorehead 1898–1899:126–132) was possibly used around the same time or somewhat earlier than the charnel house buried under the Tremper mound. See (Chapter 15, Chronology, and Its Implications for Defining Communities and Community Organization).
26. The short duration of use of the charnel house at Tremper is evidenced by the crisp spatial distribution of human remains and artifacts on its floor, yet the lack of any evidence that the charnel building had a roof to protect the integrity of its contents. Had the charnel house been used over the course of a number of years, rain and snow melt would have disturbed the clarity of the spatial distribution of human remains and artifacts.

    It does not seem likely that the lack of evidence of a roof for the charnel house results from preservation problems. Readily decomposable and combustible twigs and limbs woven among the large posts of the charnel house to create its wall-screens were recovered (Mills 1916:274).
27. The Seal earthwork fifteen miles north of Tremper, with its square-and-circle form, probably dates to a little later in the Middle Woodland than Tremper, perhaps on the time plane of Hopeton and Mound City. The Portsmouth earthwork complex three miles south of Tremper, with its causeways, recalls architectural forms that first appeared later in the Middle Woodland Period than Tremper.

Chapter 4

Social and Ritual Organization

Christopher Carr

Hopewell residential groups, spread over the forested terraces and bottomlands of the Scioto and Paint Creek valleys, were nonetheless integrated with one another in many ways. Two important kinds of ties were their mutual participation in a larger, local symbolic community and a yet broader, sustainable community. Within the context of these communities, members of different residential groups, separated by varying geographic and social distances, established and renewed essential relationships with one another by building earthworks together, performing rites together within the earthworks, negotiating marriages and marrying, forming ritual exchange partnerships with one another, and exchanging foods and other material resources. Members of different residential groups were also integrated through their participation in a rich array of other social groups and relationships within and across local symbolic communities. The activities of clans, clan-specific ceremonial societies, sodalities, and phratries, and the complementary roles of leaders and genders of varying categories, brought members of different residential communities together in a variety of combinations for a variety of purposes, creating a dense network of meaningful connections among people of the Scioto and Paint Creek valleys. Through clans, clan-specific ceremonial societies, sodalities with shaman-like roles, and phratries were undertaken many of the material and spiritual activities that were fundamental to individuals, residential groups, these other social units, and the creation and maintenance of Scioto Hopewell life as a whole. Some likely examples, considering archaeological evidence and/or ethnohistoric analogies, include ensuring the well being and success of clan members through ceremonies, obtaining personal power and blessings from personal spirit power animals, diagnosing personal ailments and healing the sick, naming children and performing rites of passage of youths into adulthood and uninitiated persons into sodality members, divining to reveal guilty parties, and readying corpses for burial and guiding souls of the deceased to an afterlife. Leaders who orchestrated public gatherings, ceremonies, and other activities were of a wide diversity of kinds and played specialized and complementary roles in such affairs. These persons were drawn fluidly from many different residential groups and clans, and sometimes from women and a third gender as well as men, creating many social interdependencies. The rites that the leaders organized drew together the residential groups of a local symbolic community or a larger sustainable community for many purposes, such as ensuring the fertility and well-being of the world by re-creating it through re-enactments and recountings of primordial mythic events or sequences, celebrating first fruits, removing disease or misfortune from an entire community and renewing its health, wiping the social slate clean of social wrongdoings and pardoning crimes, instructing community members in moral behavior and traditional culture, cleaning and renewing a ceremonial center, and playing games, socializing, and having fun. In these many kinds of social groups, relationships, and activities that brought together members of different residential communities, Scioto Hopewellian society was quite complex, although constructed horizontally of groups and individuals of roughly equivalent prestige and power.

This chapter documents many of the above-named aspects of the social, political, and ritual organization of Scioto Hopewell people. Leadership roles of diverse kinds, clans and clan organization, sodalities and ceremonial societies, gender relations, kinship structure, and ritual gatherings and alliances are each described. The major forms of evidence that are used here to gain insight into these topics include the probable ceremonial functions of various kinds of artifacts, patterns in their distribution among deceased persons in cemeteries, and artistic renderings of individuals.

The chapter begins with a discussion of the concept of the "social role", which is a primary analytical unit used here to resolve and reconstruct Scioto Hopewell social life. The active quality of a social role, in comparison to the static and structural nature of the concept of "social identity" or "social position", is emphasized. Next, the nature of Scioto Hopewell leadership is reconstructed. Shamanic qualities that run pervasively through the material record of Scioto Hopewell peoples are documented, but it is shown that classic shaman generalists who drew their powers from nature and used soul-flight were actually rare. Most leaders are found to have been shaman-like specialists who harnessed the powers of nature but used trance states other than soul flight. Also identified are a small number of leaders who employed the common symbolism of a community-shared, shamanic world view but did not perform shamanic tasks, and who apparently obtained their positions by secular achievements. Organizational aspects of Scioto Hopewell leadership are then explored: the degree to which leadership roles were centralized within a few social positions or segregated among many, changes in the centralization/segregation of roles over time, the degree to which roles were institutionalized, patterns of recruitment of leaders from different clans and genders, the geographic expanse of the domains of power of leadership roles, and changes in their domains of power over time. The question of whether priest-chiefs evolved from shaman-like practitioners as roles became segregated over time in Scioto Hopewellian communities is evaluated.

The chapter proceeds to describe the animal-associated clans and clan organization of Scioto Hopewell people. Nine clans are identified from the claws, talons, teeth, and jaws of animals of various species buried with individuals. Subjects addressed include the sizes of clans, their distribution among local symbolic communities, their relative wealth and social connectedness, which clans tended to be recruited for which social roles, the relative degrees of access that various clans had to roles of social importance generally, the determinants of that access, whether clans were linked as phratries in relationships of reciprocal obligation, and an increase in the number of clans over the Middle Woodland period.

Sodalities that crosscut clan and residence groups and ceremonial societies that were clan-specific are considered next. Six explicit archaeological criteria for identifying sodalities are enumerated. Several sodalities and clan-based ceremonial societies are identified, including ones marked by earspools, breastplates, platform smoking pipes, and bear canines, and perhaps ones marked by mica mirors, galena cubes, and canine, fox, elk, or raccoon power parts. The social functions of some of these sodalities and ceremonial societies are inferred from their ritual paraphernalia. Sodalities are shown to have been present at the very beginning of the Middle Woodland period, and their growth in number and size over the period is documented.

The chapter continues with the identification of three genders in Scioto Hopewell societies: masculine and feminine, and a rare gender associated with shamanic roles. Men are shown to have dominated the arena of social leadership through shaman-like roles and sodalities, although women did have more equal access to two important community-wide and/or public ceremonial positions and four other important roles, and clearly were not depreciated culturally. The pattern of male dominance and its continuity over the entirety of the Middle Woodland period is used to argue that Scioto Hopewell peoples probably reckoned kin relationships patrilineally.

The chapter concludes by integrating the reconstructions of Scioto Hopewell leaders, clans, sodalities, and ceremonial societies in relation to the ritual gatherings they attended at ceremonial centers. A typology of ritual gatherings is constructed, based on their sizes and social compositions. Most gatherings are found to have been small, with fewer than 25 gift givers, and/or to have been predominated by one or a few social roles, such as specialized shaman-like practitioners of a kind, nonshamanic leaders of a kind, members of a particular sodality, or members of one kind of clan-specific ceremonial society. The gatherings that were role-homogeneous suggest the collective rites of professional ceremonial societies for the integration, initiation, and/or training of their members. Much rarer were large gatherings of more than 90 gift givers, who were comprised by persons in one or a few social roles or a great diversity of social roles. These large gatherings clearly involved the participation of multiple local symbolic communities. Differences in the proportions of shaman-like leaders, nonshaman-like leaders, and commoners who gave gifts at ceremonial gatherings are found to have depended in part on the sizes of gatherings and consequently varying needs for ordering crowds. Finally changes in the sizes and social compositions of gatherings are tracked over the course of the Middle Woodland period and shown to reflect shifts in the strategies used to create alliances among people from different local symbolic communities and changes in the number of allied communities.

In total, the chapter demonstrates that Scioto Hopewell social, political, and ritual organization was relatively nonhierarchical and decentralized. Horizontal relationships among rough equals, and the sharing of power by multiple, complementary groups, were emphasized over dominant–subordinate relationships and the concentrating of power in the hands of a few.

THE CONCEPT OF THE SOCIAL ROLE

Throughout this chapter, an essential concept that is used and that needs some introduction is that of the *social role*. Social roles will be used here to describe qualities of leaders, clans, sodalities, genders, social gatherings, and other social categories.

A social role is an informal or institutionalized cultural model that guides the actions and interactions of persons in particular positions within a social field by defining or suggesting the mutual rights, duties, actions, responses, and tasks of those persons in a given social context. Roles can vary in their quality from rigid to very free-form (Turner 1991:410–471) across cultures, and within a culture by social situation. At one end of the spectrum are "structural roles", where individuals are envisioned as players in a theater and must conform to the duties and norms of behavior of their roles. Individual practice and human interaction are highly structured by the script of the actor's role, the scripts of the roles of other actors, and that of a responsive audience (e.g., Linton 1936; Mead 1934; Nadel 1957:11, 21). At the other end of variation are processual roles, where the individual is seen as a largely free player who consciously chooses various social strategies in acting and interacting. Roles in this viewpoint are very "general configurations of responses that people negotiate as they form and reform social relationships (e.g., Goffman 1959, 1969; Nadel 1957:26, 35, 41; J. Turner 1991:426; R. Turner 1962). In between these two extremes, roles can be thought of as "media" that facilitate creative social expression, action, and interaction through both their broad constraints and the room they offer for social experimentation and play.

A social role is distinct from a *social identity* or, equivalently, *social position*. A social role is a suite of rights and duties and the actions and tasks they imply that is attributable to the one or more social identities that a person has relative to another in a given social context (Goodenough 1965:324; Linton 1936:113–114). The rights and duties of a role define its domain and forms of action and potentially lead to action (Goodenough 1965:312; Nadel 1957:28, 29) in a normative or negotiated manner. In this way, a role has a dynamic quality, similar to Gidden's (1984:219) concept of agency as a "capability", but at a level of abstraction above the individual and more archaeologically resolvable. Roles are also dynamic in that, as suites of rights and duties that are negotiable, they are a potential locus of social organizational change over time. In contrast, the concept of the social identity, or social position, is structural and static. A social identity or position is a social category, one of a set of "hats" that a person wears in a given social context relative to the social identities of others. A social identity is related to social action only indirectly, through the rights and duties (i.e., roles) associated with it. It is possible to describe and analyze the identities of people in a society in an entirely structural and impersonal way, in order to measure societal characteristics such as complexity, hierarchy, segmentation, connectivity, and contradition. Studies with this purpose lead to a typological categorization of a society's nature at large, rather than a focus on individuals and their actions.

My focus in this chapter on the social and ritual roles of Scioto Hopewell peoples, rather than their social identities, aligns with its aim, and the rationale for presenting the bioarchaeological data base in this book: to personalize our understanding of the Scioto Hopewell with on-the-ground people in action. Archaeologically identifying and defining the social and ritual roles of Scioto Hopewell people provides social substance and dynamism to their material legacy, and at an archaeologically resolvable level of detail.

LEADERSHIP

The nature of leadership in Hopewellian communities in the Scioto-Paint Creek can be defined archaeologically for seven of its aspects that are also key topics in general anthropology. These facets are: (1) the range of *roles* that leaders had, especially their duties, tasks, and domains of action, such as overseeing public community rituals or managing subsistence operations and schedules; (2) the nature of the *power bases* of leaders, including ties to sacred powers and secular advantages obtained through kinship relations, achievements in physical violence, and material wealth; (3) the degree to which leadership roles were *centralized or segregated* among persons; (4) the degree to which leadership roles were *institutionalized*, i.e., standardized in their constellation of rights, duties, tasks, domains of action, and symbolism; (5) the *geographic expanse* of the domain of power of leaders, including the hamlet or residential community, the local symbolic community, or the regional sustainable community; (6) the means of *recruitment* of leaders, including achievement in some domain, or ascription by kinship, residence, or sodality; and (7) how supralocal, institutionalized leadership *arose* and solidified.

In the Scioto-Paint Creek area, leaders were highly diversified in their nature and changed in their characteristics over the course of the Middle Woodland period. Leaders included a mix of a few classic shaman who met a wide range of human needs by sacred means; many shaman-like practitioners who specialized in a narrow range of shamanic tasks; some other practitioners who used sacred but not necessarily shamanic symbolism; and a few individuals who had secular or mixed secular-sacred sources of power. Classic shaman appear to have existed only in the early Middle Woodland period. Table 4.1 inventories the various kinds of leadership roles, with focus on their tasks, that are known for Scioto

Table 4.1. Paraphernalia Probably Used in Shaman-Like and Nonshaman-Like Leadership Roles and Found in Ohio Hopewell Burial Contexts

Shamanic Paraphernalia

War[a] *and/or Hunt Divination, or Sending or Pulling Power Intrusions*

points made of quartz, other translucent gems, obsidian, cannel coal, aventurine ("goldstone")
effigy point forms of copper, mica

Other Divination

quartz crystals, raw or worked
mica mirrors, sheets
cones and hemispheres, quartz or other stones
boatstones (with or without pebbles), quartz or other stones
discs, quartz
cups, quartz
pebbles, quartz or brightly colored stones
marbles
copper balls
fossils and concretions
plummets
owl or owl-eye effigies, including pipes, boatstones

Philosopher

geometrics of copper, mica, tortoise shell, shell, bone, in forms symbolic of the cosmos and directions – rings, annuli, circles, pinwheel designs, star shapes, four-armed shapes, swastika, grid of bosses on a circle, flying human

Healer

small, triangular wands of dark or light color with snake crosshatching on the shaft, topped with a pearl.
possibly small points made of quartz, other translucent gems, obsidian, cannel coal, micaceous schist ("goldstone"), copper, and mica

Body Processor and/or Psychopomp

awls of bone (not antler)

Public Ceremonial Leader

headplates with animal parts – antler stubs, antler rack, feline paw cutout, feather form, deer ears or hummingbird wings
copper effigy antlers without preserved headplate
barracuda jaw scratchers
shark teeth possible scratchers
ocean shell containers, with or without shell spoons
large batons of human or bear femur, antler, horn, or copper rods
large baton in shape of a hallucinogenic mushroom (*Amanita muscaria*)
big, community (Copena) smoking pipes

Manufacture with "Transformative" Materials[b]

raw copper, mica, galena, meteoric iron, silver, gold, pyrite, graphite, cannel coal, obsidian, micaceous schist, hematite, red ochre, malachite, tortoise shell, pearl
flake knives and blades of translucent stones (quartz chalcedony) for working materials

Items Used in Trancing and Ceremony, Including Musical Instruments and Painting Equipment

rattles and tinklers of tortoise shell and copper
small mushroom effigy
effigies of a flying human – pipe and copper geometric

(*Continued*)

Table 4.1. (***continued***)

Shamanic Paraphernalia (*continued*)

- copper nostrils (suggesting breath)
- fan effigies (suggesting smudging)
- dish of mica schist
- cup and pestle
- pallettes and tablets of stone and tortoise shell
- spoon with paint
- spatula of tortoise shell
- panpipes
- flutes
- whistle made of a human radius
- tubes of unknown function (music or sucking)
- [Smoking pipes are excluded because they appear to have belonged to a wide range of persons who were members of a sodality rather than to primarily shaman-like practitioners; see Chapter 4, Sodalities and Ceremonial Societies.]

Possible Shamanic Equipment Used for Unknown Tasks

- tortoise shell pendants, scrolls
- alligator teeth, real, some drilled, some copper effigy
- frog effigy copper cutout
- animal and human effigies of copper and mica: hand, raptor claws, birds, bear
- tortoise shell swan
- human bone carved with animals, creatures, designs
- animal bone carved with designs
- effigy composite creatures and supernaturals

Paraphernalia Not Clearly Shamanic

War[a] *Leadership*

- trophy skulls and jaws and effigy fingers, ears, and hands of cannel coal, leather, copper, and mica
- weapons – a mace, effigy atlatls of copper, mica

Positions of Leadership or High Prestige Marked by Symbols

- headplates without animal parts
- celts, adzes, and axes of copper, meteoric iron, and cannel coal
- reel-shaped gorgets of copper, shell, calcite
- crescents of mica, copper
- tear-drop and other forms of pendants and gorgets of copper and mica
- teaspoon shaped pendants of shell, cannel coal, and calcite
- geometrics of copper, mica, and shell having forms other than of the cosmos or directions: pear-shaped eyes, G-clefs, keyholes, strips, and flowers

Prestigious Clan Roles Marked Largely by Metal/Mica Effigy Power Parts

- effigy power parts (jaws, teeth, claws, talons) of raptors, deer, fox, bear, feline, canine, raccoon, elk, beaver, and opossum, made of copper or mica

Sodality Membership and/or Achievement Rather than Leadership

- breastplates of copper, copper and silver, and iron
- earspools of copper, copper and silver, and meteoric iron

[a] Whether projectile points and weapons made of fancy materials and supposed trophy jaws, skulls, and effigy human parts indicate warfare is unclear. The forms, themselves, of these artifacts suggest the possibility of persons marked for their leadership or achievement in warfare. However, two facts suggest otherwise. First, the fancy points and weapons, as potential implements of warfare, do not associate in burials or ceremonial deposits with the takings of war–supposed trophy human parts. Second, osteological and forensic studies of supposed trophy jaws and skulls (Johnston 2002:105–113) indicate that few, if any, were trophies of war and, instead, suggest the revering of ancestors and probably other cultural practices. The alternative possible functions listed for fancy projectile points and weapons–hunt divination, sending of power intrusions, spiritual-level fighting among individual shaman-like practitioners, and the removing of power intrusions–seem more likely at this time.

[b] For explanations the materials' transformative properties, see the text and Carr and Case (2005b:200, table 5.3).

Hopewellian societies, and the kinds of artifacts that indicate the roles.

Leadership was decentralized: there were many kinds of leaders with complementary roles and arenas of action. Leadership positions were institutionalized to only a moderate degree and changed in the roles they encompassed over time. The domain of power of most leaders was limited to the local symbolic community, and analogous leaders occurred in each local symbolic community. Important persons within clans, which were only weakly localized, and within sodalities, which were nonlocalized, probably had some supralocal influence, but not over multiple local symbolic communities as wholes. However, by at least the end of the Middle Woodland period, at least two leadership roles did come to span multiple local symbolic communities as wholes, which were bound together by alliance into a sustainable community. Leaders in the two supralocal roles were not always drawn from the same local symbolic community, either synchronically or over time. Nor were they affiliated with any one particular sodality. Almost all kinds of leadership roles were each recruited from a wide spectrum of clans, although some clans more commonly held some particular leadership roles (see below, Clan Organization).

In characterizing Scioto Hopewellian leadership, care must be taken to distinguish among three kinds of social personae, whose archaeological remains may surficially look similar. The *classic shaman* is a generalized magico-religious practitioners who employs soul flight and the powers of nature to perform a wide diversity of community-wide and individual client-oriented tasks in the service of society (Eliade 1964:4–5; Harner 1988; Wallace 1966:86, 126, 145). Shaman are found in small-scale societies that subsist by hunting, gathering, and/or fishing, and occasionally in pastoral and simple horticultural societies (Winkelman 1989, 1990, 1992). *Shaman-like practitioners* are specialized magico-religious practitioners of multiple kinds who each perform only one or a few roles of the classic shaman and have different roles from one another. These practitioners evolve and differentiate from classic shaman as a society becomes larger and more complex. They continue to harness power and information from nature to achieve their ends, and retain elements of the basic cosmology of classic shaman defined by Eliade (1964: 259–287), but use trance states other than soul flight in the harnessing process (Winkelman 1989, 1990, 1992). Finally, the *broader community* that a shaman or shaman-like practitioner serves may follow religious beliefs and practices and use religious symbols that have a shamanic tone, but usually these are more diverse and more variable than the esoteric, private beliefs, practices, and symbols of a shaman or shaman-like practitioner (Eliade 1964:7–8, 12–13). I use the adjective, *shamanic*, to refer to classic shaman, and the term, *shaman-like*, to refer to more specialized practitioners.

Shaman-Like Aspects of the Scioto Hopewell Material Record

Looking at the Scioto Hopewell material record at a glance, one sees many apparent shamanic features that run pervasively through it, and one might conclude that Scioto Hopewell societies were led by classic shaman. First is a great variety of equipment for performing specific classic shamanic tasks. Mirrors and cones for divination, sucking tubes for healing, projectile points made of fancy materials for hunt divination or for sending and/or extracting power intrusions, rattles and tinklers for trancing, and effigies of hallucinogenic mushrooms all recall the classic shaman at work. Table 4.1 lists a full range of these kinds of paraphernalia. Many of these are illustrated in Figure 4.1.

A second feature that is suggestive of shamanism is a large number of smoking pipes, many carved with an animal effigy that faces the smoker (Figure 4.2).The pipes are close analogs to historic Woodland smoking pipes that bore effigies of personal power animal spirit helpers and that were used to induce a trance so that the smoker's "dream soul" or "free soul" could call forth his or her personal power animal or travel in the spirit world to it, and be guided by and sometimes merge with it to share in its

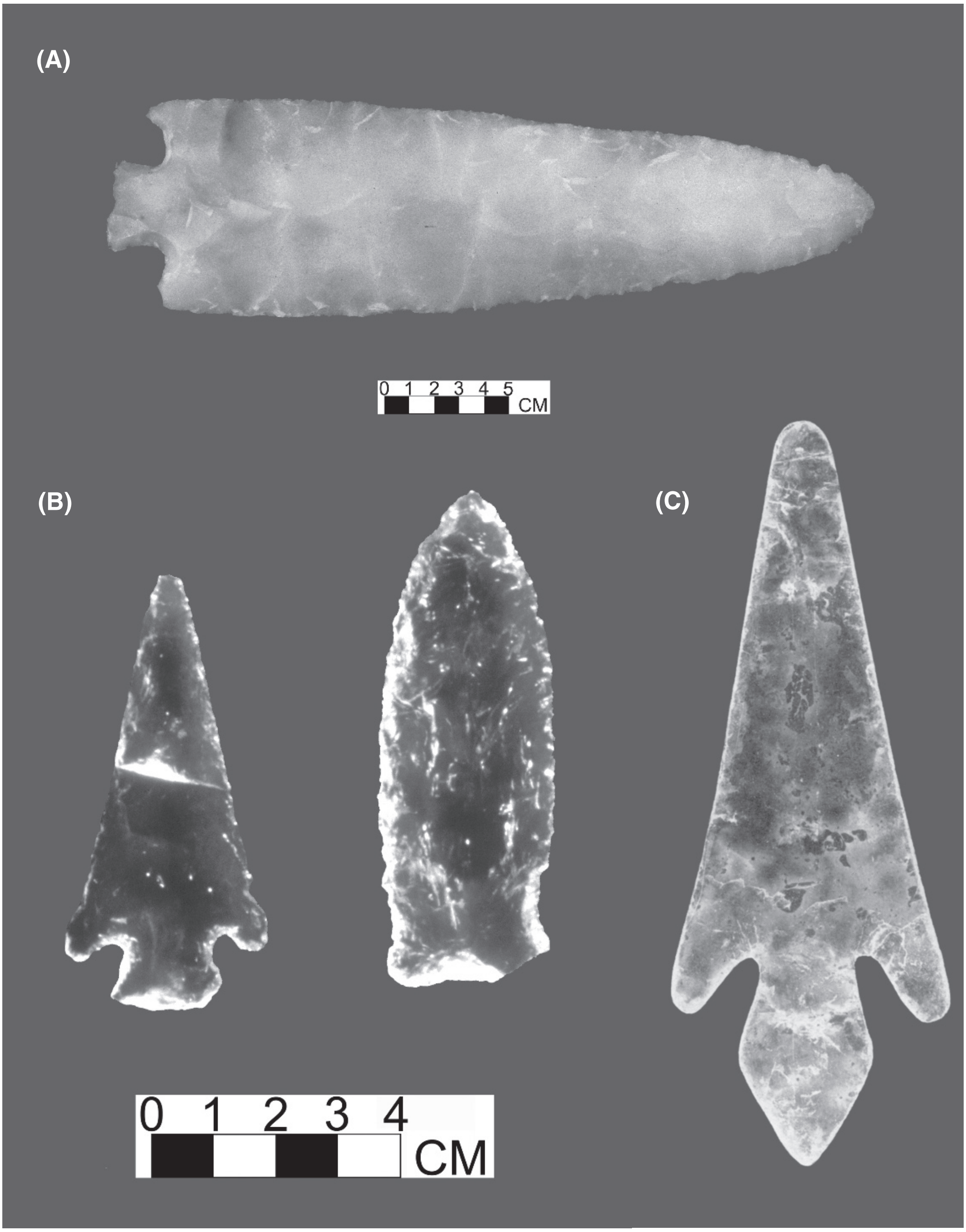


Figure 4.1. Many kinds of Scioto Hopewell ceremonial paraphernalia were useful for performing particular kinds of classic shamanic tasks, which are listed in Table 4.1. However, in most cases, these items were used by shaman-like practitioners, who were specialized in their roles and used trance states other than soul flight, rather than classic shaman generalists who employed soul flight. (A) Ceremonial spear made of novaculite, a grainy, translucent white, milky-quartz-like stone, 12 inches long, from a mound near Painesville, Ohio. Very similar, long, novaculite spears are known from the Seip and Fort Ancient earthworks (Converse 2003:298, figures A, B, C). (B) Quartz crystal projectile point from the Eugene Powell Cache, Fort Ancient earthwork. (C) Mica effigy projectile point from the Hopewell earthwork, Mound 25, Burial 34. When rotated 180°, the item takes the form of a human with hands raised

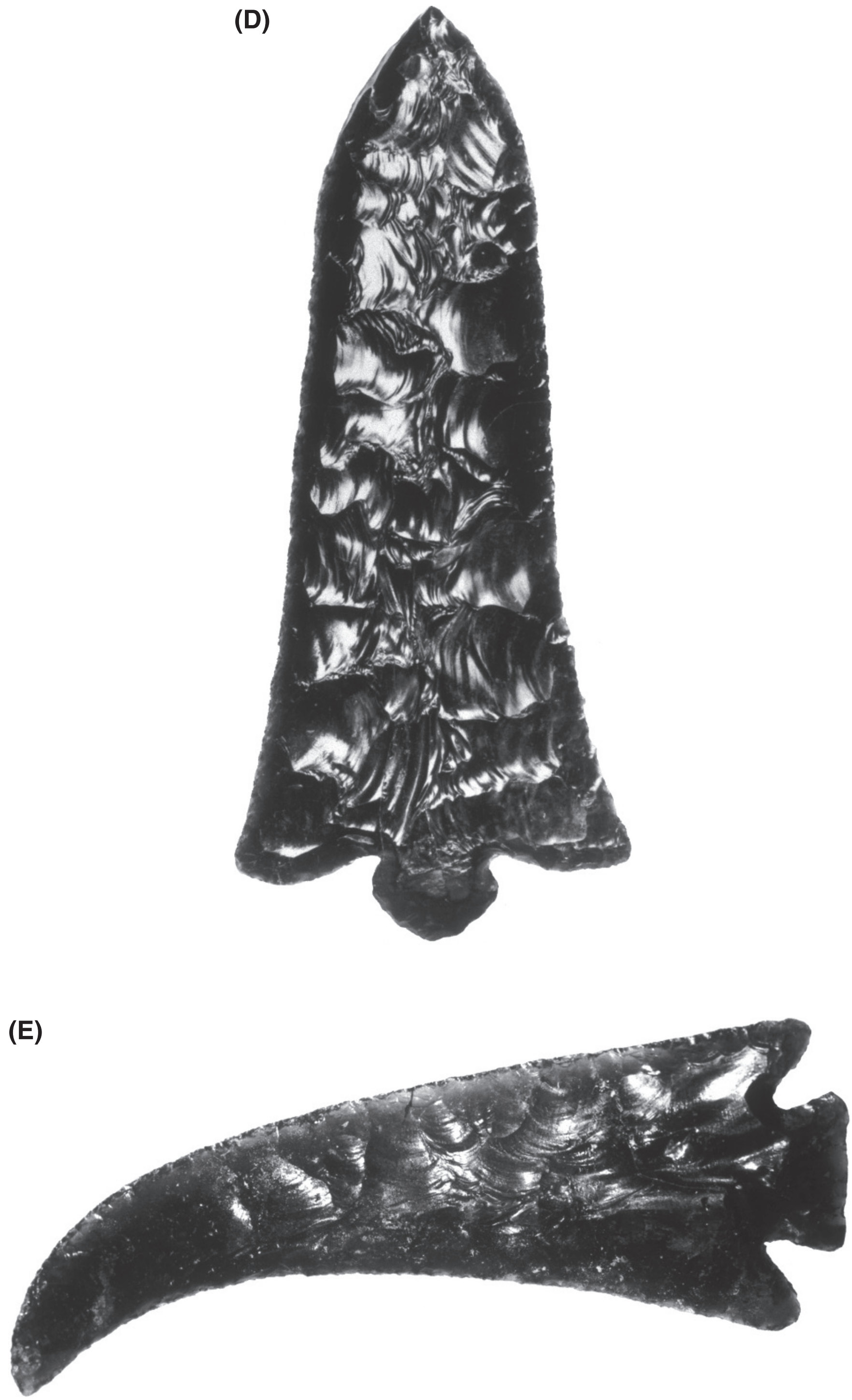


Figure 4.1. ***(continued)*** **and wearing a triangular cap, similar to ones depicted on Scioto Hopewell patinated copper breastplates and occasionally on historic Ojibwa, Midewiwin-related birch bark scrolls (e.g., Dewdeny 1975:18, 49, 66, 102, 120, 139, 146, 149). (D) Obsidian Ross Barbed style ceremonial spear from the Hopewell earthwork, Mound 17. (E) Obsidian ceremonial knife in the form**

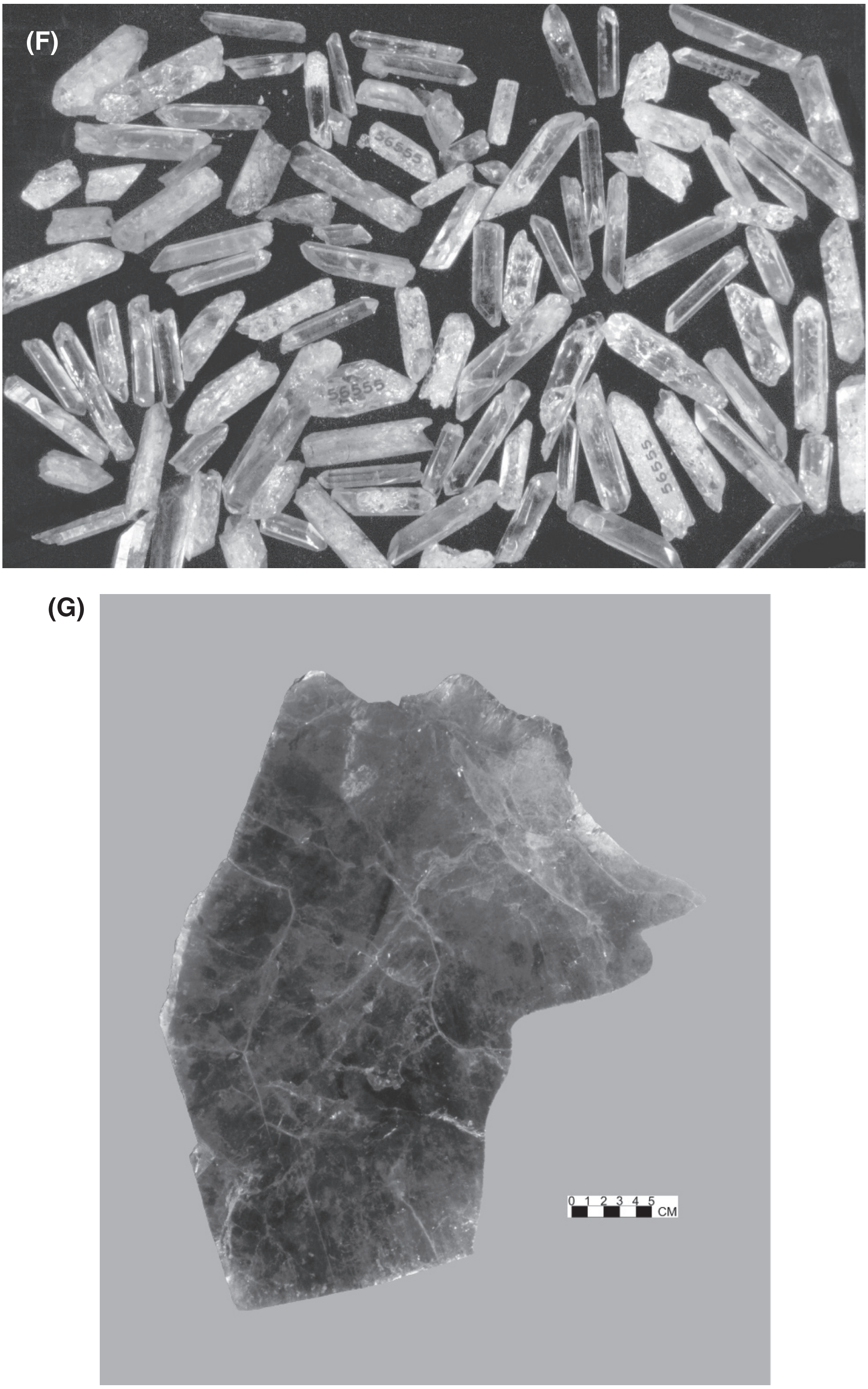


Figure 4.1. ***(continued)*** **of a bird head and beak, from the Seip earthwork, Pricer mound, Burial 58. (F) Quartz crystals from the Hopewell earthwork, Mound 25, Altar 1. (G) Mica mirror cut out into the form of a human with a bird nose and ears of a cat or mammal, as in Figure 4.8A. From the Hopewell earthwork, Mound 25. (H) Cones, copper and hollow, milky quartz and hollow, limestone**

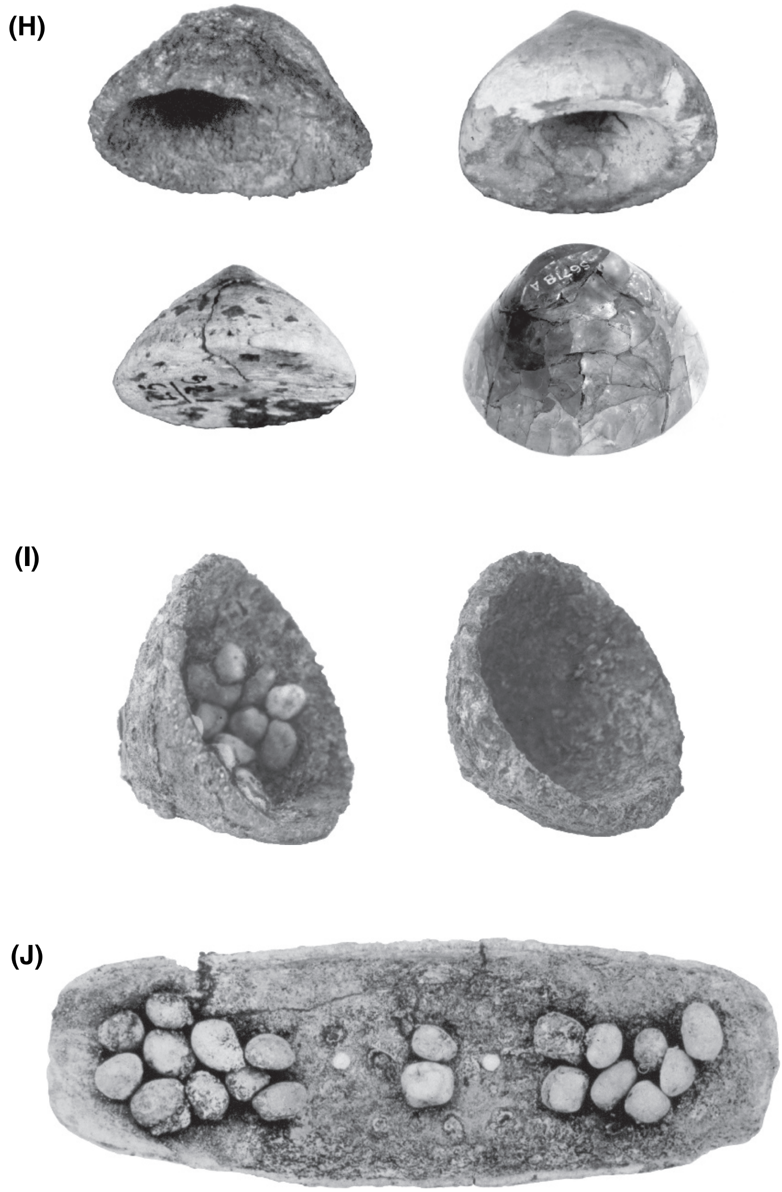
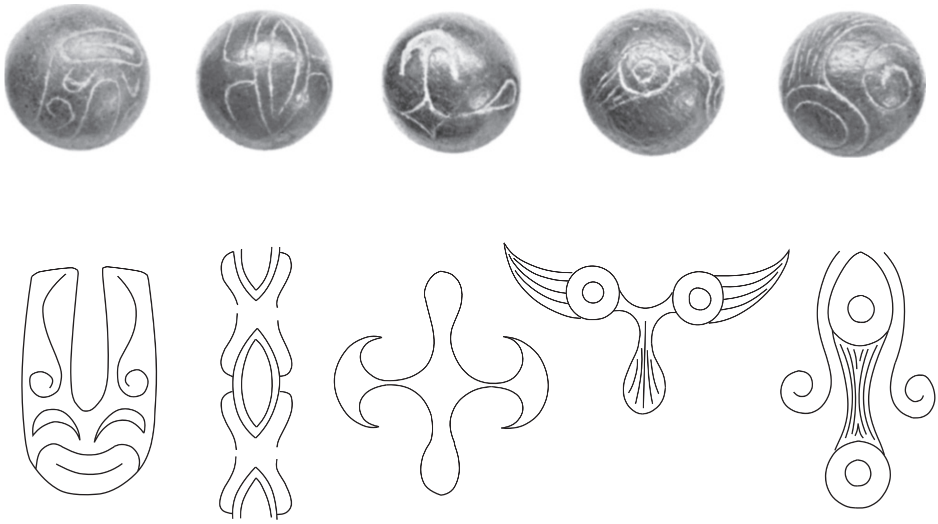


Figure 4.1. ***(continued)*** **and solid, quartz crystal and solid. Three on the top and lower left are from the Tremper mound, the Great Cache. One on the lower right is from the Hopewell earthwork, Mound 25, internal provenience unknown. (I) Copper cone filled with pink and white pebbles, from the Tremper mound, the Great Cache. (J) Copper boatstone filled with white and pink quartz pebbles from the Tremper mound, Great Cache. (K) Steatite marbles and layout of designs engraved on them, from the Seip earthwork, Pricer mound, Burnt Offering adjacent to Burial 13. (L) Quartz marble from the Hopewell earthwork, Mound 25, internal provenience unknown. (M, N) Fossil ornaments resembling caterpillars or pupae, respectively from the Hopewell earthwork, Mound 25, Altar 1 and Skeleton 278. (O) Slate effigy of a pupa from the Seip Earthwork, Pricer Mound, Burnt Offering. (P) Plummet of shell useful for divining, not as a net weight, from the Hopewell earthwork, Mound 25, Altar 2. (Q) Owl effigy of steatite, hollow. From the Seip earthwork, Pricer Mound, Burnt Offering. (R) Owl effigy smoking pipe of steatite. From the Seip earthwork, Pricer mound, ceremonial deposit three**

(K)



(L)

Figure 4.1. (*continued*) **feet above the Great Multiple Burial. (S) Copper geometric cutout of a snake head, embedded with two raptor talons, owl eyes, a bear's head, duck heads, the four cardinal directions, and the circle-cosmos, when viewed with different sides up. From the Hopewell earthwork, Mound 25, Copper Deposit. (T) Triangular wands of bone, dark with pearl on top and light, respectively from the Hopewell earthwork and Turner earthwork. (U) Sucking/blowing tube made of formed turtle shell, from the Seip earthwork, Pricer mound. (V) Set of deer metacarpal skewers used to peg down the fabric canopy over the Great Multiple Burial, Pricer Mound, Seip earthwork. (W) Six of a set of eight deer metacarpal skewers in situ, buried along the side of a shaman-like practitioner with a copper headplate with copper and mica effigy wings of a shimmering, flying creature (insect?, cicada?, hummingbird?) and/or effigy deer ears, from the Hopewell earthwork, Mound 25, Burial 11. See Shetrone (1926a:70, figure 26) for the original excavation photograph of the grave. (X) Barracuda jaw scratchers from the Hopewell earthwork, Mound 25, Burial 25. (Y) Copper effigy, possibly of a scratcher made from alligator, caimin, shark, or other reptile or fish teeth in the jaw or set in a holder. From the Hopewell earthwork, Mound 25, Copper Deposit. (Z) Sharks teeth possible scratchers/pendants from the Liberty earthwork, Edwin Harness mound. (AA) Ocean shell container, decommissioned to form head of a long-beaked bird with cutout eye, from the Hopewell earthwork, Mound 25. (BB) Antler baton carved with a human head, from the Hopewell earthwork, Mound 25. (CC) Baton or sucking/blowing tube made from human or bear femur, inscribed with a bear paw. From the Hopewell site, Mound 25, Burial 281. (DD) Large, communal, "Copena style" smoking pipe effigy of a bird resembling a whippoorwill, carved from steatite. One of five communal pipes found in the Seip earthwork, Pricer mound, above the Great Multiple Burial. (EE) Copper effigy turtle carapace rattle, one of 18 sewn on a leather belt, each with 12 holes in the four semicardinal directions, from the Mound City earthwork, Mound 7, Burial 12. (FF) Immature bear canine tinklers from the Hopewell earthwork, Mound 25. (GG) Copper effigy mushroom, of the hallucinogenic** ***Amanitas*** **genus, from the Mound City earthwork, Mound 7, Burial 9. (HH) Stone carving of a mushroom, from the Fort Ancient, earthwork, Middle Woodland component. (II) Copper nostril inserts in a skull, Hopewell earthwork, Mound 25, Burial 6. See Shetrone (1926a:65, figure 24, left, for photograph of the original human remains. See Shetrone (1926a:63–66, figure 24, right) and Shetrone and Greenman (1931:374–375, 408–410, figure 33) for two other examples**

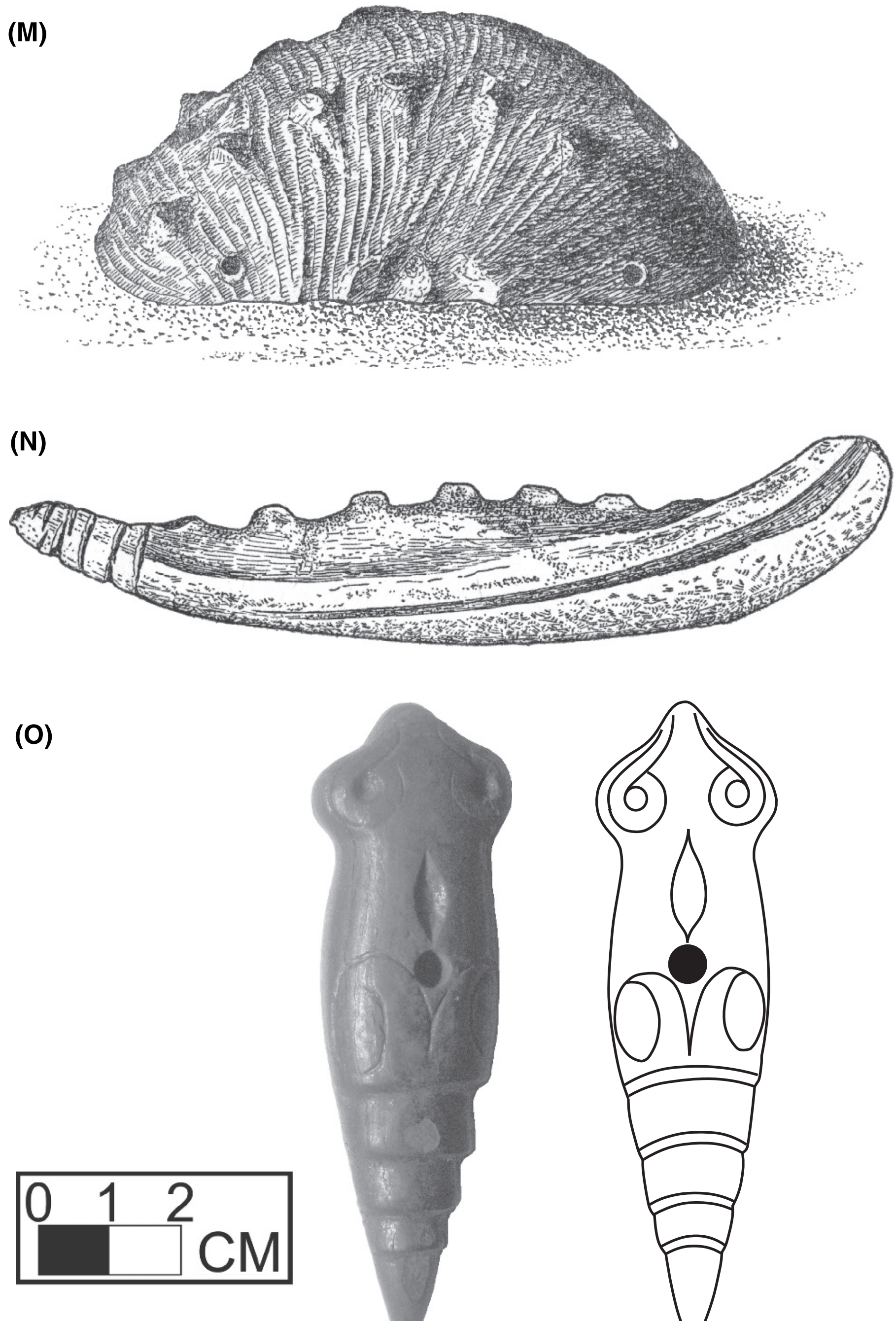


Figure 4.1. (*continued*) **from the Hopewell and Seip earthworks. (JJ) Copper-sheathed panpipe from the Hopewell earthwork, Mound 20, Burial 1. Left, obverse side. Right, reverse side. (KK) Copper-sheathed whistle or flute from the Rockhold mound, Burial 1. (LL) Whistle made of a human radius bone with copper ends and incised with a curvilinear design of a masked human head facing left (bottom fifth) with a headdress (top four-fifths), from the Bourneville mound. The headdress is similar in its great height to ones depicted on some Scioto Hopewell copper celts and breastplates. (MM) Mica effigy bird-tail fan from the Liberty earthwork, Edwin Harness mound. (NN) Chlorite stone effigy bird tail (fan?). From the Hopewell earthwork, Mound 17, Deposit 2. See credits.**

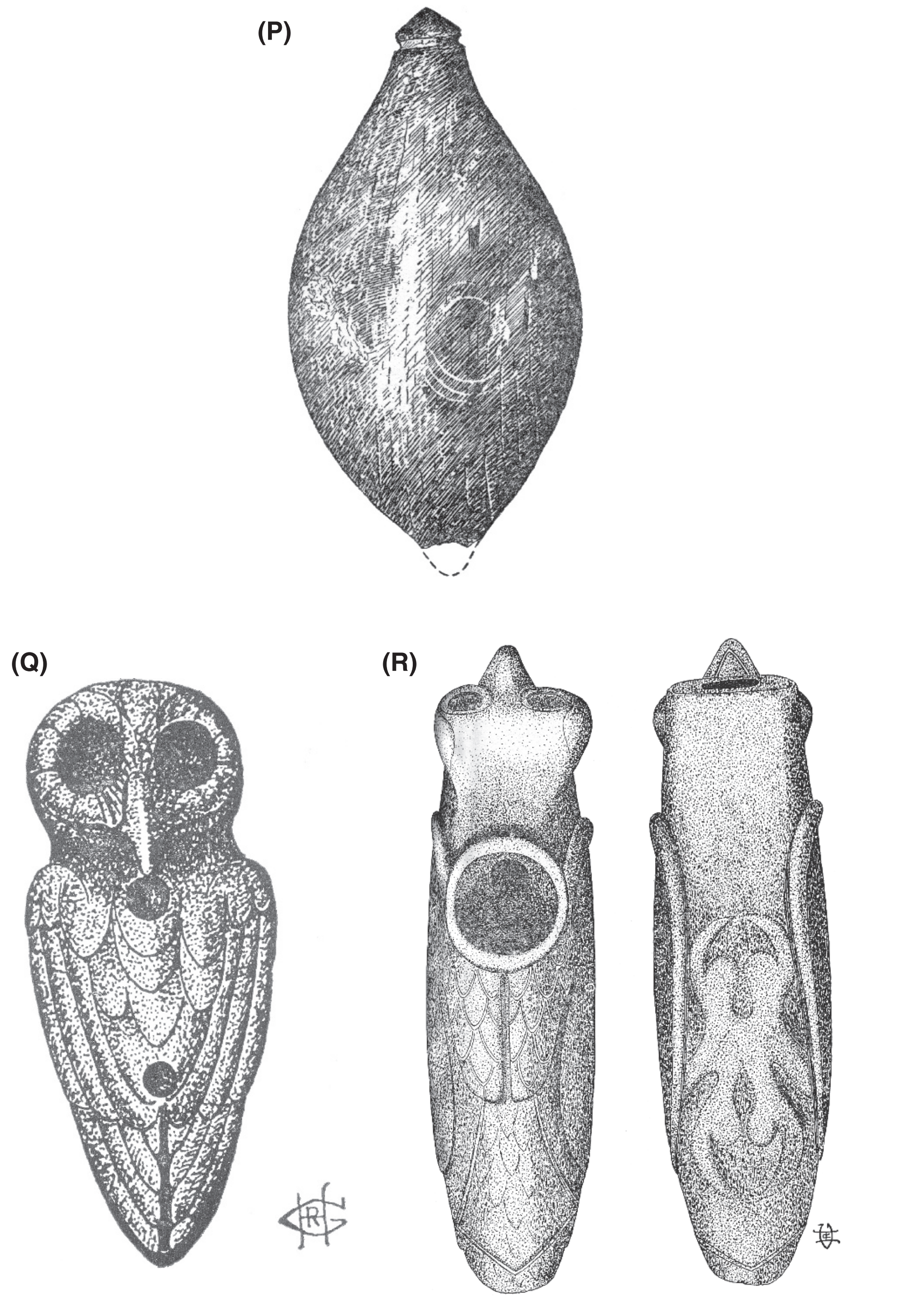


Figure 4.1. (***continued***)

(S)

Figure 4.1. (*continued*)

power (von Gernet and Timmins 1987:39–40; Harner 1980:73–88; Hultkrantz 1953:39–40; Grim 1983:144; Mails 1979:50–51, 57). The consistent positioning of the effigy animals facing the smoker, and the great diversity of depicted species (29+; Otto 1984, 1992:5), each with its own talents, reinforce the identity of the carvings as personal power animals.

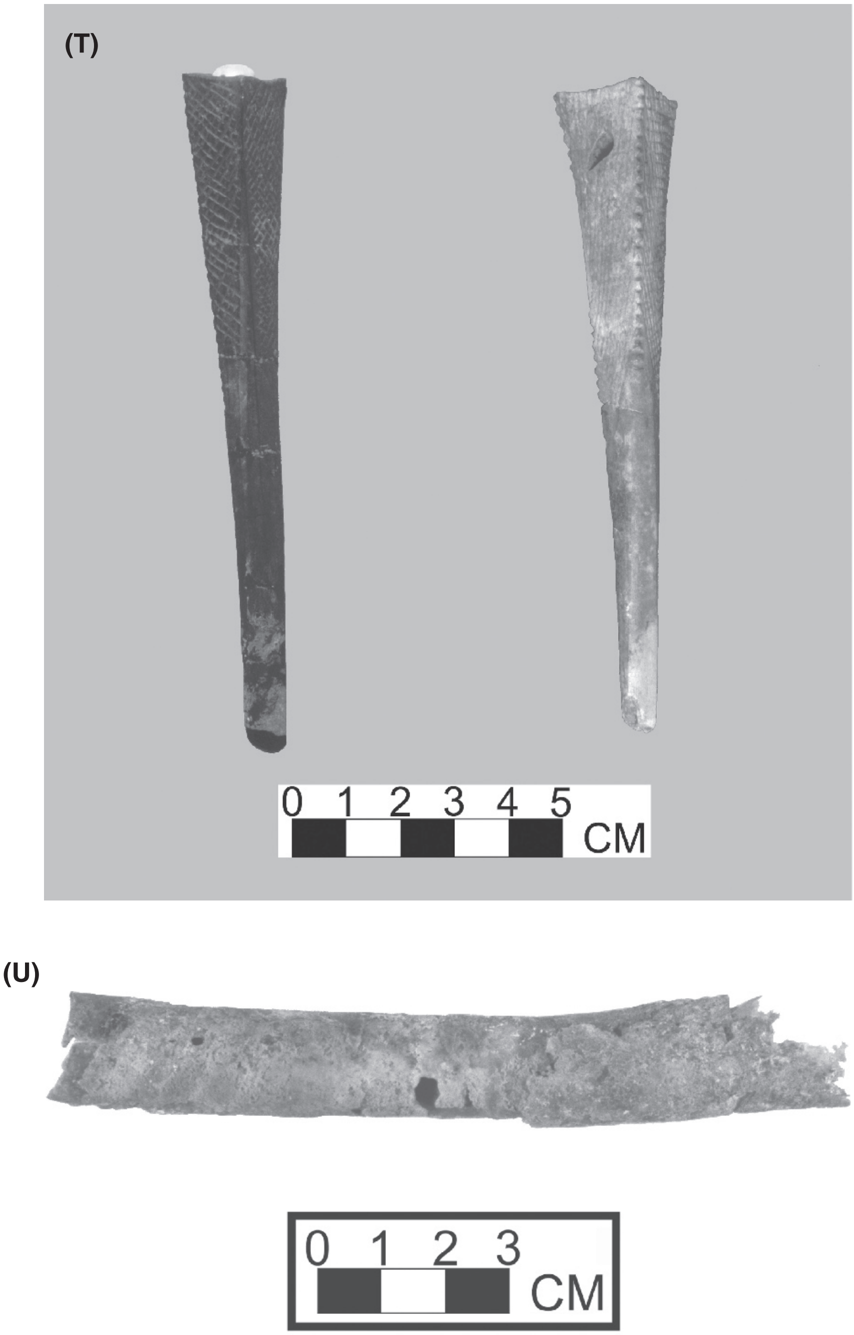
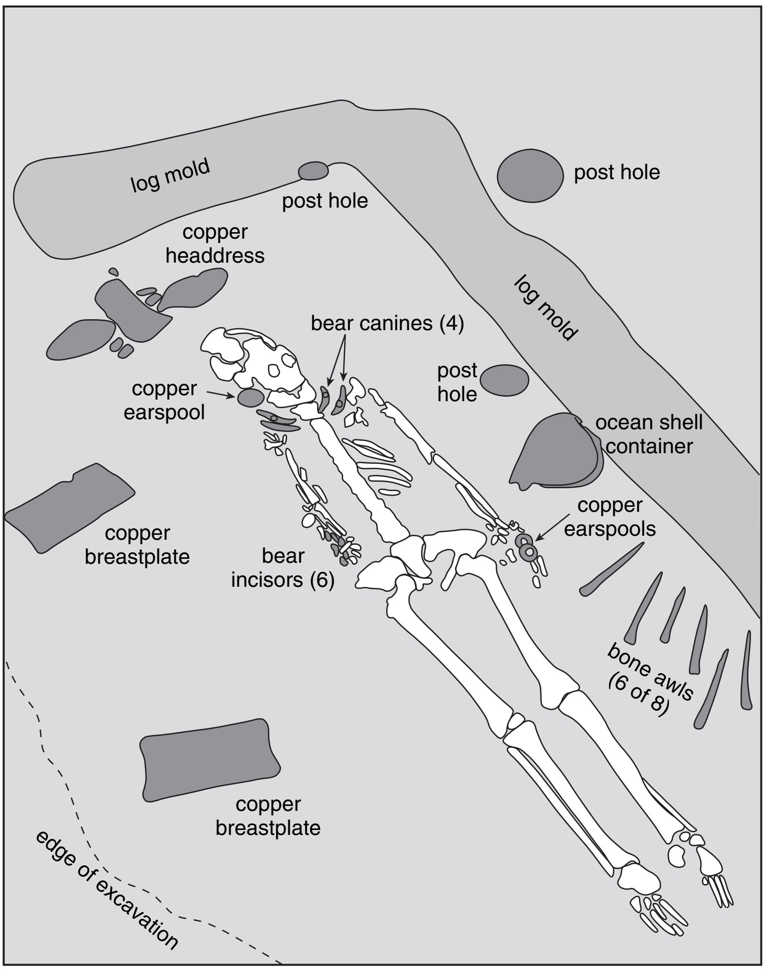


Figure 4.1. (*continued*)

(V)

(W)



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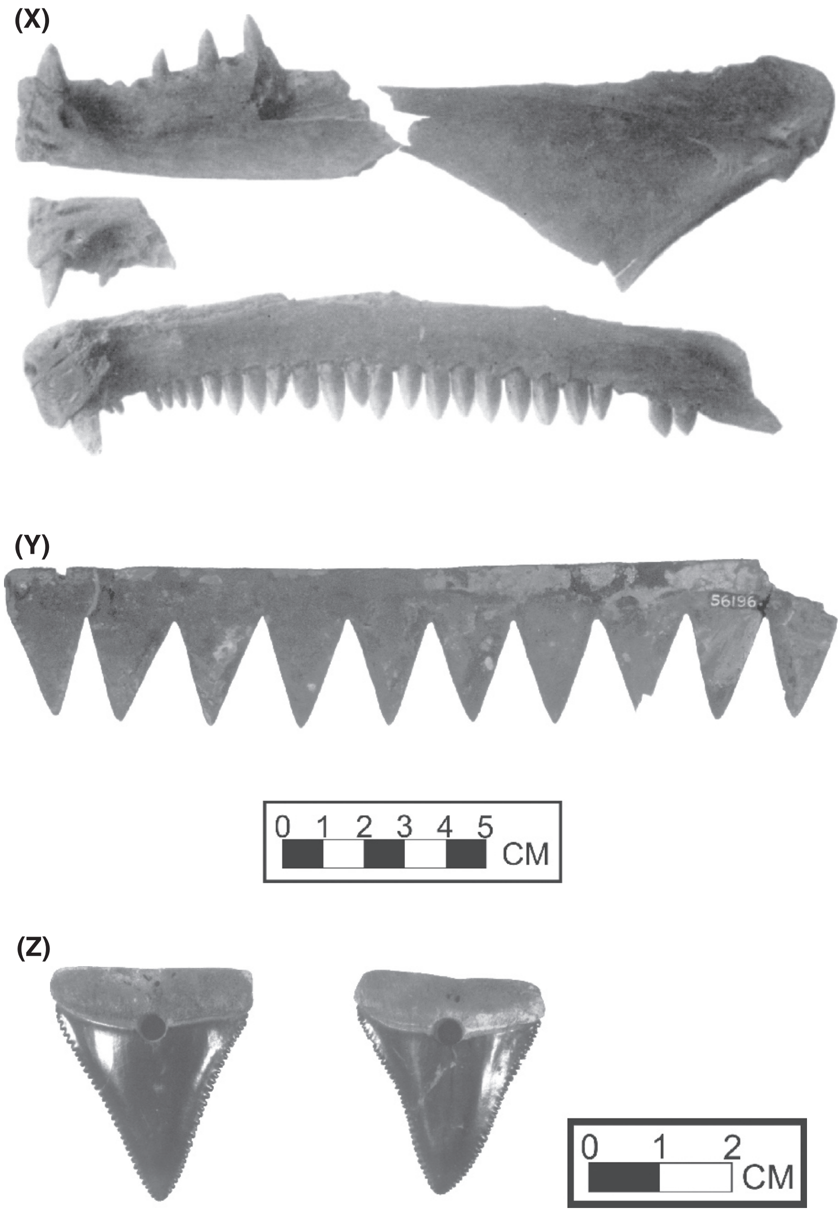


Figure 4.1. (***continued***)

A third common characteristic of the Scioto Hopewell material record that suggests shamanism is the use of raw materials with a transformative quality to manufacture most public and elite artifacts. Transformation is a core quality intrinsic to classic shamanic tasks: the sick person is cured, the lost object is divined and found, and the soul of the deceased is guided from the world of the living to a land of the dead. The materials of Hopewell ceremonial paraphernalia and elite items mimic such transformation in three ways: by changing from light and shiny to dark and dull and back again, by simultaneously displaying both

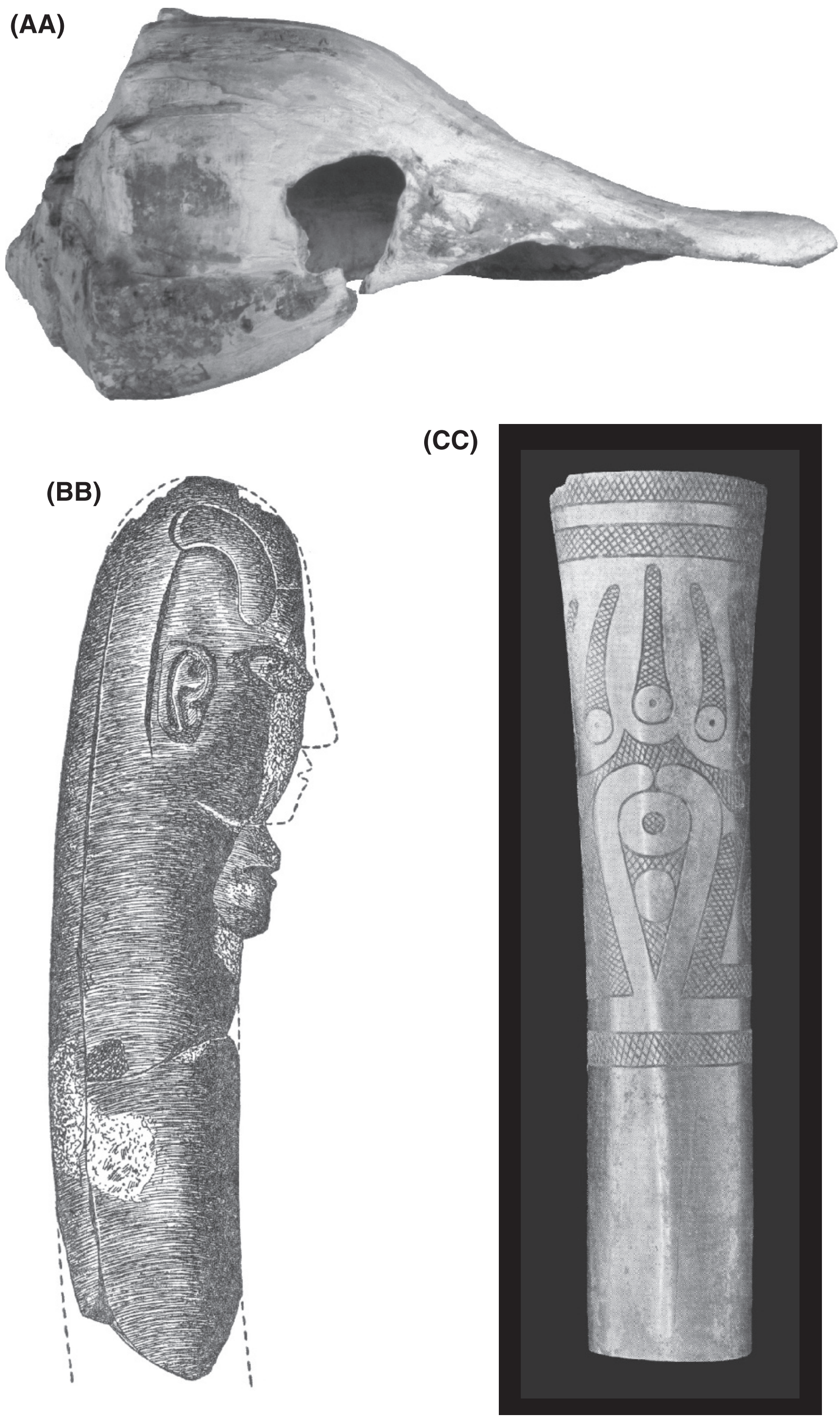


Figure 4.1. (*continued*)

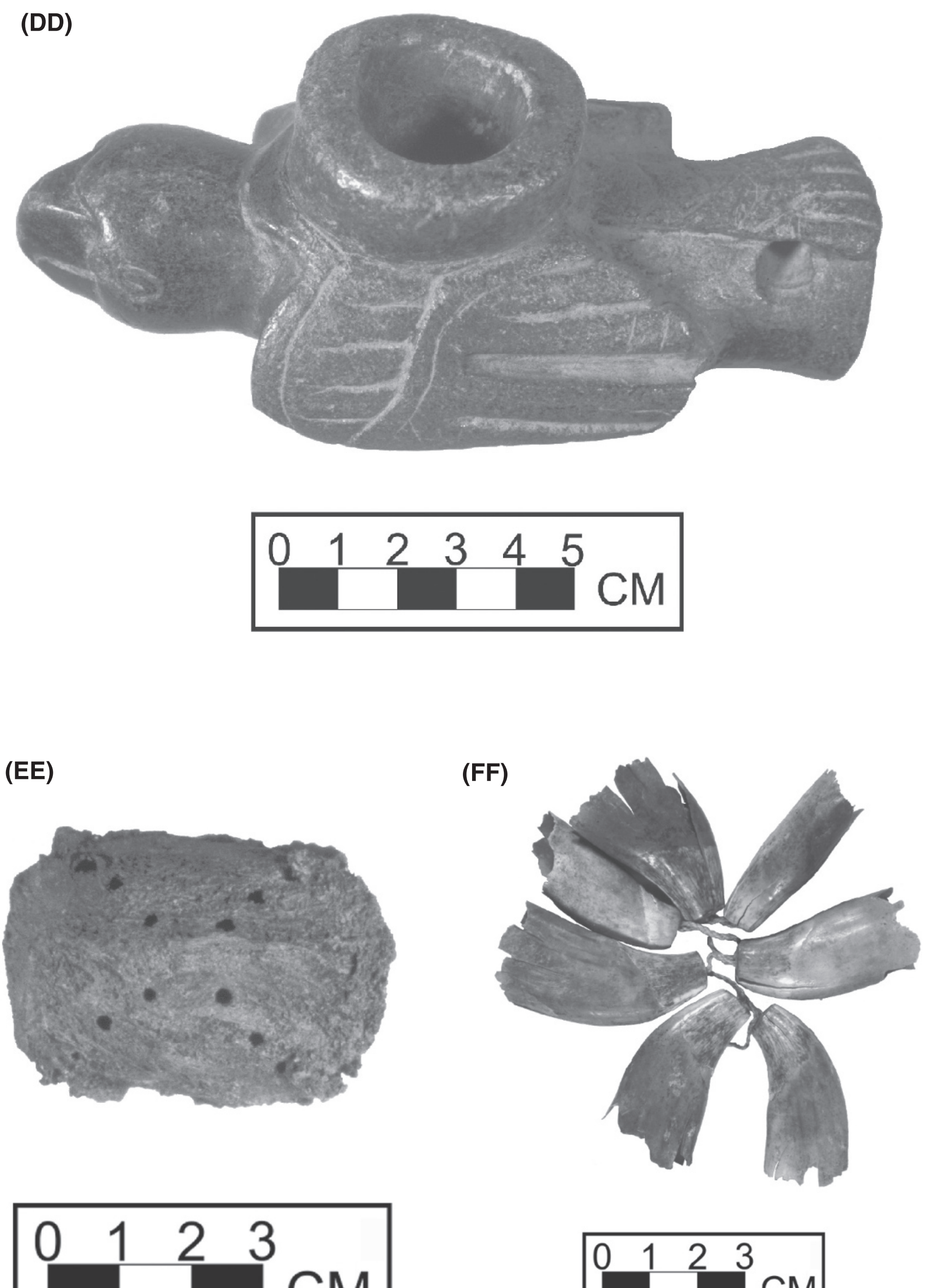


Figure 4.1. (***continued***)

Figure 4.1. (*continued*)

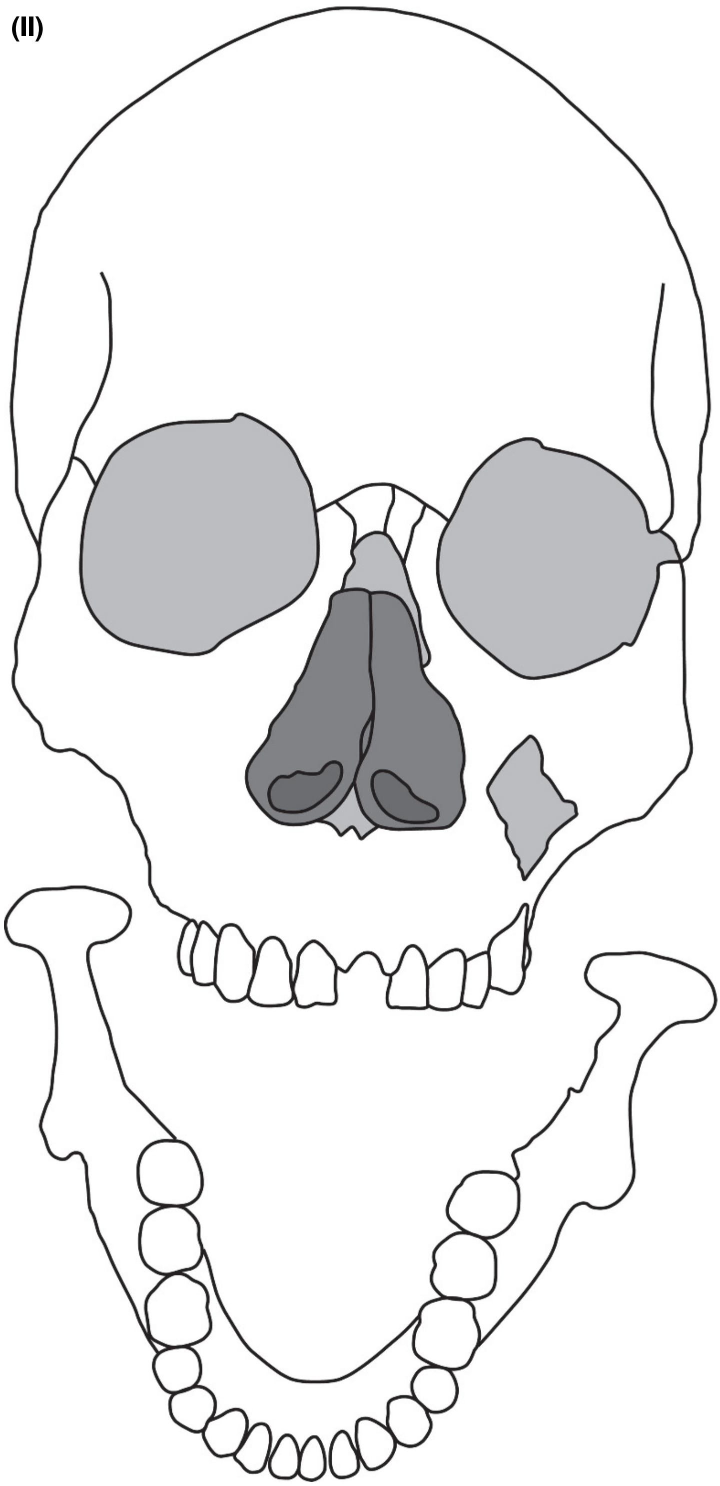


Figure 4.1. (*continued*)

(JJ)

(KK)

Figure 4.1. (***continued***)

Figure 4.1. (*continued*)

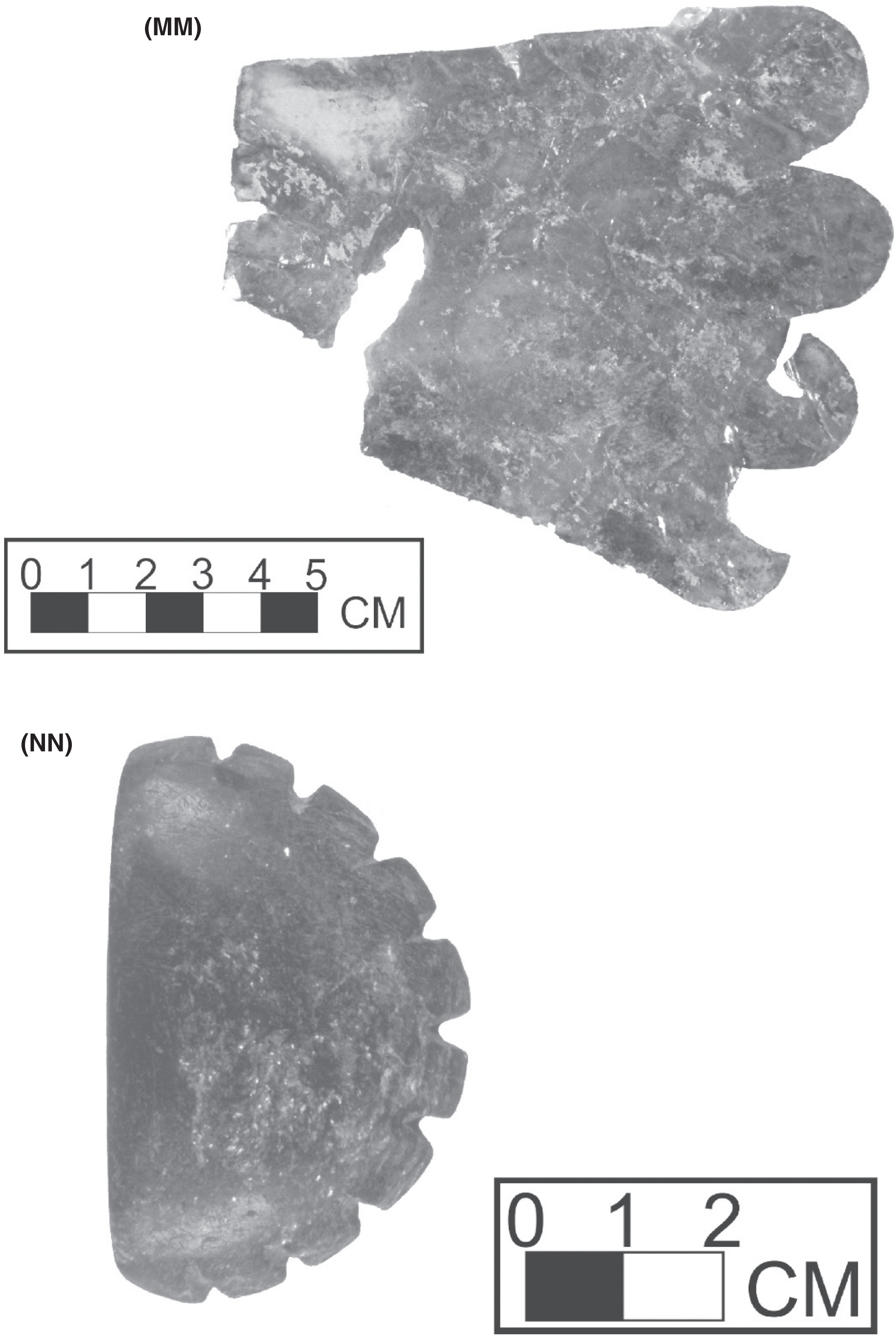


Figure 4.1. (*continued*)

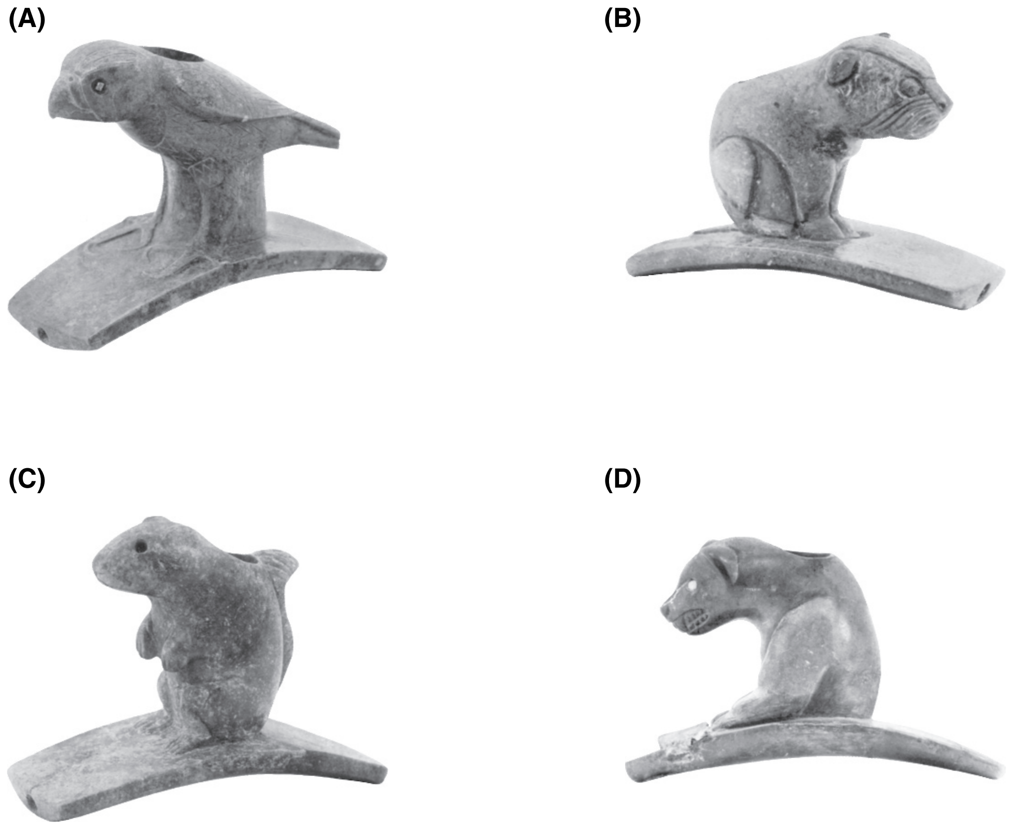


Figure 4.2. Smoking pipes with sculpted animal effigies from the Tremper earthwork, the Great Cache. (A) Hawk. (B) Wild cat. (C) Squirrel. (D) Black bear. See also Figure 4.19A–D. See credits.

the light/shiny and the dark/dull poles, and by the placement of light/shiny and dark/dull materials in complementary positions within graves, ceremonial deposits, and earthworks. A wide variety of the materials used by Scioto Hopewell peoples have these transformative qualities, such as copper, silver, meteoric iron, mica, steatite, chlorite, clay for pottery, human bone, obsidian, Flint Ridge flint, shell, and pearls (Carr and Case 2005b:199–201, table 5.3). Thus, for example, shiny copper corrodes but can be polished and made shiny again. Obsidian is simultaneously shiny yet dark (Figure 4.1D, E). Certain cherts that are comprised simultaneously of patches of dark and light colors were used to make ceremonial artifacts (Figure 4.3A). A few light quartz projectile points were buried as a contrast to hundreds of dark obsidian projectile points in Alter 2 of Hopewell Mound 25 (Figure 4.1B, D–E). Similarly, elaborately carved bone in both a light, unburnt state and a dark, burnt and polished state were buried in quantity in Mound 1 of the Hopewell earthwork (Figure 4.3B, C). Significantly, color ambiguity is associated with shamanism crossculturally (Reichel-Dolmatoff 1978; Roe 1995:67).

The transformative nature of copper, in particular, was harnessed by Scioto Hopewell artists with a shamanic cast. On copper breastplates, celts, and headplates, artists depicted and memorialized their leaders through a patination process (Carr 2000c, d, 2005e; Carr and Lydecker 1998; Carr et al. 2002). To shiny, orange copper were applied mild, natural acids and salts, transforming its surface over the course of a few weeks into pictures of ceremonial leaders formed by the brilliant colors of deep blue azurite, green malachite, aqua turquoise, light blue chrysocolla, and red cuprite (Figure 4.4).

Fourth, many of the raw materials from which public ceremonial and elite artifacts were made evoke the idea of the shaman's

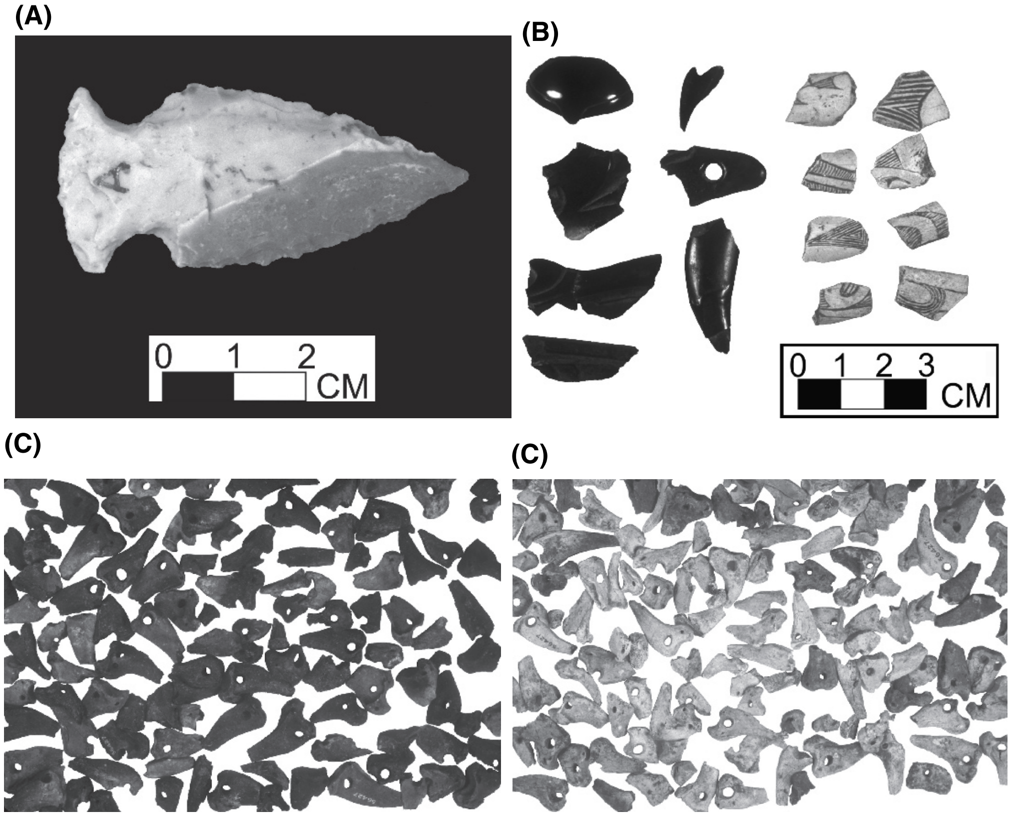


Figure 4.3. Transformation, which is a core characteristic of shamanic tasks, was expressed pervasively in Scioto Hopewell art, ceremony, and daily life. The theme is seen in the use of materials that are at once dark and light and in the ceremonial placement together of light and dark materials. (A) A Lowe Flared Base projectile point made from half dark and half light chert. From the vicinity of the Liberty earthwork. (B) Light, unburnt carved bone and dark, burnt and polished carved bone buried together in the Hopewell earthwork, Mound 1. (C) Dark, burnt bear claws and light, unburnt bear claws buried together in the Hopewell earthwork, Mound 25, Altar 1. See credits.

power to see within, through, or beyond (Halifax 1979; Harner 1980:27–31). A shaman has the ability, through soul flight, to see and "bring into light" nonordinary realities that otherwise would remain unknown and "in darkness", such as various layers of the cosmos. A shaman can also see, with his or her "strong eye", the nonordinary aspects of this world, including spiritual representations of diseases, ghosts, and lies within the dishonest. These talents of a shaman are implied in the Scioto Hopewell case by shiny materials that reflect an image and can be gazed into (e.g., thick sheet mica, galena, silver, meteoric iron), translucent materials that let light through their darkness (e.g., chalcedony, Knife River flint), and transparent materials that are conceived in some cultures to be solidified light or water (e.g., quartz, novaculite, thin sheets of mica, thinned obsidian, amethyst, fluorite; Harner 1980:29 and references therein).

Finally, the broad spread through Scioto Hopewellian elite art of a curvilinear style characterized by "positive–negative play" (e.g., Figure 4.5A–J) suggests the pervasiveness of shamanic thought, practices, and leaders in Scioto Hopewellian society. Positive–negative play is the capacity of an artistic rendering to shift visual attention back and forth between two aspects of the work, seeing one part as figure and the other as background, but also the latter as figure and the former as background (Roe 1995:64). The result of this visual uncertainty is a sense of change of one thing into another,

Figure 4.4. (*Top*) A copper breastplate patinated with the image of a duck-human with spread wings, and (*Bottom*) a tracing of the image. From the Fortney mound, Burial 5. Copper minerals forming the composition are: deep blue azurite, pine-to-olive green malachite, sea-foam green chrysocolla, and possibly a power blue colored chrysocolla-azurite mixture or turquoise. See Figure 4.4 in the Appendix on the CD-ROM for better definition of the image and to see the patina colors. Minerological identifications by petrological reflected-light microscopy, X-ray diffraction, and electron microprobe. See credits.

or transformation – a core theme of shamanism. Indeed, positive–negative play is associated crossculturally with animistic shamanism and trancing (Cordy-Collins 1980; Roe 1995:68; see also Lewis-Williams and Dowson 1988; Reichel-Dolmatoff 1987).[1]

The pervasiveness of these five shamanic qualities in the Scioto Hopewellian material record certainly indicates the religious beliefs, practices, and symbols of broad communities that shaman or shaman-like leaders served. The five qualities do not, however, directly address whether leaders in Scioto Hopewellian societies were classic shaman generalists or diverse specialized shaman-like practitioners, whether other kinds of leaders may have existed as well, and the relative frequency of different kinds of leaders. To answer these questions, one must turn to depictions of leaders, themselves, consider their costumery and other symbols of position, and analyze the distribution of shamanic roles and other roles among leaders to determine whether the roles were bundled together in single practitioners or dispersed among many specialists.

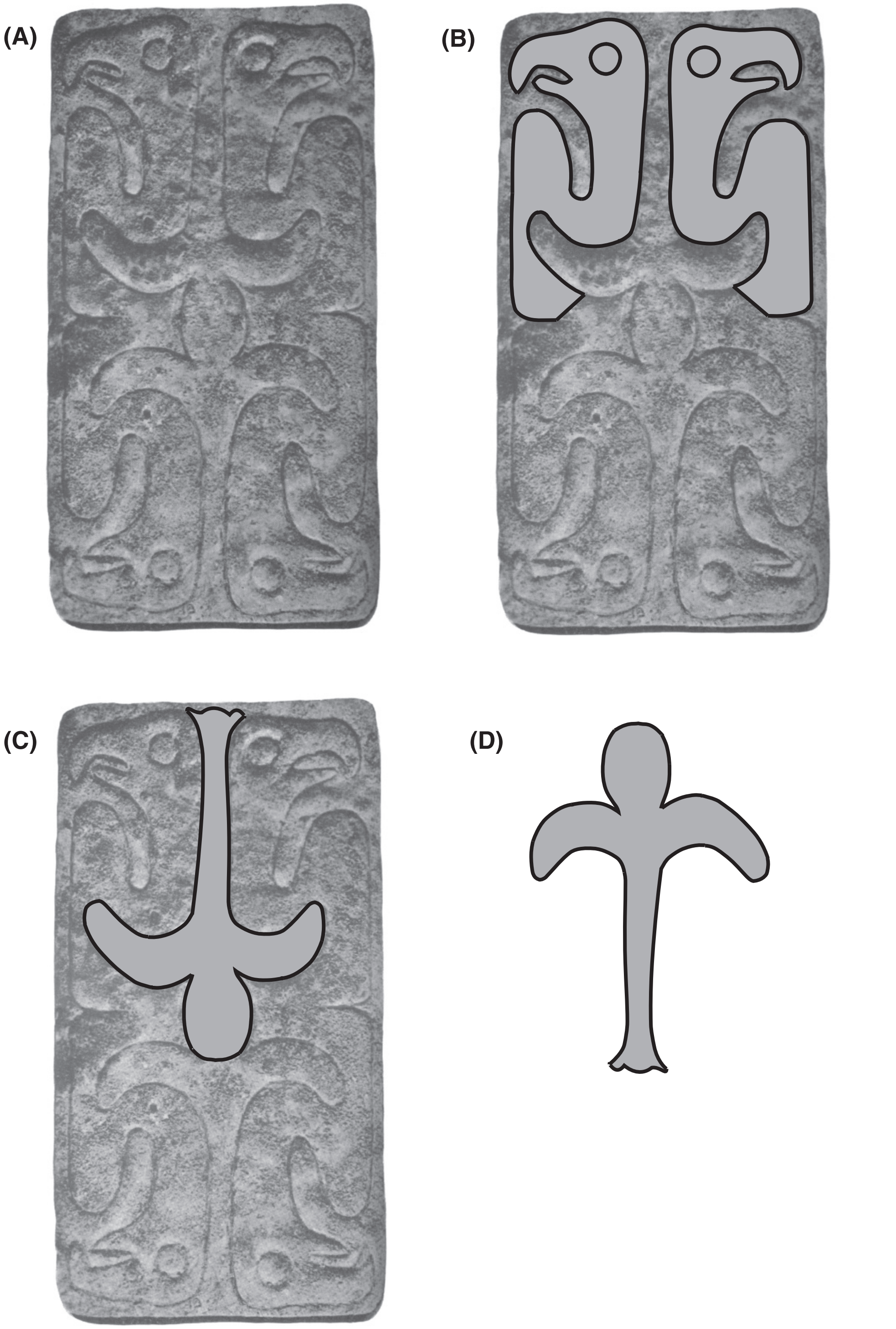


Figure 4.5. (A) Positive-negative play through the ambiguity of line-work on a copper repousse breastplate from the Mound City earthwork, Mound 7, Burial 9. (B) Two raptors. (C) A human or emergent plant form upside down. The entire central "column" running vertically on the plate is a rendition

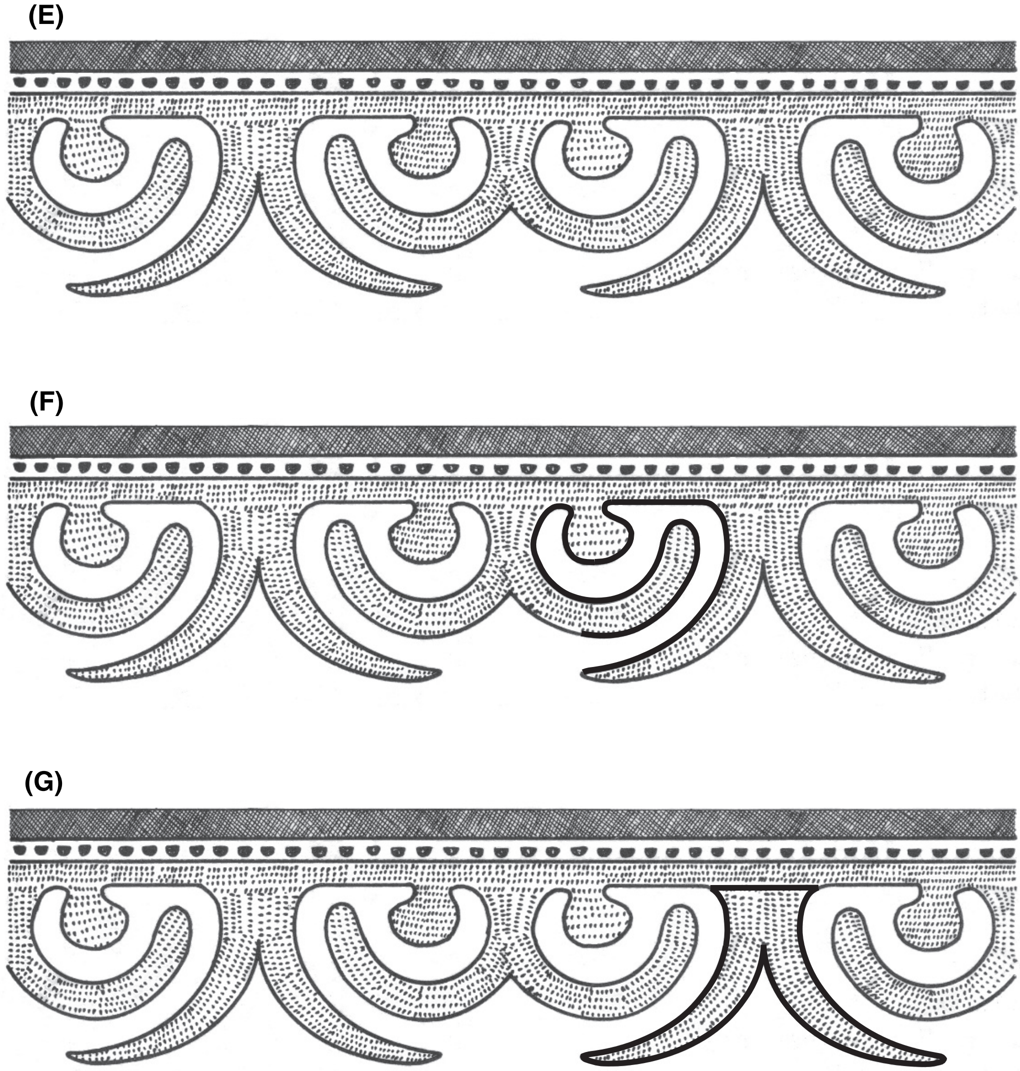
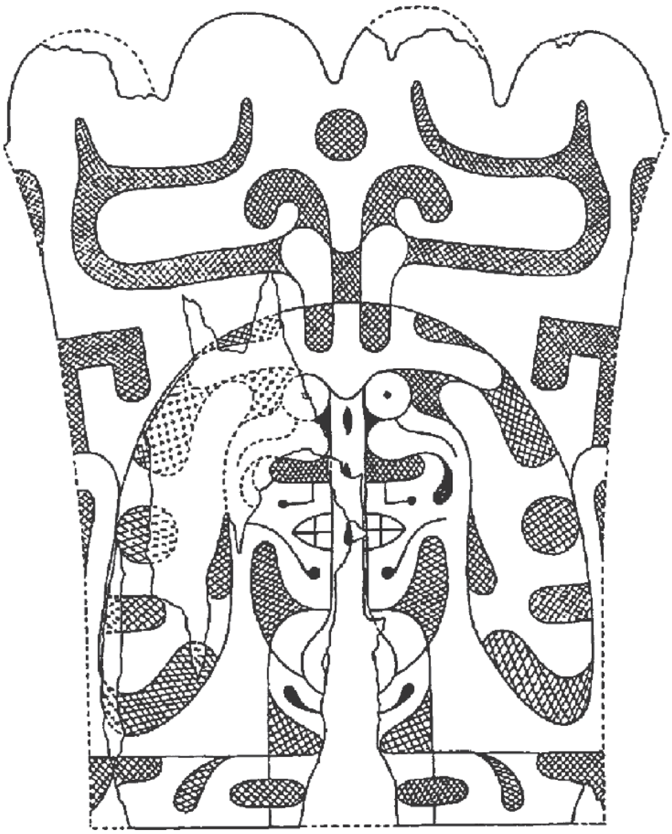


Figure 4.5. (*continued*) **of the** ***axis mundi*****, analogous to its representation and position on five to seven of the fourteen know Adena tablets. (D) The human or emergent plant form rotated right side up. (E) Positive-negative play through the ambiguity of dark and light on a Havana Hopewell zone-incised, dentate-stamped ceramic pot from the Klunk cemetery, Mound 1, Tomb B in the lower Illinois valley. (F) Stylized bird tail in light/shiny/polished surface. (G) Forked snake tongue in dark/dull/stamped surface. (H) Positive-negative play through the ambiguity of dark and light, on an incised human or bear femur, from the Hopewell earthwork, Mound 25. (I) Human face with drooping headdress in dark. (J) Masked human face in light. See credits.**

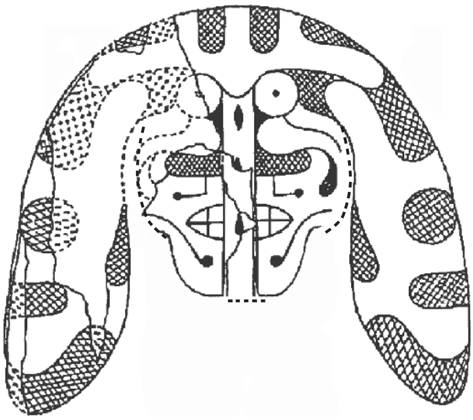
Depictions, Costumery, and Symbols of Position of Leaders

The very small number of Scioto Hopewell depictions of persons in the state of soul flight and using the powers of nature – the hallmarks of the classic shaman – suggests that classic shaman were infrequent among Hopewell peoples in the Scioto-Paint Creek area. Only two such depictions are know there. One is a pipe excavated by Squier and Davis (1848:247; Fowke 1902:592) from the Mound City earthworks (Figure 4.6A). It depicts a bird-man: a man's head with the body of a bird. The bird-man appears to be in flight, because

(H)



(I)



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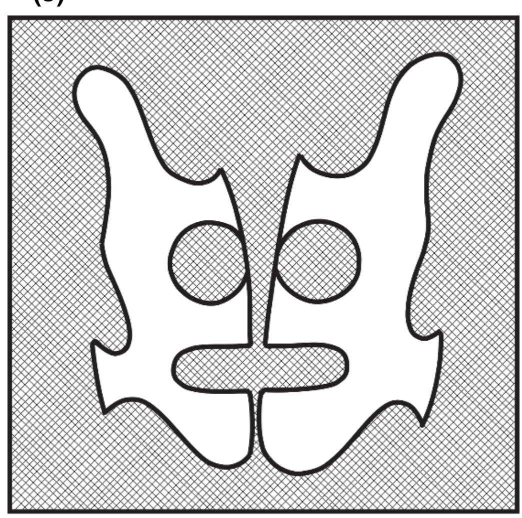
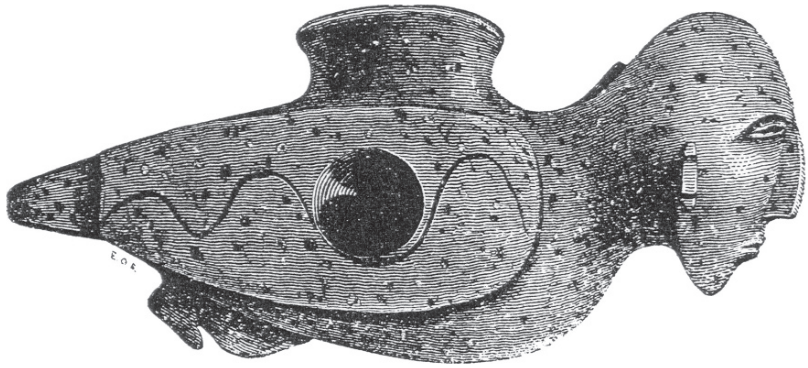


Figure 4.5. (*continued*)

(A)



(B)

Figure 4.6. (A) A bird-man in flight. Smoking pipe from the Mound City site, Ohio. (B) A bear shaman. The "Wray" figurine, limonite and schist, from the Newark site. See credits.

when the pipe is held for smoking, the bird's body is oriented fully horizontally rather than in a perched position, and the head of the man faces forward as would the head of a bird in flight rather than perched. This is a convincing case because soul flight is most commonly experienced as one being transformed into a bird that flies or being carried by a flying bird (e.g., Eliade 1964:474–482; Halifax 1979:16–18). Significantly, the depiction is on a pipe – an implement for inducing trance states in which soul flight can be experience.

A second rendering less certainly shows a classic shaman in soul flight and using the powers of nature. It is a stone sculpture from the Cherry Valley mound group of the Newark site in the neighboring Licking valley (Figure 4.6B; Dragoo and Wray 1964; Lepper 2004:77–78). The sculpture depicts a human largely enveloped by the image of a bear. The hands and arms of the man are fully transformed and at one with the paws and forelegs of the bear. The man's feet have a clawlike appearance (Dragoo and Wray, p. 197). The sculpture could be depicting the coming of a bear spirit from behind to merge with the body of the man, the man wearing a bear skin costume, or both. Merging with a power animal and "becoming" it is an essential practice in the shamanic arts of many traditions around the world (e.g., Harner 1980:73–88; Halifax 1979). The man is in trance, indicated by his closed eyes and drooped mouth, as expectable for a shaman in the process of transforming into an animal spirit helper or a costumed shaman at work. The hard-to-hold, asymmetric positioning of the bear-man's arms is similar to postures that are meant to help induce trance and are known around the globe (Goodman 1990). The human head with extended hair on the lap of the bear-man could depict his soul in the process of leaving his abdomen at the initiation of soul flight. Four aspects of the figurine mutually reinforce the identification of the human head as the bear-man's departing soul. First, the abdomen is one of several common locations of soul departure from a body that is spoken of crossculturally. Second, the head has earspools that echo the earspools and identity of the man in trance. Third, the head's eyes are open, which would be true of a soul disembodying and in contrast to the closed eyes of the man in trance. Fourth, unlike the rest of the figurine, which is round and fully realistic, the head has been rendered flat. This flat form recalls how one sees oneself reflected in a mirror or still water. Significantly, such flat, reflected images are commonly thought in premodern societies to be the soul of the person who is gazing into the mirror or water (Hall 1976b:361). In this interpretation, the sculpture depicts a person in soul flight. The person could be either a classic shaman whose tutelary spirit was the bear, or a shaman-like specialist bear doctor and member of a bear doctoring society, like those commonly found in the historic Eastern Woodlands (see below, A Clan-Specific Ceremonial Society). The identification of the person as a bear doctor is less probable, because historic Woodlands bear doctors did not typically use soul flight to heal their patients.[2]

An alternative interpretation of the head on the bear-man's lap is that it represents the severed head of a war victum, or of a community member whose skull is being prepared for curation or for breaking apart before cremation or burial – practices that are known from bioarchaeological remains and studies (Baby 1954; Magrath 1945). In this interpretation, the bear-man would be a shaman-like war leader and/or body processor and psychopomp (see also Dragoo and Wray 1964:198).

Beyond the bird-man from Mound City and the bear-man from Newark, there are three other artifacts that may (or may not) indicate soul flight. All three, not coincidentally, are from the Mound City site. One is a hollow stump of a tree that was used as a burial container to hold the cremated remains of a person (Mound 7, Burial 5; Mills 1922:487, figure 30). This absolutely unique burial in the Scioto Hopewell world may represent a shaman in the trunk of the World Tree – a vehicle used by classic shaman bird-men for soul flight during the Early Woodland period (see immediately below). The second two artifacts possibly indicating soul flight are two copper breastplates that each depict raptors at their four corners and a central, vertical column that probably represents the World Tree (Mound 7, Burial 9; Mills 1922:489–491, 534–535, figures 62 and 63). One of these breastplates is illustrated above in Figure 4.5A. The breastplates have the same format of birds at their corners and a vertical central column as some Adena tablets that more realistically render the central column as the World Tree with bird impersonators who have traveled up it (Figure 4.7 A–E).[3]

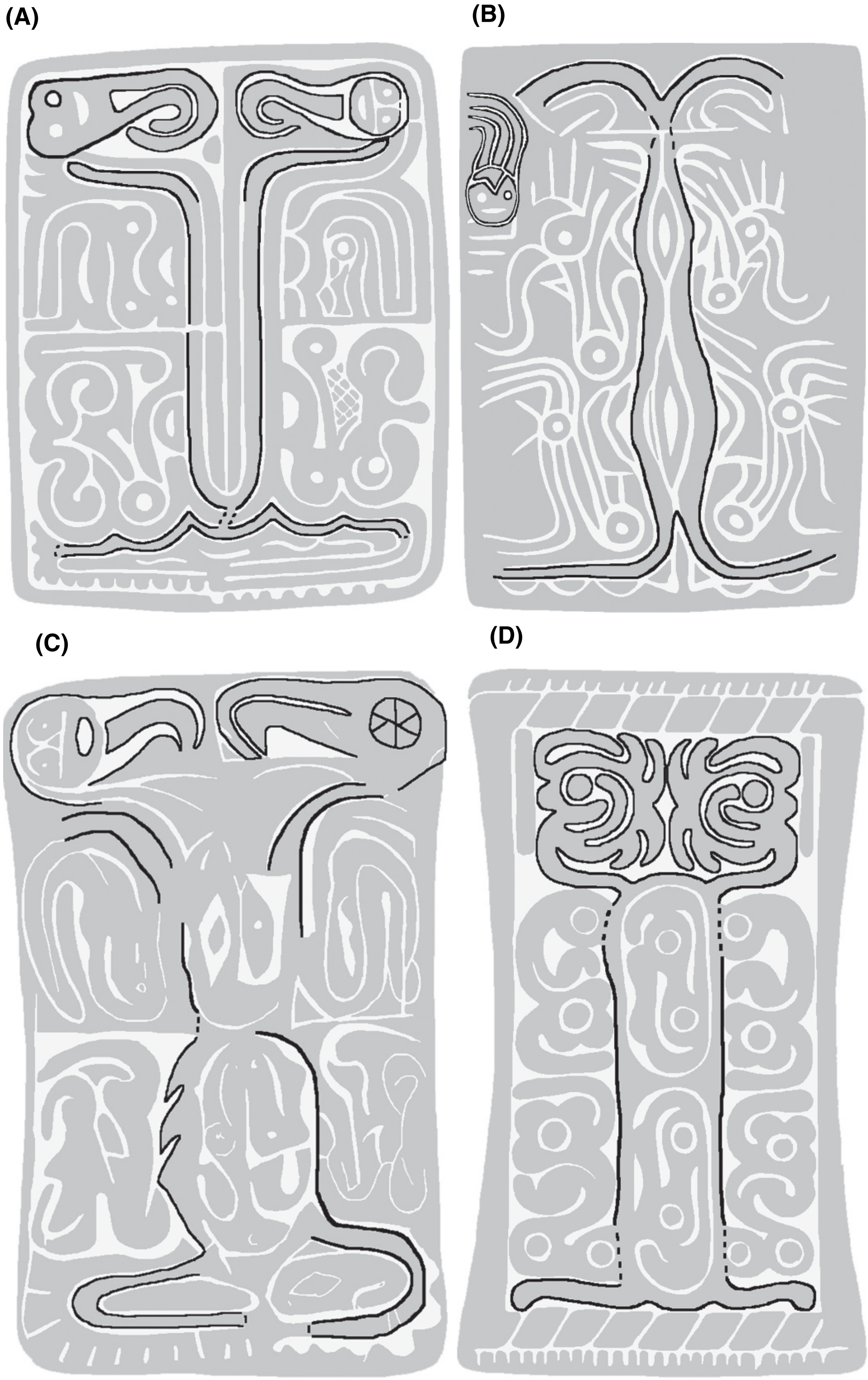


Figure 4.7. (***continued***)

(E)

Figure 4.7. (*continued*)

There is a clear decrease in the frequency of artistic renderings of classic shaman and presumably in the commonality of their presence from the late Early Woodland through the early Middle Woodland, and perhaps none thereafter, in the greater Scioto-Paint Creek area. In the late Early Woodland, 5–7 of the 14 Adena tablet carvings (Figure 4.7; Otto 1975; Penney 1980; Webb and Baby 1957), a large smoking pipe carving (Mills 1902:474–479), and perhaps a blocked-end tubular pipe (Smith 1964) show bird-men in soul flight. Such references to soul flight are less common in the early Middle Woodland, limited to the bird-man pipe, and possibly the stump burial and two breastplates, all from the Mound City earthwork, which dates to early in the Middle Woodland period (Ruby et al. 2005:161, Figure 4.6). The artistic theme of the bird-man in soul flight does not appear to have continued into the later Middle Woodland period, although depictions of bird-men in general and symbolic references to them do (see below, Figure 4.8H; Carr 2000c, 2005e; see also Note 3).

The decrease in artistic renderings of classic shaman from the Early through Middle Woodland periods accords well with Winkelman's (1989, 1990, 1992) crosscultural model of change in the forms of magico-religious practitioners as a society grows in size and overall complexity. Whereas classic shaman who use soul flight are common around the globe in very small-scale societies that rely on hunting, gathering, and/or fishing, they are rare in agricultural societies that lack much political integration beyond the local community – a characterization that roughly fits Scioto Hopewell societies.

In contrast to classic shaman, specialized shaman-like practitioners of multiple varieties appear to have been much more common in Scioto Hopewell societies. Shaman-like practitioners who used the powers of nature and who impersonated animals, retaining the practice of "becoming" one's power animal but not necessarily of soul flight, are represented by both ceremonial headdresses and depictions of persons in headdresses. The animals that were impersonated include deer, elk, bear, cat, dog, bird, perhaps hummingbird, and a composite creature with deer, spoonbill, and perhaps snake elements (Figure 4.8). In addition, one person was buried with a deer tooth replacement for a human tooth in the lower jaw (Figure 4.8F). These shaman-like specialists each performed only one or a few of the roles of the classic shaman generalist, and each used only a limited range of the kinds of shaman-like paraphernalia shown in Figure 4.1 (see below, The Nature and Organization of Leadership Roles).

Leaders who did not use shamanic methods and symbolism seem to have been less common than shaman-like practitioners in Scioto Hopewellian societies. Three art works show

Figure 4.7. Engraved clay or stone Adena tablets showing the World Tree with bird impersonators and/or birds on top of it, or making their way up its trunk. (A) The Wilmington tablet. (B) The Lakin A tablet. (C) The Meigs tablet. (D) The Cincinnati tablet. (E) The Gaitskill tablet.

Figure 4.8. Depictions of persons in ceremonial headdresses, and ceremonial headdresses themselves, that imply shaman-like practitioners who used the powers of nature, impersonated animals, and practiced "becoming" one's power animal but not necessarily soul flight. (A) Cat impersonator carved in stone, from the Mound City earthwork, Mound 8, the altar. (B) Copper headplate with cutout of a cat's paw and claws, from the Hopewell earthwork, Mound 25, Burial 4. The paw design is possibly comprised of a pair of bird heads as typically stylized in the Adena tablets and Scioto Hopewell art. (C) Copper headdress effigy of a "dog"-like creature, from Mound City, Mound 13, Burial 3. (D) Copper effigy deer racks for attachment to a headdress, from the Mound City earthwork, Mound 13, Burial 4. (E) Copper headdress with copper covered, wooden, new deer antlers, from the Hopewell earthwork, Mound 25, Skeletons 260 and 261. (F) Deer tooth replacement for a human tooth (I 26) in the mandible of a human, from the Liberty earthwork, Edwin Harness mound. Deer tooth shown as a photograph, human teeth as line drawing. (G) Copper headplate with effigy elk antlers, from the Hopewell earthwork, Mound 25, Burial 248.

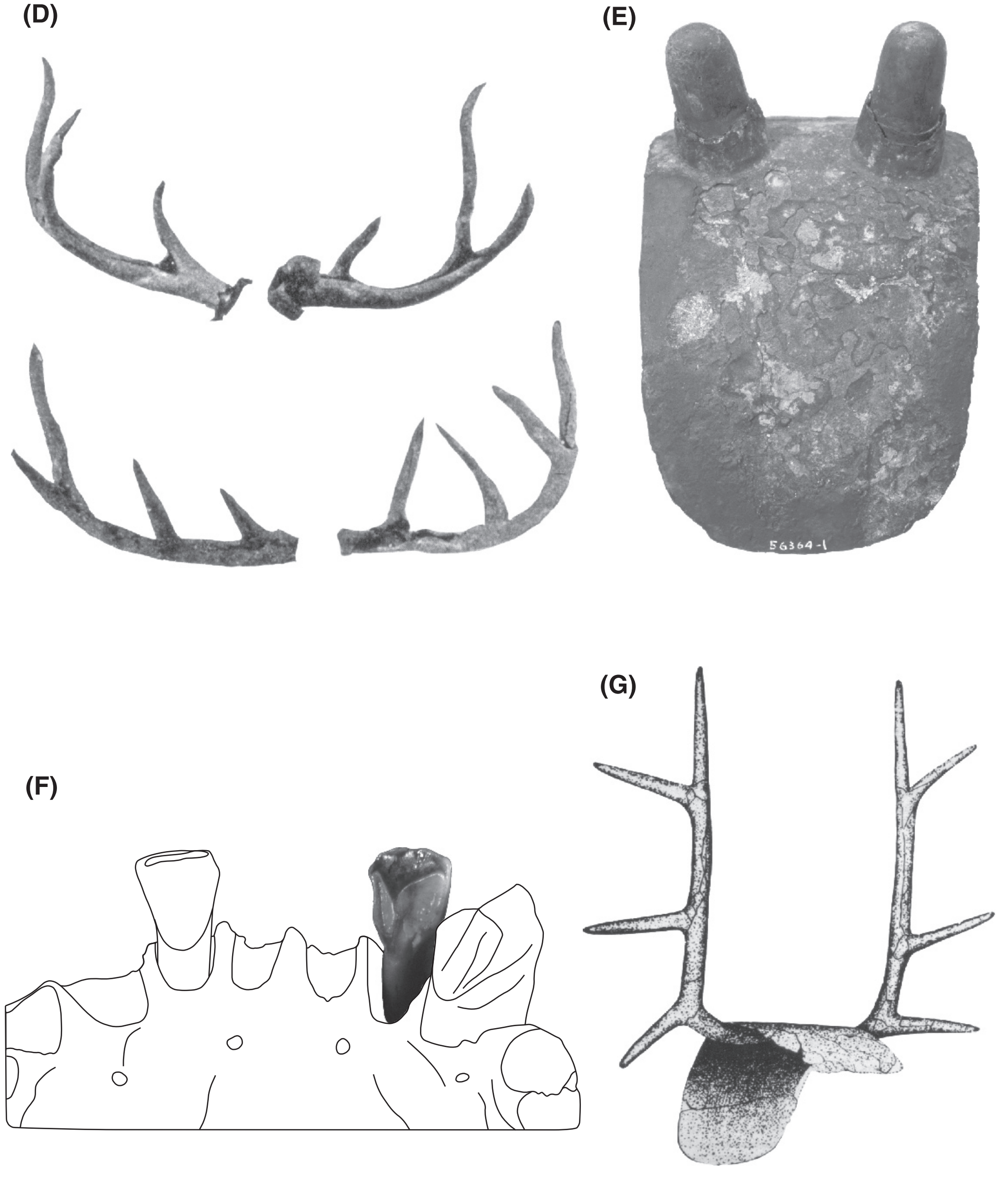


Figure 4.8. (***continued***) **(H) Copper headplate in the form of a bird's feather, from the Hopewell earthwork, Mound 7, unnumbered burial. (I) Bird impersonator (note nose/beak) with a three-layered turban-like headdress cut from mica, from the Turner earthwork, Mound 3, Central Altar in the Little Miami valley, Ohio. (J) Copper headplate with copper and mica effigy wings of a shimmering, flying creature (insect?, cicada?, hummingbird?) and/or effigy deer ears, from the Hopewell site, Mound 25, Burial 11. (K, *left*) Nonutilitarian copper celt with appliqué depiction of a human face and torso in profile facing right. The person has a bird's nose and wears a tall raptor headdress, i.e., is a raptor impersonator. For better definition of the raptor impersonator, see the color enhancement, Figure 4.8K in the Appendix on the CD-ROM. From the Hopewell earthwork, Mound 25. (K, *right*) Line drawing of the raptor impersonator. (L, *left*) Black-and-white rendition of a false-color image enhancement of a nonutilitarian copper celt patinated with a human face and torso facing right and analogous to K. The person wears a tall raptor headdress, i.e., is a raptor impersonator. For better definition of the raptor impersonator, see the false-color enhancement,**

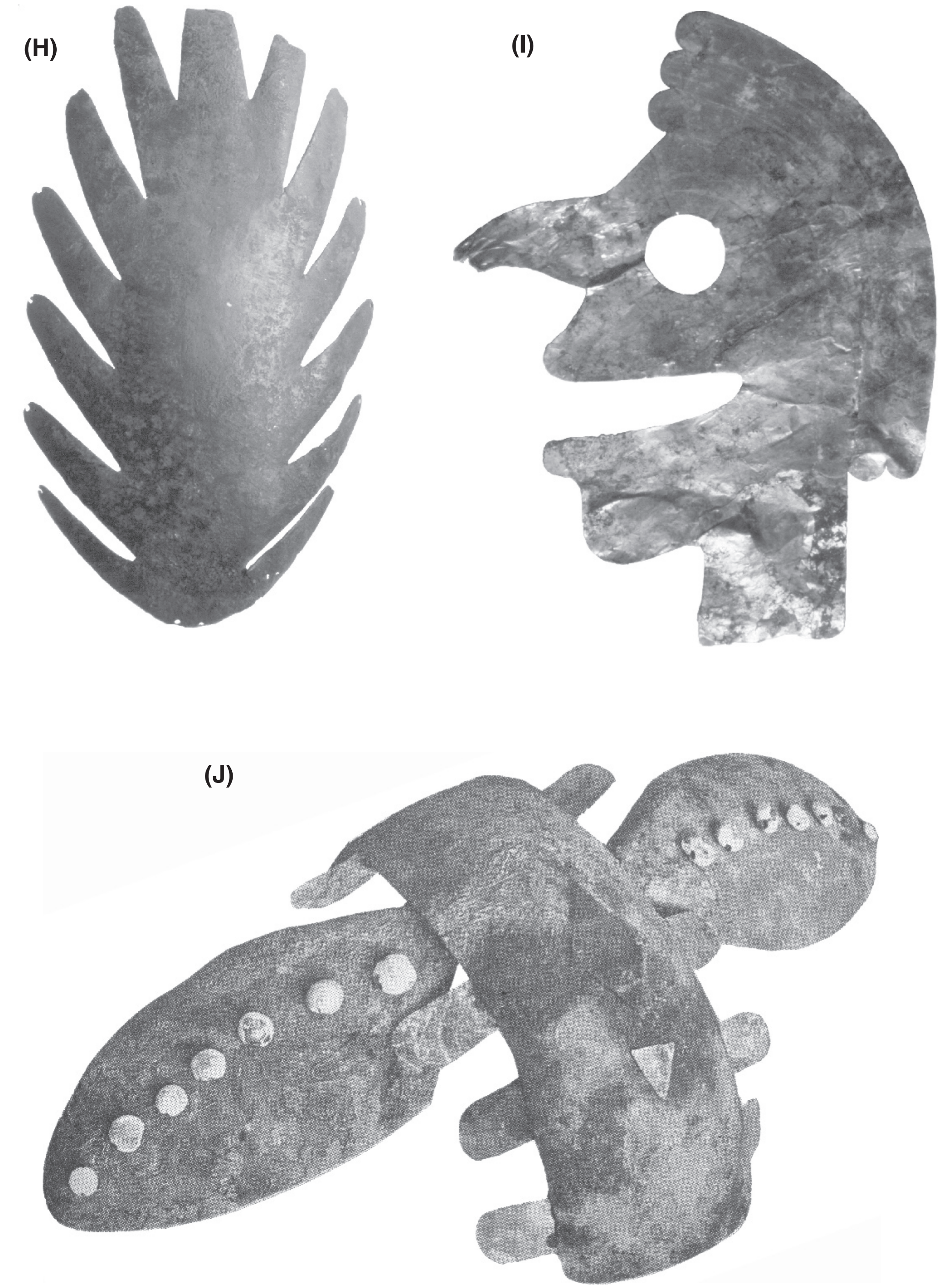


Figure 4.8. (*continued*) **Figure 4.8L, in the Appendix on the CD-ROM. From the Edwards mound group, Mound 4, Skeleton 20, Anderson Township, Hamilton County, Ohio (33HA7) (Metz 1878:125; 1881:295; Putnam and Metz 1884:374). (L,** ***right*****) Line drawing of the raptor impersonator. Both raptor impersonators in K and L are engulfed by the raptor headdress that they wear or by a raptor spirit, much like the bear impersonator shown in Figure 4.6B**

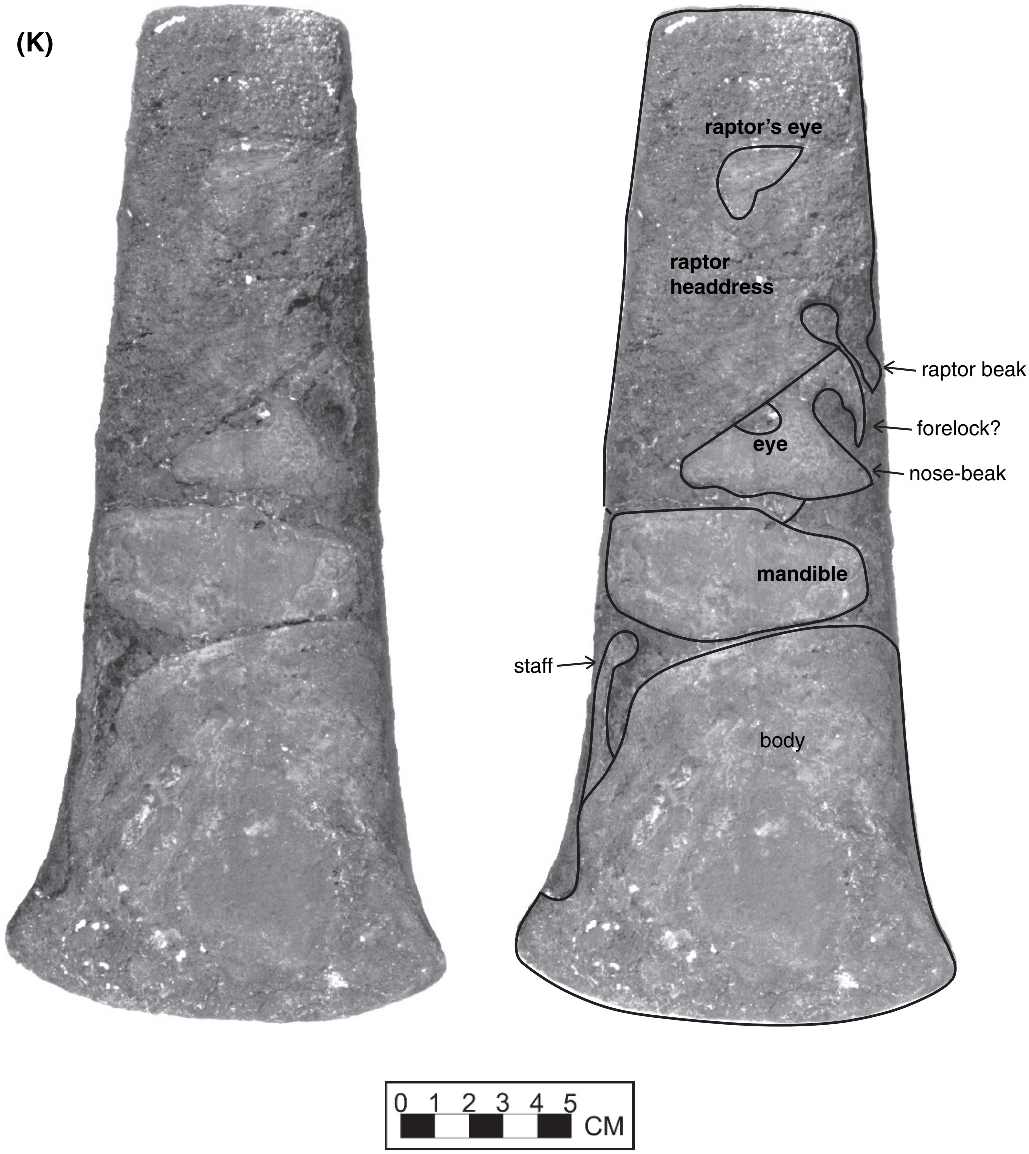


Figure 4.8. (*continued*) **is engulfed by a bear headdress and costume or a bear spirit. For other depictions of shaman-like animal impersonators, see Figure 4.5H – a-composite creature with deer, spoonbill duck, and perhaps snake elements (cf. Webb and Baby 1957:94, Figure 45), carved on a human or bear femur, from the Hopewell site, Mound 25, Burial 278. See credits.**

individuals with curvilinear facial decorations – either tattooing, scarification, or face painting (Figure 4.9A–C). Two are effigy pipe bowls, from the Edwin Harness Mound in the Liberty earthwork (Greber 1983:33) and Mound 8 in the Mound City earthwork (Squier and Davis 1848:244, figure 143). The third is a carved ivory or shell baton from Hopewell Mound 25 (Moorehead 1922:166). The precise roles that these sculpted individuals played is unknown. However, in the Southeastern United States at the time of contact, tattooing marked leadership positions of several kinds, earned titles, and achievement in warfare (Hudson 1976:30, 230, 328–333). Leadership or achievement in warfare in Scioto Hopewell communities also may have

(L)

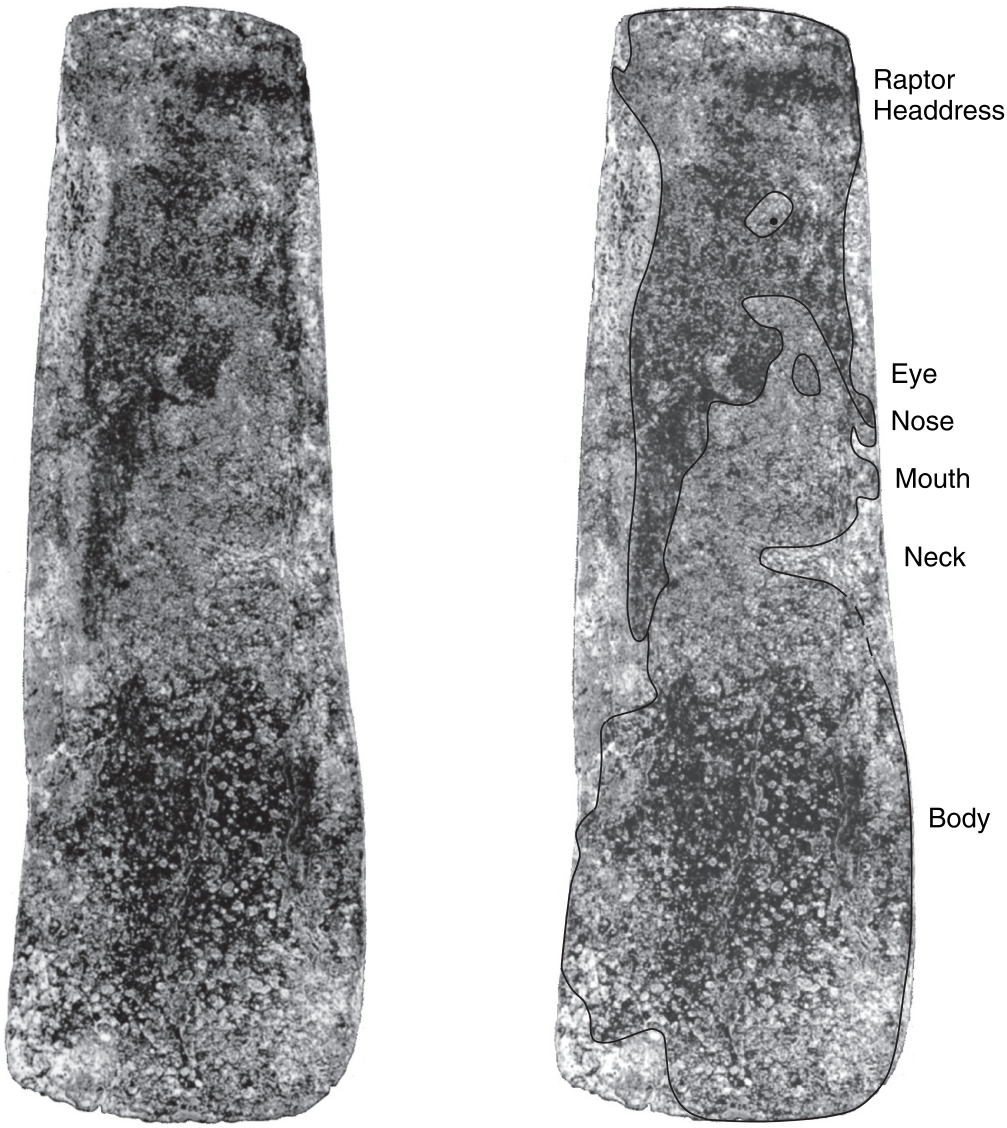


Figure 4.8. (*continued*)

been displayed by some, but not all, of several dozen "trophy" skulls (Johnston 2002; Seeman 1988), a drilled human digit, six effigy human trophy body parts, a large stone mace, and three copper and mica effigy atlatls identified by Hall (1977:503, figure 1) (Figure 4.9D–H), although alternative interpretations exist for these items (see Table 15.3 for proveniences, references, and interpretations). Leadership of unknown duties, but not obviously shaman-like ones, is depicted by a copper cutout of a human, possibly with a high feather headdress (Figure 4.9I).

Some costumery and symbols of position made of copper or mica give no indication of the tasks of classic shaman or shaman-like practitioners, but do imply a religious world view inspired by shamanism and its themes of transformation and seeing, evidenced in the materials of which they were made (Table 4.1).

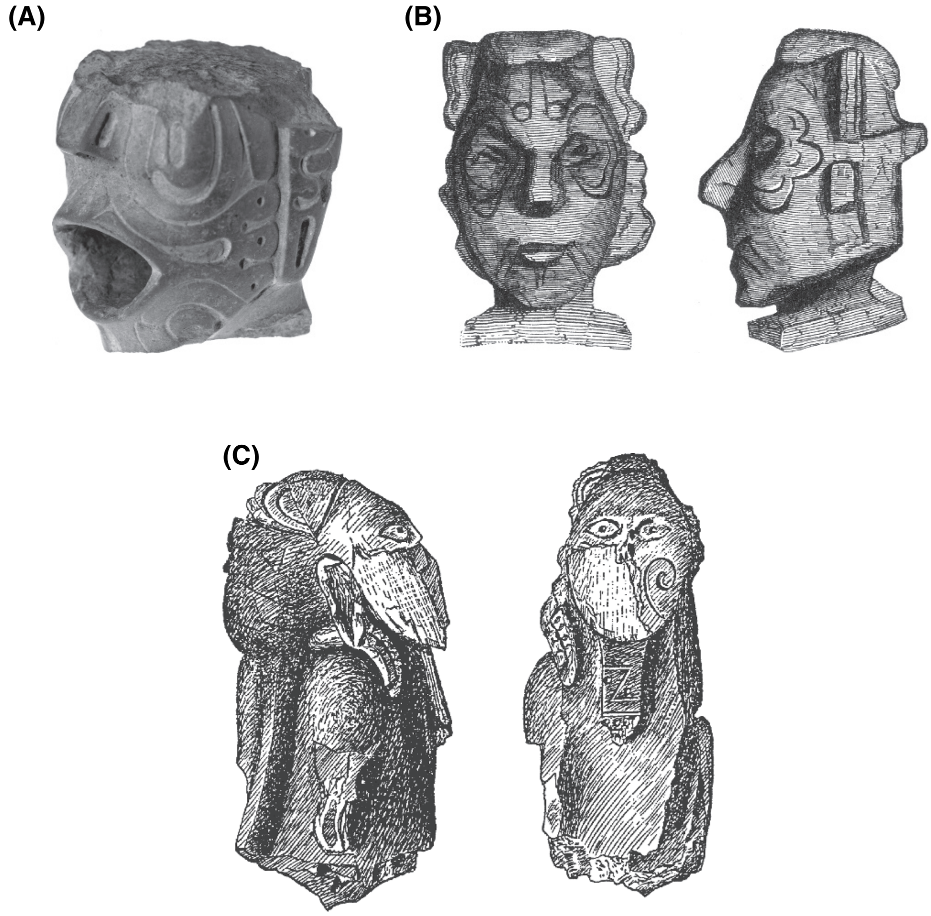


Figure 4.9. Depictions of persons in ceremonial headdresses, and ceremonial headdresses and paraphernalia, that do not directly imply shaman-like practitioners who used the powers of nature, impersonated animals, and practiced "becoming" ones power animal. (A) Human head with face painting, tattooing, or scarification, carved on a pipe bowl. From the Liberty earthwork, Edwin Harness mound. For another view, see Carr and Case (2005b:209, figure 5.8A) and Greber (1983:33). (B) Human head with face painting, tattooing, or scarification, carved on a pipe bowl from the Mound City earthwork, Mound 8. (C) Human head with face painting, tattooing, or scarification, carved on the end of an ivory or shell baton, from the Hopewell earthwork, Mound 25. (D) Cannel coal effigy of a human thumb, possible trophy, from the Hopewell earthwork, Mound 25, Skeleton 278. (E) Copper effigy of a human ear, possible trophy, from the Hopewell earthwork, Mound 17. (F) Copper effigy of human missing head and legs and perhaps with hands tied behind back, from the Mound City earthwork, Mound 13, Burial 11. (G) Stone mace from the Hopewell earthwork. (H) Two mica effigy atlatls and a copper effigy atlatl from the Hopewell earthwork, Mound 25, Altar 1 and the Copper Deposit, respectively. (I) Copper cutout of a human head, possibly with a high, feather headdress, from the Hopewell earthwork, Mound 25, Burial 35. (J) Plain copper headplates. *Left:* From the Hopewell earthwork, Mound 2, Burial 5. *Right:* From the Hopewell earthwork, Mound 25, Skeleton 243. (K) Nonutilitarian copper celt depicting in fabric and feather mosaic a human face in profile, facing right, wearing a headdress composed of multiple layers and a large earspool, from the Seip earthwork. (L) Unused, ceremonial stone celts, whole (*top*) and decommissioned by breaking (*bottom*). Top 17.5 inches long. Bottom 11.4 inches long. From the Hopewell earthwork, Mound 17. (M, *top*) Copper reel-shaped gorget from the Hazlett mound. (M, *middle*) Elaborate, copper reel-shaped gorget from the Hopewell earthwork, Copper Deposit. (M, *bottom*) Simple, copper reel-shaped gorget from the Tremper mound, Great Cache. (N) Copper crescent from the Liberty earthwork, Edwin Harness mound. (O) Copper elongated pendant from the Hopewell earthwork, Mound 25, Copper Deposit. (P) Copper spoon-shaped pendant worn in the opposite orientation of the

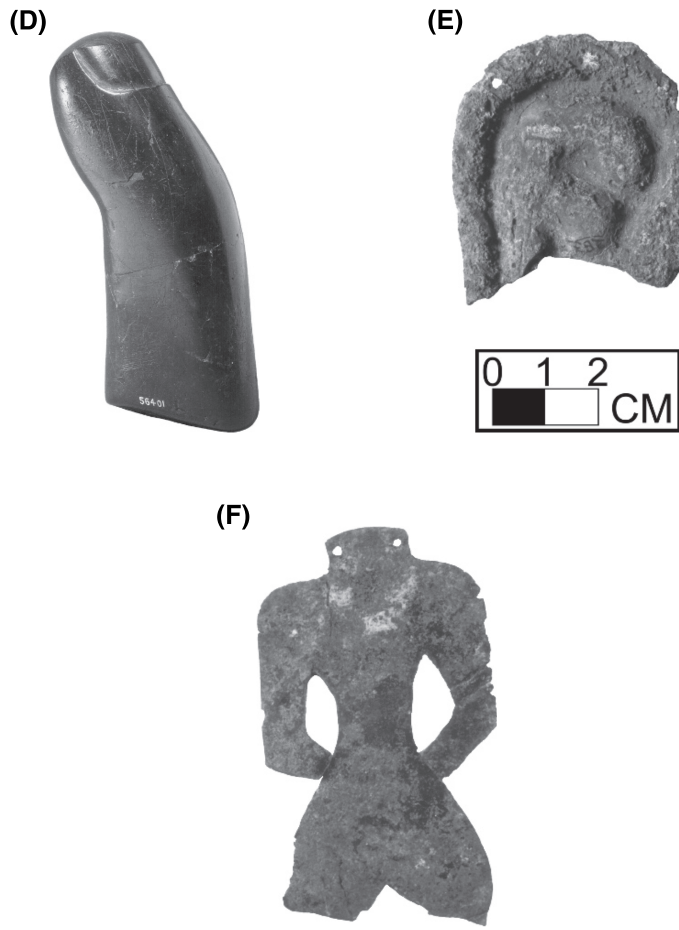


Figure 4.9. ***(continued)*** **elongated pendant shown in Figure 4.9 O. From the Mound City earthwork. Not shown are copper pendants in the form of the "bowl of a teaspoon" (Q) Copper eye-shaped pendant from the Turner earthwork, Mound 3, Altar. (R) Copper eye-shaped pendant with hole possibly representing pupil. From the Turner earthwork, Mound 3, Altar. (S) Copper eye-shaped pendant with gold foil overlay, from the Turner earthwork, Mound 3, Altar. (T) Copper expanding sided pendant with center hole, from the Hopewell earthwork, Mound 25. (U) Copper geometric cutout without obvious reference to cosmological concepts by its shape, from the Hopewell earthwork, Mound 25, Copper Deposit. See credits.**

Here, recall that the religious knowledge, beliefs, and symbols of a community having shaman or shaman-like practitioners is not synonymous with the shaman or shaman-like practitioner's knowledge, beliefs, and symbols (see above). Thus, for example, copper headplates that lack animal parts symbolized a community-wide leadership role without implying shamanic or shaman-like tasks (Figure 4.9J; Carr 2005a:280–283). Nonutilitarian copper celts likewise symbolized community-wide leadership, but could have been used in either nonshamanic or shamanic ritual tasks (see below, Table 4.2, Role Bundle 4; Carr 2005a:280–283; Bernardini and Carr 2005:635–637). Copper celts were commonly decorated with depictions of either persons in nonshamanic regalia (Figure 4.9K) or persons costumed as animals (Figure 4.8L). Later in the Woodlands, copper celts symbolized high

(G)

(H)

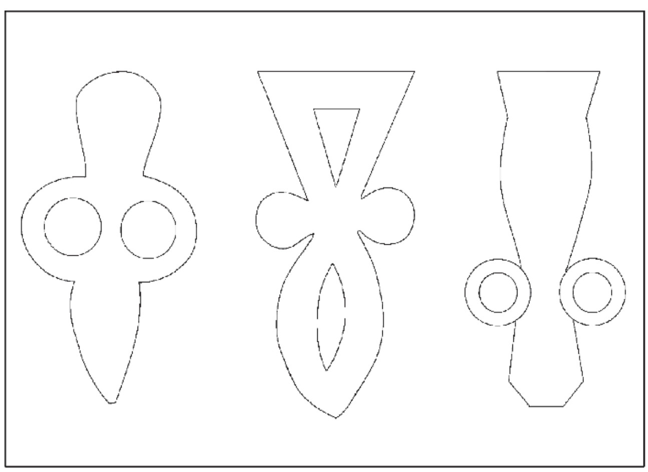
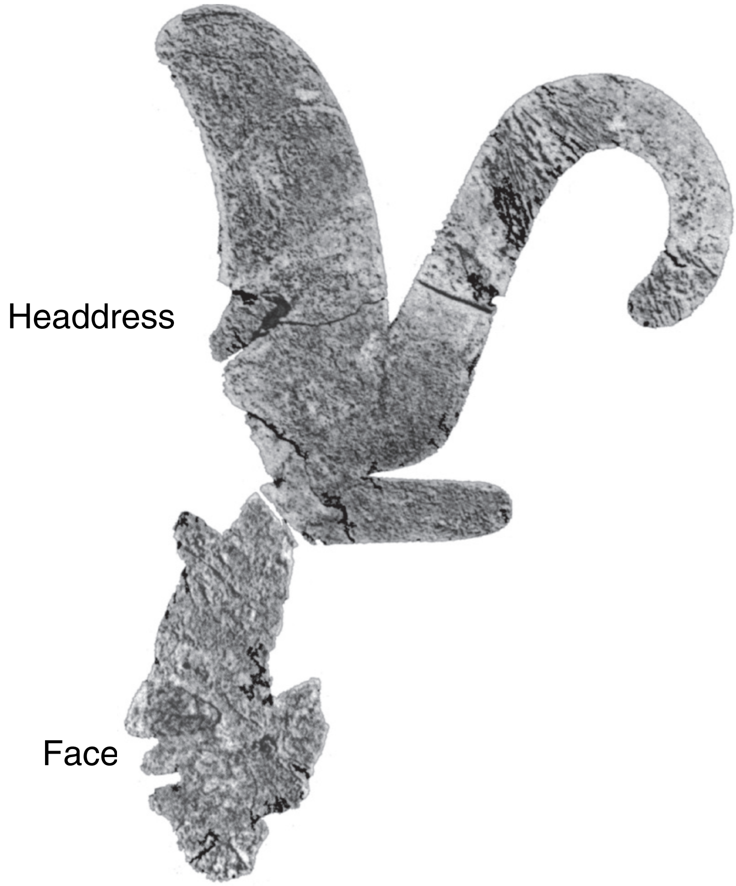


Figure 4.9. (*continued*)

offices and achievement in warfare.[4] Large, nonutilitarian ground stone celts, like their copper analogs, also appear to have marked community-wide leadership (Figure 4.9L; see below, Table 4.2, Role Bundle 2) and could have symbolized either nonshamanic or shamanic tasks. Copper and mica effigy power parts of clan totems or eponyms may

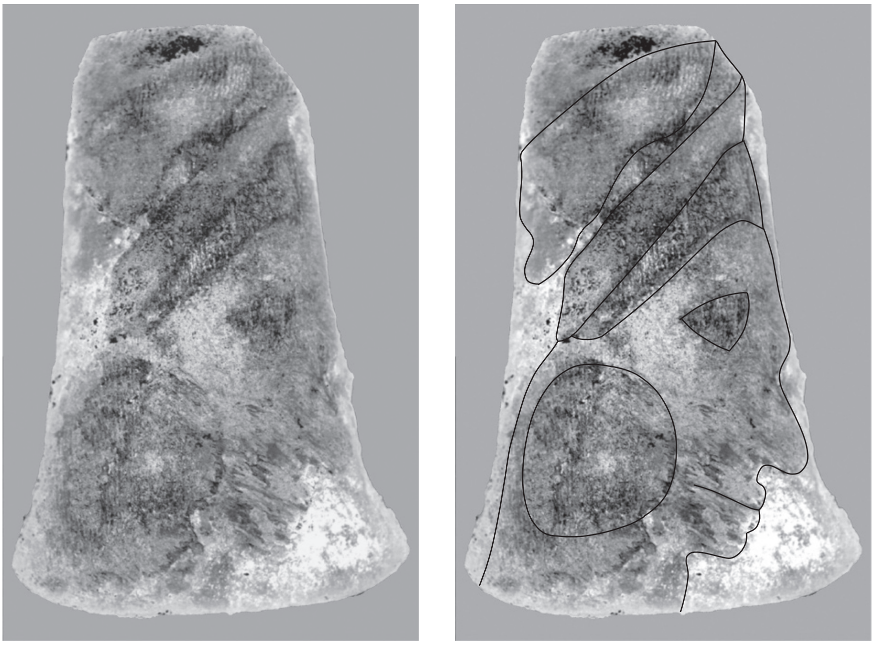
(I)



(J)

Figure 4.9. (***continued***)

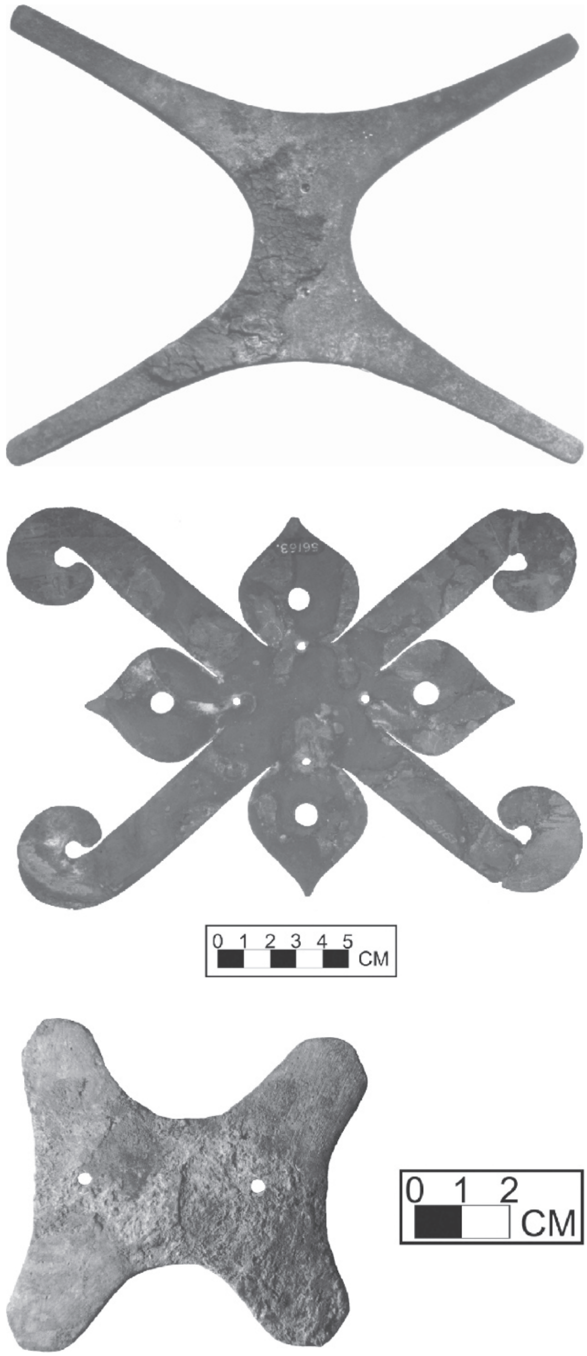
(K)



(L)

Figure 4.9. (***continued***)

(M)



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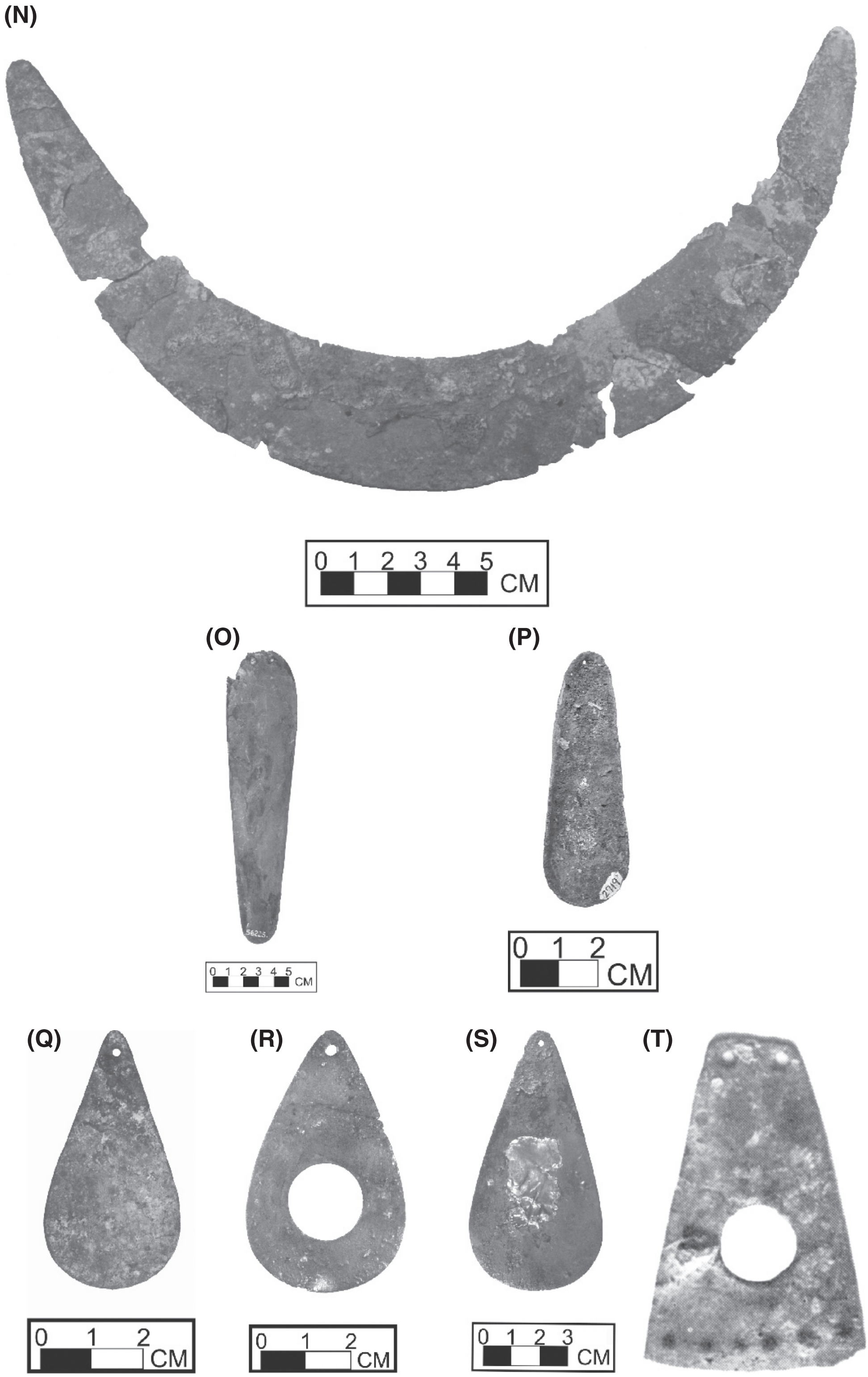

Figure 4.9. (*continued*)

Figure 4.9. (*continued*)

have marked clan leadership (see below, Figure 4.12B, C). These artifacts are rare compared to real animal power parts (Thomas et al. 2005). Other elements of costumery and symbols of position that were made of copper and imply a shamanic world view but not shamanic or shaman-like tasks include rare, reel-shaped gorgets, crescents, teardrop shaped pendants, teaspoon-shaped pendants, and geometric cutouts without cosmological referents (Figure 4.9M–U).

Some elements of dress made of copper or mica again reveal a religious world view inspired by shamanism, but more probably reflect the prestige and wealth of an individual and his or her clan rather than a particular position of leadership. Mica covered bead necklaces, copper bead necklaces, and copper and silver covered buttons are examples (Figure 4.10).

In sum, the shamanic qualities that run deep through Scioto Hopewell material assemblages reflect societies that were led predominately by complementary, specialized shaman-like practitioners and that had a broad, shamanic, cultural world view within which those practitioners operated. A few classic shaman were significant leaders early in the Middle Woodland period, and a variety of

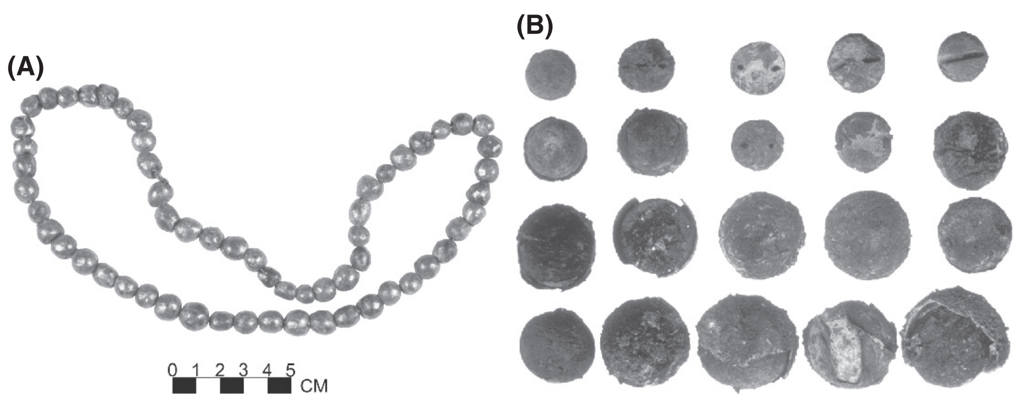

Figure 4.10. Costumery that probably reflects the prestige and wealth of an individual and his or her clan, rather than a position of leadership. (A) Mica covered bead necklace from the Liberty earthwork, Edwin Harness mound. (B) Buttons of wood, clay, and stone, covered with copper and/or silver, from the Hopewell earthwork. See credits.

leaders who apparently did not use shamanic or shaman-like methods were important socially throughout the Middle Woodland period.

Proportion of Shamanic and Shaman-Like Leaders to Nonshaman-Like Leaders

The great predominance of classic shaman and shaman-like leaders over leaders who did not use shaman-like methods and symbolism in the Scioto-Paint Creek area is vividly expressed by the contents of the large ceremonial deposits in the Mound City and Hopewell sites (Carr, Goldstein et al., 2005:490–494, Table 13.3) These two sites were locations of burial of a disproportionately high number of leaders compared to commoners (Chapter 3, Local Symbolic Communities; Carr 2005a; Carr, Goldstein et al. 2005) and, consequently, provide a good view of the spectrum of leaders in Scioto Hopewellian societies. Of 13 large ceremonial deposits that contained primarily the paraphernalia of leaders, 12 were comprised mainly of artifacts associated with classic shaman or shaman-like practitioners. Obsidian points, quartz points, copper geometrics with cosmological references, mica geometrics, mica mirrors, chlorite and pyrite cones/hemispheres, chlorite disks, raw Indiana hornstone disks, raw galena cubes, and raw obsidian dominated these 12 deposits. Only one deposit contained largely paraphernalia that might indicate nonshaman-like leaders. It had a large number of copper celts, which could have marked either shaman-like or nonshaman-like roles (see above). None of the deposits were dominated by items that more likely marked nonshaman-like leaders, such as copper and mica effigy power parts, reel-shaped gorgets, crescents, teardrop and teaspoon-shaped pendants, or geometric cutouts without cosmological referents.[5]

The sheer quantities of shamanic or shaman-like artifacts that were placed in these deposits give some sense of the numbers and/or importance of shamanic or shaman-like leaders in Scioto Hopewellian societies. The deposits included: several hundred obsidian points, more than a bushel of quartz points, 50–100 limpid quartz points, 109+ copper geometric cutouts, about 200 mica geometric cutouts, hundreds of mica mirrors, an 8×4 feet rectangular area covered by mica mirrors, a 7×6.5 feet area of mica sheets/mirrors, 80 cones and hemispheres of chlorite and pyrite, 30–40 chlorite disks, 8,000 ovate preforms of Indiana hornstone, 30 pounds of galena in 2-ounce to 3-pound pieces, 25 pounds of galena crystals, 12 galena cubes of 12–15 pounds each, 300 pounds of obsidian debitage, and dozens of quartz crystals. There are no corresponding accumulations of artifacts that would indicated nonshaman-like leaders in plenty in the Scioto-Paint Creek area.

The Nature and Organization of Leadership Roles

In the Scioto Hopewell record, depictions of leaders, costumery, and other symbols of leadership positions provide good detail on the sacred and secular nature of the power bases of leaders. Patterns of association and dissociation of artifactual markers of leadership that were placed in graves give further insight into this topic, as well as whether or not leadership roles were centralized in the hands of a few individuals, institutionalized, and/or supralocal in their domains of power.

Using a sample of 767 burials from 60 mounds in 15 large and small mounds across Ohio, and 55 artifact classes that indicate leadership roles and/or other roles of importance (e.g., Table 4.1, above), Carr and Case (2005b) were able to find those artifact role markers that repeatedly occurred together in burials, indicating a given role or bundle of roles, and those artifact role markers that seldom or never occurred together, indicating role segregation. In all, 21 sets of artifacts could be defined (Table 4.2). The large sample used in this analysis helped to ensure statistically significant and stable results. The analysis was then repeated on grave goods within each of four cemeteries in the Scioto-Paint Creek area, alone: Mound City, Hopewell Mound 25, Seip-Pricer mound, and Ater mound. These cemeteries form a chronological sequence and allowed changes in leadership characteristics to be described over the Middle Woodland period. For each

Table 4.2. Global Organization of Roles at 15 Ohio Hopewell Ceremonial Centers[1]

Abbrevation for Artifact Class[2]	Artifact Class
Role 1: Shaman-Like Public Ceremonial Leadership	
(Median Jaccard = 0.181; median pairwise co-occurrence = 1 in 2–3 burials)	
headsham	headplate, copper with shaman-like-animal referents
copcutsham	cutout, copper with shaman-like-cosmos symbolism (shared)
cutother	cutout, copper and mica with unknown symbolism
baton	baton of bone, antler, or copper (shared)
ironraw	iron, raw (shared)
silverraw	silver, raw (shared)
copraw	copper, raw (shared)
Role Bundle 2: Nonshaman-Like (?) and Shaman-Like Public Ceremonial Leadership	
(Median Jaccard = 0.182; median pairwise co-occurrence = 1 in 2–3 burials)	
headlead	headplate, copper, without shaman-like animal referents
baton	baton of bone, antler, or copper (shared)
celtstone	celt, stone
copcutsham	cutout, copper with shaman-like-cosmos symbolism (shared)
ironraw	iron, raw (shared)
silverraw	silver, raw (shared)
copraw	copper, raw (shared)
Role 3: Public Ceremonial Leadership	
(Median Jaccard = 0.095; median pairwise co-occurrence = 1 in 4–5 burials)	
conch	conch shell (shared)
spoon	spoon, shell
Role Bundle 4: Sodality Achievement and Nonshaman-Like Leadership Recruitment	
(Median Jaccard = 0.102; median pairwise co-occurrence = 1 in 4–5 burials)	
breastpl	breastplate, copper (shared)
earspother	earspool, copper, placed elsewhere than in hand (shared?)
celtmetal	celt of copper or iron
conch	conch shell (shared)
Role Bundle 5: Sodality and Possibly War Achievement	
(Median Jaccard = 0.078; median pairwise co-occurrence = 1 in 6 burials)	
breastpl	breastplate, copper (shared)
earsphand	earspool, copper, placed in the hands (shared?)
trophyjwsk	trophy jaw or skull, human
gemprism	prismatic blade, gem (shared)
Role Bundle 6: Hunt or War Divination or Sending or Pulling Power Intrusions, Other Divination, and Nonshaman-Like (?) Public Ceremonial Leadership	
(Median Jaccard = 0.170; median pairwise co-occurrence = 1 in 2–3 burials)	
obsidbiface	biface, obsidian
qzgembiface	biface, quartz or gem
galena	galena, raw
micasheet	mica sheet
sharktooth	shark tooth

(*continued*)

Table 4.2. (*continued*)

Abbrevation for Artifact Class[2]	Artifact Class
headlead	headplate, copper, without shaman-like animal referents
copraw	copper, raw (shared)
pyriteraw	pyrite, raw (from analysis of caches)
owleffigy	owl effigy (from analysis of caches) (shared)
marble	marble (from analysis of caches) (shared)
Role 7: Divination (Median Jaccard = 0.091; median pairwise co-occurrence = 1 in 5 burials)	
boatstone	boatstones, any material
conehemi	cones and hemispheres, any material
barracuda	barracuda jaw
crescent	crescent, copper (shared)
nosecopper	nose insert, copper
tortshorn	ornament, tortoise shell
button	buttons, copper
qzcup	cup, quartz (from analysis of caches)
owleffigy	owl effigy (from analysis of caches) (shared)
marble	marble (from analysis of caches) (shared)
Role 8: Body Processor and Possibly Psychopomp (Median Jaccard = 0.113; median pairwise co-occurrence = 1 in 4 burials)	
awl	awl.
pipesmall	pipe, small
Role 9: Healing, Sucking Energies, and Possibly Sending Energies (Median Jaccard = 0.200; median pairwise co-occurrence = 1 in 2 burials)	
tubefuncunkn	tube, function unknown
alligtooth	alligator tooth
Role 10: Healing, and Sending and/or Removing Energies (Median Jaccard = 0.060; median pairwise co-occurrence = 1 in 7–8 burials)	
fancypoint	fancy points, copper, mica, or schist
panpipe	panipe
crescent	crescent (shared)
tortraw	tortoise shell, raw
plummet	plummet (from analysis of caches)
Role Bundle 11: Shaman-Like Leadership: Philosophy, Divination, and Possibly War Achievement (Median Jaccard = 0.100; median pairwise co-occurrence = 1 in 4–5 burials)	
copcutsham	cutout, copper with shaman-like-cosmos symbolism (shared)
micacutsham	cutout, mica with shaman-like-cosmos symbolism
conehemi	cones and hemispheres, any materials (shared)
trophy	trophy parts, effigy human finger or hand, of mica, copper, or stone
Role 12: Unknown Kind (Median Jaccard = 0.125; median pairwise co-occurrence = 1 in 3–4 burials)	
painttablet	painting equipment (cup, pestle, ochre, grinder) and/or tablet of stone
fancypot	pottery, fancy surface treatment and decoration

(*continued*)

Table 4.2. (*continued*)

Abbrevation for Artifact Class[2]	Artifact Class
Role 13: Divination?	
(Median Jaccard = 0.167; median pairwise co-occurrence = 1 in 2–3 burials)	
copball	balls, copper
gemprism	prismatic blade, gem (shared)
Roles 14–21: Independently Distributed Artifact Classes	
reelgorget	reel-shaped gorgets
flute	flute
qzcolpebbles	pebbles, quartz and colored
fossconcret	fossils and concretions
othertranslpt	points, translucent but not quartz or gem
obsidprism	prismatic blade, obsidian
obsidraw	obsidian, raw
fan	fan of feathers, effigy of copper or stone

[1]The 15 ceremonial centers and 60 of their mounds upon which the analysis is based are: Ater; Bourneville; Circleville; Esch Mounds 1 and 2; Hopewell Mounds 2, 3, 4, 7, 8, 11, 16, 18, 19, 20, 23, 24, 25, 26, 27, 29, 30; Liberty's Edwin Harness Mound and Russell Brown Mounds 1, 2, and 3; McKenzie Mounds A, B, and C; Mound City Mounds 1, 2, 3, 7, 8, 9,10, 12, 13, 15, 18, 20, 23, 24; North Benton; Rockhold Mounds 1, 2, 3; Seip-Pricer; Shilder; Tremper; Turner Mounds 1, 2, 3, 11, 12, Enclosure, and Turner-Marriot; and West.
[2]Items in this column are the abbreviated names of the artifact classes listed here. The abbreviations are used in Table 4.3.

cemetery, artifact sets similar to those found in the pan-Ohio analysis were defined, but the sets were bundled differently than in the pan-Ohio analysis, and also varied from site to site (Table 4.3).

The leadership roles revealed by the two analyses include shaman-like leaders of public ceremony, nonshaman-like leaders of public ceremony, hunt and/or war diviners or those who sent and/or extracted power intrusions, other kinds of diviners, corpse processors and possibly psychopomps, healers, high achievers in perhaps warfare, high achievers in sodalities, and several unknown kinds of roles.

Power Bases of Leadership

The power bases of these kinds of leaders can be distinguished into three kinds: shaman-like; other sacred roles indicated by artifact classes that are not obviously shaman-like in nature and that may reference community religious beliefs, to follow Eliade's (1964) distinction (see above); and secular roles indicated by artifact classes that have no apparent religious overtones in their functions or in the materials from which they are made. Most of the roles and role bundles defined in the pan-Ohio analysis are fully or primarily shaman-like, or occasionally sacred but nonshaman-like, in their foundations of power. None of the roles or role bundles having multiple artifact classes are comprised of solely secular ones. Specifically, of the 21 roles or role bundles defined across Ohio, 11 are fully or largely shaman-like, 2 are fully or largely of another sacred nature, 4 are either shaman-like or otherwise sacred, 1 is equally both, and only 3 are secular combined with shaman-like or other sacred roles.

Segregation of Leadership Roles

Leadership roles in Hopewellian societies across Ohio and in the Scioto-Paint Creek area were highly segregated from one another rather than centralized, and increased in their degree of segregation over the course of the Middle Woodland period. In particular, artifact classes that mark roles of leadership or other importance across Ohio divide into 21 different, dissociated sets, rather than one or a few sets. Roles concerned with leading public ceremonies,

Table 4.3. Presence and Organization of Roles Through Time at Four Scioto Ohio Hopewell Ceremonial Centers[1]

Mound City	Hopewell Mound 25	Seip-Pricer Mound	Ater Mound
Role 1: Shamanic Public Ceremonial Leader	**Roles 1 and 3 Combined: Shaman-Like and Undefined Public Ceremonial Leader**	**Roles 1 and 12 Combined: Shaman-Like Public Ceremonial Leader and Unknown Role**	**Role 1: Shaman-Like Public Ceremonial Leader**
headsham	headsham	cutother	cutother
cutother	copcutsham	painttab	
	baton		
	celtstone		
	celtmetal		
	conch		
	ironraw		
	silverraw		
	copraw		
Roles 2, 4, 6, 8, 9, 11 Combined: Nonshaman-Like (?) Public Ceremonial Leader, Sodality and War (?) Achievement, Hunt or War Divination or Sending or Pulling Power Intrusions, Body Processor/Psychopomp, Healer	**Role 2: Nonshaman-Like (?) Public Ceremonial Leader**	**Role 2: Nonshaman-Like (?) Public Ceremonial Leader**	**Role 2: Nonshaman-Like (?) Ceremonial Leader**
headlead	headlead	headlead	headlead
breastplate	baton	celtstone	
earspool	celtstone	tortshorn	
obsidbiface	celtmetal		
qzgembiface	copcutsham		
sharktooth	ironraw		
micasheet	silverraw		
galena	copraw		
copraw			
button			
awl			
smallpipe			
alligator			
copcutsham			
trophy			
celtstone			

(*continued*)

Table 4.3. (*continued*)

Mound City	Hopewell Mound 25	Seip-Pricer Mound	Ater Mound
Roles 3, 4, 17: Ceremonial Leadership, Nonshaman-Like Leadership, Divination	**Role 3: Ceremonial Leadership**	**Role 3: Ceremonial Leadership**	**Role 3: Ceremonial Leadership**
conch celtmetal fossconcret	combined with Role 1, above	not present	conch spoon
Role 4: Sodality Achievement and Ceremonial Leadership	**Role 4: Sodality Achievement and Ceremonial Leadership**	**Role 4: Sodality Achievement and Nonshaman-Like Leadership**	**Roles 4 and 10: Sodality Achievement, Nonshaman-Like Leadership, and Healing**
combined with Roles 3, 17, above	earother conch	breastplate earother celtmetal conch	breastplate earother earhand celtmetal fancypoint panpipe crescent tortraw
Role 5: Sodality and War (?) Achievement	**Role 5: War (?) Achievement**	**Role 5: Sodality and War (?) Achievement**	**Role 5: Sodality and War (?) Achievement**
not present	trophyjwsk cutother	not present	breastplate earhand earhother trophyjwsk
Role 6: Hunt or War Divination or Sending or Pulling Power Intrusions, Other Divination, and Nonshaman-Like (?) Public Ceremonial Leadership	**Role 6: Hunt or War Divination or Sending or Pulling Power Intrusions, Other Divination, and Nonshaman-Like (?) Public Ceremonial Leadership**	**Role 6: Hunt or War Divination or Sending or Pulling Power Intrusions, Other Divination, and Nonshaman-Like (?) Public Ceremonial Leadership**	**Role 6: Hunt or War Divination or Sending or Pulling Power Intrusions, Other Divination, and Nonshaman-Like (?) Public Ceremonial Leadership**
combined with Roles 2, 4, 8, 9, 11, above	galena qzgembiface micasheet cutother pipesmall pipesmall	obsidian biface galena sharktooth button micasheet celtmetal	not present

(*continued*)

Table 4.3. *(continued)*

Mound City	Hopewell Mound 25	Seip-Pricer Mound	Ater Mound
Role 7: Divination	**Roles 7, 10: Divination, Healing**	**Role 7: Divination**	**Role 7: Divination**
not present	boatstone nosecopper crescent conehemi button barracuda panpipe torshorn fancypoint	boatstone boatstone conehemi nosecopper crescent button baton tortshorn	not present
Role 8: Body Processor/Psychopomp	**Role 8: Body Processor/Psychopomp**	**Role 8: Body Processor/Psychopomp**	**Role 8: Body Processor/Psychopomp**
combined with Roles 2, 4, 6, 9, 11, above	awl sharktooth	awl pipesmall painttab	awl pipesmall
Role 9: Healing	**Role 9: Healing**	**Role 9: Healing**	**Role 9: Healing**
tubefuncunkn segregated from alligtooth , above	not present	tubefuncunkn alligtooth	not present
Role 10: Healing	**Role 10: Healing**	**Role 10: Healing**	**Role 10: Healing**
not present	combined with Role 7, above	not present	combined with Role 4, above
Role 11: Shaman-Like Leadership, Philosophy, and Divination; and War Achievement (?)	**Role 11: Shaman-Like Leadership, Philosophy, and Divination; and War Achievement (?)**	**Role 11: Shaman-Like Leadership, Philosophy, and Divination; and War Achievement (?)**	**Role 11: Shaman-Like Leadership, Philosophy, and Divination; and War Achievement (?)**
combined with Roles 2, 4, 6, 8, 9, above	micacutsham trophy	micacutsham copcutsham	not present
Role 12: Unknown	**Role 12: Unknown**	**Role 12: Unknown**	**Role 12: Unknown**
fancypott	not present	fancypot micasheet	not present
Role 13: Divination (?)	**Role 13: Divination (?)**	**Role 13: Divination (?)**	**Role 13: Divination (?)**
not present	copball	not present	not present
Roles 14–21: Independently Distributed Artifact Classes	**Roles 14–21: Independently Distributed Artifact Classes**	**Roles 14–21: Independently Distributed Artifact Classes**	**Roles 14–21: Independently Distributed Artifact Classes**
fossconcret	flute qzcolpebbles othertranlpt torshorn	not present	qzcolpebbles othertranslpt

hunt or war divination and/or sending and extracting power intrusions, other kinds of divination, corpse processing, healing, possibly war achievement, sodality achievement, and other unidentified roles were largely distinguished from one another in their grave distributions and presumably were in Ohio Hopewellian social-ceremonial life. The classic shaman, who is a generalist who encompasses many social roles within his or her social persona, is not evidenced. In addition, of 272 individuals that had at least some artifacts marking leadership or importance, 65% had only one role as defined in Table 4.2 and 91% had only one or two roles. No individual had more than four roles. Strong segregation of leadership roles is indicated.

A particularly significant segregation of leadership roles is that between community-wide leaders marked by copper headplates and community-wide leaders marked by copper celts. The community-wide scope of power of leaders in these positions is indicated by their rarity: only 2.6% ($n = 15$ of 575) of the individuals buried in the Seip-Pricer, Edwin Harness, and Ater mounds and at the Hopewell site were accompanied by headplates; only 5.2% ($n = 30$ of 575) were accompanied by copper celts. These percentages are reasonable for the proportion of leaders compared to the general populace within a society. These two forms of leadership were almost never combined within one social position occupied by one person. Only 1 of the 44 individuals buried with a headplate or copper celt at the four sites had both. In addition, persons recruited into the two kinds of positions were usually members of different clans, and had different sex-distributions. Leaders marked by headplates most commonly were Canine and Raccoon clansmen, whereas leaders symbolized by copper celts were most often Raptor and Nonraptorial Bird clanspersons (see below, Clan Organization). Leaders marked by headplates were exclusively male, whereas leaders symbolized by celts were female as frequently as male (see below, Gender, Gender Relations, and Kinship Structure).

This segregation of leadership duties could indicate a distinction between leaders with intrasocietal responsibilities who were marked by headplates and leaders with external intersocietal responsibilities who were marked by celts, analogous to the "peace chiefs" and "war chiefs" of historic Native American tribes in the northeastern Woodlands (Callender 1978a:640; 1978b:610; 1978c:627; 1978d:649; Calender et al. 1978:661; Howard 1981:96; Miller 1955:283–284; Spindler 1978:693) and southeastern Woodlands (Hudson 1976:234; Lankford 1992). Most Great Lakes-Riverine tribes had a dual political structure comprised of parallel organizations and leaders for peace and war (Callender 1978b:610). In line with this interpretation of headplates and celts, celts were strongly associated with warfare later in Mississippian iconography of the Southeastern Ceremonial Complex (Brown 1976:126; Phillips and Brown 1978:13, 18–19; 1984:plate 104; Waring and Holder 1945:10–11, 15). Celts also may have been associated with the building of dugout canoes and long-distance (i.e., external) travel to sources of fancy raw materials, power in nature, and knowledge available in foreign societies (Bernardini and Carr 2005:635, 636). At the same time, the characteristics of the animal totems or eponyms of the clans associated with headplates versus celts, and ethnohistorical information on which clans in the Woodlands filled the roles of peace chiefs and war chiefs (Thomas et al. 2005:369–370), do not add support to the interpretation of internal/peace versus external/war leaders in Scioto Hopewell societies. Also, the equal access of women and men to the community-wide position possibly concerned with external relations but the restriction of the position possibly concerned with internal relations to men (see below, Gender, Gender Relations, and Kinship Structure) is opposite the historic pattern and superficially does not seem to support the interpretation. Most archaeological evidence suggests that long-distance, intersocietal Hopewellian interaction across the northern Woodlands was undertaken by men, not women (Keller and Carr 2005:437, 440, 446, 456, 458). However, among the historic Shawnee, mothers, sisters, and close female relatives of male war and peace chiefs sometimes held those positions (Howard 1981:109, 126; Trowbridge 1939:12–13), giving those positions the same mixed male and female recruitment distribution found in the Scioto Hopewell case of leaders marked by copper celts. Shawnee men and women also both filled the role of the priest-shaman, who divined the outcome of war parties and accompanied them to war (Howard 1981:117). Both men and women served as warriors (Howard 1981:112). (Further data and thoughts on the social role(s) indicated by celts are presented in Chapter 15, Metallic Celts.)

The Process of Segregation of Leadership Roles Over Time

Looking over the span of the Middle Woodland period within the Scioto-Paint Creek area, increasing role segregation as a process is evident. At the earliest of the sites analyzed individually – Mound City – roles that were defined as separate across Ohio, as a time-averaged picture, are often combined into larger bundles, indicating less segregation at that early time (e.g., in Table 4.3, Roles 2, 4, 6, 8, 9, 11 form two bundles; Roles 3, 4, 17 form one bundle). In later sites, these roles become segregated, indicating their performance by different individuals. In the later cemeteries of Hopewell Mound 25, Seip-Pricer, and Ater, roles that were defined as separate across Ohio, as a time-averaged picture, become partitioned into multiple, yet smaller roles, each with fewer artifact classes (e.g., Table 4.3, Role 6). Over time, the number of pan-Ohio defined roles that are combined into larger bundles within individual cemeteries drops from nine to four to two and then remains at two (Table 4.4, top row; Figure 4.11). The number of globally defined roles that become divided into smaller roles within individual cemeteries increases from one role divided into two parts to three roles divided into six parts to three roles divided into seven parts, followed by one role divided into two parts (Table 4.4, bottom row). (Role partitioning decreases at the tail end of the sequence because of the small number of roles represented at the Ater mound.) In addition, from Mound City to Hopewell Mound 25 to Seip-Pricer to Ater, the percentage of individuals buried with artifacts marking only one or two roles increases from 73.1% to 88.9% to 97.4% to 100%. The clear trend is for greater and greater role segregation over the course of the Middle Woodland period.

This temporal pattern of segregation is precisely what one would expect from Winkelman's (1989, 1990, 1992) crosscultural model of segregation in the roles of magico-religious practitioners as societal size and overall complexity increase, and from the middling place of Scioto Hopewellian societies in that model.

The pattern of segregation of shaman-like leadership roles among more and more kinds of specialized practitioners over time was complemented in the Scioto-Paint Creek area by increases in the number and sizes of ceremonial societies who performed shaman-like tasks. In all, the archaeological evidence from the Early and Middle Woodland periods there suggest that the multiple roles bundled within the classic shaman became increasingly divided over time among not only specialized individual practitioners, but also specialized ceremonial societies (see below, The Development of Sodalities and Ceremonial Societies over Time). Some of these societies were true sodalities, with memberships that crosscut clan and community. Others were clan-specific.

Table 4.4. Segregation of Roles of Leadership and Importance over Time

	Time 1: Mound City	Time 2: Hopewell Mound 25	Time 3: Seip-Pricer Mound	Time 4: Ater Mound
Compared to Globally Defined Sets	9 roles merged,	4 roles merged	2 roles merged,	2 roles merged,
	1 role in 2 parts	3 roles in 6 parts	3 roles in 7 parts	1 role in 2 parts

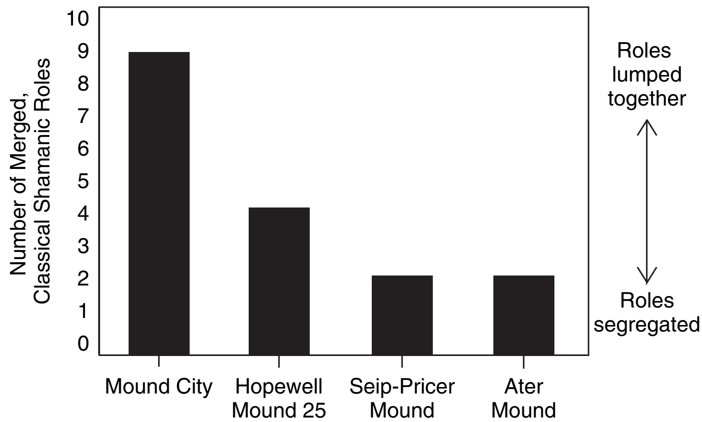

Figure 4.11. The process of role segregation over the Middle Woodland period. Over the time span defined by the sequence of cemeteries including Mound City, Hopewell Mound 25, Seip-Pricer, and Ater, the number of pan-Ohio defined shaman-like roles that were merged into larger bundles steadily decreases.

Over the course of the Early through Middle Woodland periods arose a sodality marked by smoking pipes and with the aim of facilitating relationships of individuals with their personal power animals; a sodality marked by copper breastplates perhaps used in divination; two possible sodalities marked by mica mirrors and galena cubes, both involved in divination; a Bear clan-specific ceremonial society marked by bear canine pendants and involved in corpse processing, possibly guiding souls of the deceased to an afterlife, and/or doctoring; and three other possible ceremonial societies marked respectively by large obsidian bifaces and quartz bifaces used for hunt divination and/or sending and extracting of power intrusions and by cones and hemispheres used for divination in general. Other ceremonial societies also arose, including ones marked by metallic earspools and canine, fox, elk, and raccoon teeth pendants and neckaces; however, it is unclear whether these societies and possible societies were concerned with classic shaman-like tasks. Metallic panpipes, mica and copper crescents, and chlorite disks each may indicate ceremonial societies, but might also represent individuals who played similar roles but were not organized into societies; it is also unclear whether their social roles were shaman-like in nature. All of these social developments are described below (see below, Sodalities and Ceremonial Societies).

Institutionalized Roles

Leadership roles in Hopewellian societies across Ohio and in the Scioto-Paint Creek area were only moderately to weakly institutionalized. The degree to which a role has been institutionalized can be measured by whether the multiple kinds of artifact classes that indicate that role form a consistent set across multiple examples of practitioners, and also form a consistent set across multiple practitioners over time. Across Ohio Hopewell societies, there are 13 defined roles that employed multiple artifact classes (Table 4.2). In the case of the role that was most strongly institutionalized (Role 9), only half of the burials with one artifact class employed in the role also had a given second artifact class employed in that role, considering and averaging all class pairs. In the weakest case (Role 10), only one in seven or eight burials with one artifact class employed in the role had a given second artifact class employed in that role, considering all class pairs. The median situation for the 13 defined roles was for one in four burials with a given artifact class used in a role to have a second artifact class used in that role.

Looking over time within the Scioto-Paint Creek area, in very few cases do roles show consistency in the artifact classes that define them across multiple cemeteries spanning two or three centuries (Table 4.3). The role of public ceremonial leader was marked by headplates without animal referents and by stone celts and their association (Role 2) at both Hopewell Mound 25 and Seip-Pricer mound, but not earlier at Mound City or later at Ater. The role of diviner was marked by mica sheets and galena and their association (Role 6) at each of Mound City, Hopewell Mound 25, and the Seip-Pricer mound, but not later at Ater. Another role of diviner was marked by boatstones, cones/hemispheres, copper noses, and copper buttons and their association (Role 7) at Hopewell Mound 25 and Seip-Pricer mound, but again, not earlier at Mound City or later at Ater. The role of body processor and/or psychopomp was defined by awls and sharks teeth and their association (Role 8) at Mound City and Hopewell Mound 25, while awls and platform pipes identify this role at the Seip-Pricer mound and Ater mound. Beyond these cases, the artifact classes that marked roles varied among temporally distinct cemeteries and, thus, do not indicate leadership roles that were institutionalized for many generations.

The particular roles that were institutionalized more or less, as measured by differences among them in how strongly their artifact markers were associated (Table 4.2), follow expectation. Three of the four most institutionalized roles (Roles 2, 1, 6) focused on public ceremonial leadership marked by a copper headplate or combined public ceremonial leadership with hunt or war divination, marked by a copper headplate and obsidian, quartz, or other gem bifaces. The public, community-wide or multicommunity nature of these roles would have encouraged their becoming institutionalized. Six of the nine least institutionalized roles (13, 12, 8, 4, 11, 3, 7, 5, 10) did not focus on public ceremonial leadership marked by a headplate, a celt, or a conch-shell spool set. Instead, the roles involved divination, healing, body processing and possibly psychopomp work, and sodality achievement. Significantly, divination, healing, body processing, and psychopomp work are each roles that are found crossculturally with shaman-like practitioners who work as individuals serving individual or family clients and whose methods tend to be idiosyncratic and vision-inspired rather than institutionalized (Winkelman 1989, 1990, 1992).

The moderate to weak consistency of artifact classes within roles and of institutionalizing of roles may be too low an estimate, to some extent. Some inconsistencies in artifact markers of a role may reflect instances where only a part of a role practitioner's paraphernalia was buried with him or her, for any number of cultural reasons, but especially because it was passed on to the next individual who filled that role.

Geographic Domains of Power of Leadership Roles

Essential leadership roles with domains of power beyond the local symbolic community, which one would expect to be few, number two. The first is Role 2, a combination of nonshaman-like and shaman-like public ceremonial leadership tasks that are marked in part by copper headplates without animal referents and stone celts. The second is Role 3, a kind of ceremonial leadership apparently responsible for serving important drink with conch shell dippers and shell spoons. The supralocal expanse of power of these two roles is know from the distribution of their artifact markers within the multiroom charnel buildings under the Seip-Pricer mound and Ater mound. In both of these charnel buildings, different rooms were burial places for members of different local symbolic communities (Chapter 3, Local Symbolic Communities, Sustainable Communities). For each role, the artifacts that indicate it occur in only one of the rooms within the Seip-Pricer charnel house and/or one of the rooms within the Ater charnel house, suggesting that only one community was the source of persons who filled the role and that the other communities represented in the charnel house fell under the domain of operation of those in that role, i.e., supralocal power. Had the domains of power of the two roles been only local, then as essential roles, they should have been recruited within each community, and markers of the roles should have been present in each room of the charnel houses. This is not the case.

The strength of political and/or religious power of these two supralocal leadership roles was not great. This is evident by a lack of elite residences in the Scioto Hopewell archaeological record, the burial of persons who filled the two roles in cemeteries (Ater, Seip-Pricer) that were not geographically central to the three local symbolic communities that the roles served, the fact that persons in the two roles shared their power with many other kinds of leaders who had complementary functions, the weak institutionalizing of the two roles as seen in the modest degree of association of the artifact accoutrements of each role across burials, and the recruitment of persons into the two roles from not one clan or local symbolic community over time but different ones (Chapter 3, Centralized Leadership, Identity, and Alliance; above, Segregation of Leadership Roles; Institutionalized Roles; below, Clan Organization; and Thomas et al. 2005:372–373, table 8.14).

Recruitment into Leadership Roles

Recruitment of each of the two kinds of leaders with supralocal domains of power apparently was not tied to local symbolic community, sodality affiliation, or clan affiliation, but was tied to gender, from what data has been analyzed to date. Regarding community, it can be inferred which room in the charnel house under the Seip-Pricer mound corresponds to which room under the Ater mound in representing the same local symbolic community (Carr 2005a:310–311; Thomas et al. 2005:364). Neither plain headplates from Role 2 nor conch shells and spoons from Role 3 occurred in a charnel house room at Seip-Pricer and a charnel house room at Ater that represent the same local symbolic community.[6] The community from which each role was recruited changed over the few decades separating the time of use of the Seip-Pricer charnel house and the time of use of the Ater charnel house. Regarding sodalities, persons who filled Role 2 and were buried with plain copper headplates at the Hopewell site were members of both a sodality symbolized by breastplates and one symbolized by earspools, with equal frequency. This pattern also is found at the Seip-Pricer mound. Likewise, persons who were recruited into Role 3 and were buried with conch shell cups at the Hopewell site and in the Seip-Pricer and Ater mounds were members of both the sodality marked by breastplates and that marked by earpools, with equal frequency.[7] A diversity of animal-totemic clans had members who were recruited into Roles 2 and 3. Persons who filled Role 2 marked by plain headplates were most frequently members of the Canine and Raccoon clans, but also the Feline, Beaver, and Bear clans. Persons recruited into Role 3 marked by conch shell cups and shell spoons were affiliated with the Raptor, Feline, Canine, Beaver, and Bear clans (Thomas et al. 2005:372, table 8.14). Regarding gender, in the Scioto-Paint Creek area, Role 2 marked by plain headplates was recruited only from males, and Role 3 marked by conch shell cups was recruited somewhat more commonly from males than females, 3 to 2 (see below, Gender, Gender Relations, and Kinship Structure).

Other kinds of leadership roles in the Scioto-Paint Creek area were recruited in a fairly fluid manner from varying clans. All 12 of the leadership roles that were defined by multiple artifact classes (Table 4.2) and for which the clans of persons filling those roles are known were each recruited from multiple clans. Different roles were recruited from different suites of multiple clans in a partially complementary, partially overlapping manner. However, some clans were more successful than others in their access to leadership roles. The more successful clans were those that were wealthier and those that were more widely networked socially through sodalities, where wealth is indicated by items of wealth (e.g., necklaces, bracelets) in the graves of persons with clan markers and social networking is measured by the occurrence of sodality markers (breastplates or earspools) in the graves of persons with clan markers. The size of a clan appears to have had little effect on its success in attaining leadership positions (see below, Clan Organization, and Table 4.6, Figure 4.15).

Leadership roles in the broad in the Scioto-Paint Creek area were recruited more commonly from males than females, but different roles had different gender distributions. Roles that were filled more frequently by males include: hunt or war divination or sending or extracting of power intrusions, as indicated by gem projectile points; possibly war achievement, which may be indicated by "trophy" skulls; corpse processing and/or psychopomp work, as indicated by awls; and public ceremonial leadership, as indicated by copper animal effigy headplates, barracuda jaws, and batons. These male-oriented roles suggest recruitment by achievement rather than inheritance, or else specific cultural-conceptual associations between gender and task. At the same time, other roles were filled more equitably by males and females: divination for other than the hunt or warfare, as indicated by mica mirrors, cones, quartz and colored pebbles, and boatstones; public ceremonial leadership indicated by conch shell cups as oppose to the above, male associated objects; and community-wide leadership symbolized by copper celts. The latter were also found with small children, potentially signaling an inherited position.

The Question of Priest-Chiefs

The endpoint of Winkelman's (1989, 1990, 1992) model of differentiation of magico-religious practitioners is a society with a priest or priest-chief-like personage, whose role is well segregated from those of a series of complementary, individual client-oriented practitioners. A priest is a magico-religious specialist who is a centralized political, legislative, judicial, military, and/or economic authority. A priest has a supralocal domain of power, serving an entire community, primarily through public ritual rather than individual clients in private, and without using altered states of consciousness. A priest's power comes from communion with deities, spirits, and/or ancestors rather than the spiritual essences of animals of nature. Priestly practices are typically well institutionalized and standardized compared to those of the classic shaman or shaman-like practitioner because priests are trained through formally organized groups rather than through their individual experiences with the spirit world (Winkelman 1989, 1990:344–347, 1992:69–74).

Scioto Hopewell societies were moving toward this priestly endpoint in Winkelman's model of segregation, but did not reached it by the end of the Middle Woodland period and Hopewellian ways of life. Two roles of public ceremonial leadership that began to take on some priestly characteristics formed over the course of the Middle Woodland. One role was marked by plain copper headplates, which referenced sacred concepts through their copper, but not the power of animals of nature that analogous headplates of animal impersonators did. As shown in Table 4.3, under Role 2, this role was integrated with a variety of shaman-like roles at the Mound City site, early in the Middle Woodland period. It became increasingly more divorced from these other roles at Hopewell Mound 25 and then the Pricer mound. At the latest site, Ater mound, it had become fully segregated from other shaman-like and nonshaman-like roles. It also had a domain of power over multiple local symbolic communities (see above). The second role that came to take on some priestly attributes was marked by conch shell cups and shell spoons. These items again had sacred connotations but did not reference the power of the kinds of animals normally evoked by shaman. Early in the Middle Woodland period, this role (Table 4.3, Role 3) was integrated with other shaman-like roles at the Mound City site and Hopewell Mound 25. By the end of the Middle Woodland, at the site of Ater, it had become fully segregated from these shaman-like roles and also had a domain of power over multiple local symbolic communities (see above).

The roles marked by plain headplates and by conch shell cups and shell spoons were not those of the priest as defined by Winkelman (see above) or the classic chief-priest as defined by Service (1962), Peebles and Kus (1977) or Earle (1997), for several reasons. First, cross-culturally, where priests occur in the same society as shaman-like practitioners, the social prestige and social power of the latter are depreciated (Winkelman 1990:334, 338, 1992:56). In contrast, in Scioto Hopewell societies, specialized shaman-like practitioners had much social power. Their ceremonial paraphernalia were made of visually flamboyant materials that were difficult to obtain, and they orchestrated large public ceremonies evidenced in the large ceremonial deposits within the charnel houses of Mound City, Hopewell Mound 25, and Seip-Pricer. The lack of any such deposits of paraphernalia within the charnel house under the later, Ater mound may indicate the beginning of a process of depreciation of shaman-like practitioners, or alternatively, the winding down of large intercommunity gatherings as an intercommunity alliance began to disintegrate (see below, Changes in the Number of Allied, Local Symbolic Communities; and Changes over Time in the Sizes and Social Compositions of Gatherings). Second, across cultures, priests almost always lead ancestor worship rites (Winkelman 1990:70; see also Service 1962:162). Contrary, Scioto Hopewell charnel houses and mound construction show little evidence for ancestor worship in the form of transgenerational, frequently repeated tomb visitation or mound capping (Carr 2005c:468–473; Greber 1979a:41; 1979b:28, 32; 1983:89–90, 1997:215; Konigsberg 1985:131). Finally, the Scioto Hopewell archaeological record lacks artistic and artifactual evidence for powerful priests or priest-chiefs. The Mississippian archaeological record, with its abundant images of chief-priests (e.g., Phillips and Brown 1978, 1984), provides an archetypal contrast. It would be most accurate to describe the two roles marked by plain copper headplates and by conch shell cups and shell spoons as "incipient priests", given their partial demonstration of some priestly characteristics.

The sociopolitical power of the individuals who filled the two "incipient priest" roles probably was not much greater than the power of other important Scioto Hopewell leaders. The power of the two roles was compromised by the complementarity of their responsibilities with those of other kinds of specialized leaders who worked within local symbolic communities. The power of the two roles was also limited by the recruitment of both of them from different clans and different local symbolic communities over time. Power did not concentrate, or was not allowed to concentrate, in the hands of a single clan or community.

As with the other characteristics mentioned above for leadership in Scioto Hopewellian societies, the sequence of development of incipient priests over the Middle Woodland shows that the members of these societies were actively transforming the organization of their social lives.

Summary

Each of the seven, essential dimensions of leadership that are discussed in general anthropological theory and that were enumerated at the beginning of this section are known for Hopewell communities in the Scioto-Paint Creek area. The power base of the great majority of leaders was sacred rather than secular, and was embedded in the widely pervasive shaman-like world view of Scioto Hopewell peoples. That world view is evident in the Scioto Hopewell material record in the great variety and quantities of ceremonial paraphernalia for performing shaman-like tasks, large numbers of smoking pipes for trancing and communing with personal power animal spirit helpers, raw materials that mimic transformation or can be used to see into, and positive–negative play in the curvilinear style of Scioto Hopewell art. Whereas classic shaman generalists who employed soul flight and the powers of nature are known from only one or two sculptures of them, shaman-like specialists who impersonated and "became" animals to tap into their power are plentifully documented by animal ceremonial headdresses. Some leaders had costumes and symbols of position that give no indication of the performance of shaman-like tasks but that do imply the generalized, Scioto Hopewell shaman-like world view that provided the context for some of their power. Plain copper headplates, celts, reel-shaped gorgets, crescents, and other forms, and mica effigy clan totem or eponym power parts, exemplify leaders with this power base. Leaders with a more secular power base are indicated by a few sculptures of individuals with facial tattooing, scarification, or face painting analogous to that which marked persons having earned titles and achievements in warfare in the historic Southeastern United States. However, patterning in grave good distributions shows that no leadership position had solely secular roles.

The roles played by Scioto Hopewell leaders were many. They include: shaman-like public ceremonial leadership marked by copper animal effigy headplates, nonshaman-like public ceremonial leadership of two kinds indicated by plain copper headplates and copper celts, hunt or war divination or sending or pulling power intrusions, several other forms of divination, processing of corpses and probably psychopomp work, healing of several forms, keeping of cosmological knowledge and myths, perhaps war leadership, and other marked but unidentified roles. Almost all of these roles involved shaman-like activities or imply a shaman-like world view, and most leaders played these roles, rather than more secular ones, as evidenced by the relative quantities of paraphernalia of various kinds found in the archaeological record.

These social and ceremonial leadership roles were segregated from one another among different individuals who specialized in their duties; the roles were not centralized within one or a few social positions. Over the course of the Early and Middle Woodland periods, roles that were initially bundled together within the hands of individual, classic shaman became more segregated from one another and distributed among multiple kinds of more specialized, shaman-like leaders. The roles also became distributed among newly developing sodalities and other ceremonial societies. Leadership roles were only moderately to weakly institutionalized. Different persons in the same leadership role used somewhat different but overlapping suites of paraphernalia, and the suites varied somewhat over time rather than remained consistent.

The geographic domains of power of leaders were limited to within the local symbolic community until the very end of the Middle Woodland period, when two positions with some supralocal responsibilities arose. These were marked by plain copper headplates and by conch shell cups and spoons. The two positions are best characterized as "incipient priests". They were not strong leaders: their claims on sociopolitical power were shared with those of many different kinds of local shaman-like specialists. Further, neither position was always filled by persons from the same local symbolic community, clan, or sodality; thus, social power was not consolidated within any single social unit.

Leaders of other kinds were likewise recruited fairly fluidly from varying clans. Each kind of leadership role was commonly filled by members from several different clans, and different leadership roles were filled by members of somewhat different but overlapping sets of clans. Most leadership roles were filled by men, although some were recruited more equally from men and women.

In all, these characteristics of leadership clearly indicate that Scioto Hopewell societies were in transition, organizationally. The path of change that they were following is well described by Winkelman's (1989, 1990, 1992) crosscultural socioreligious model of the segregation of the roles of the classic shaman among multiple, specialized, shaman-like practitioners as a society grows in size over time. The end-point of Winkelman's model, where a society is led by a priest or priest-chief with centralized political, legislative, judicial, and/or economic public authority, and where other shaman-like practitioners are depreciated in their sociopolitical powers and attend to individual client needs in private, was not reached.

Leadership in Scioto Hopewell societies was similar in its most basic qualities to leadership in the historic Central Algonkian tribes of Ohio, Indiana, Illinois, and Wisconsin. In the best known of these tribes, the Fox, leadership roles were decentralized among multiple and complementary social positions, including the village peace chief, leaders of war parties, a village ceremonial leader, and the headmen of each extended family who formed a village council. The power of each particular leadership role was situationally contingent and temporary, and relevant to a narrow set of domains of life rather than widely spread over many domains. None of the leadership roles involved directive authority over other tribal members, i.e., relations of domination, subordination, and hierarchy. Instead, leading was accomplished by suggesting actions. The basis of power of a Fox leader was spiritual, called *manitu*. Manitu was conceived of as a spiritual essence that is universally and equally available to all, that exists when a person is successful and demonstrates it, and that is lost when he or she fails. Fox leadership roles were not strongly institutionalized in format. The persons who filled given leadership roles typically changed over time as their demonstrated power, i.e., *manitu*, rose and declined, with the form of demonstration varying from person to person. Thus, most roles were achieved, and open to multiple clans. Only the position of the village peace chief was inherited (through the Bear clan) and permanent, and to this extent, institutionalized (Miller 1955).

From a broad, ecological perspective, the organization of the leadership system of Scioto Hopewell local symbolic communities was an essential strategy for integrating and overcoming the social isolation of residential communities that were spatially dispersed over the land, small in size, and fairly sedentary. Decentralized leadership, and specialization and complementarity of leaders in their roles, spread leadership roles and sociopolitical power across multiple individuals from multiple residential communities, and created social dependencies among leaders and many residential communities. Further, because different leadership positions tended to be recruited from different suites of clans, clans and the residential communities that in part comprised them became integrated by relationships of complementarity and mutual interdependency. These patterns of social complementarity and integration of groups horizontally, and a lack of emphasis on vertical hierarchies, relations of domination and subordination, and centralization, are repeated in other aspects of Scioto Hopewell social and ritual organization (see below, Clan Organization; Sodalities and Ceremonial Societies).

CLAN ORGANIZATION

A good number of aspects of the clan organization of Scioto Hopewell people are knowable archaeologically: the animal totems or eponyms with which they identified themselves, their rough sizes, their distribution among local symbolic communities, the extent of formalized ties among them (i.e., phratry relationships), the social roles they filled, and their relative prestige (Thomas et al. 2005). These fine details of Scioto Hopewell social life are recognizable because Hopewell people buried some of their dead with markers of their clan affiliation, which can be named, counted, and examined for their spatial distributions and associations with one another and with other kinds of grave goods that indicate social roles and prestige. The clan markers are real or effigy power parts of animals of various species native to Ohio: the claws, talons, teeth, and jaws of animals. Effigy power parts were made of copper, mica, bone, and stone. Often the markers were drilled with a hole to hang as a pendant around the neck, singly or in numbers (Figures 1.8A and 4.12A–H).

That these animal power parts symbolized clan membership is almost certain, for seven strong reasons. First, they reference animal species, which were the most common kind of clan eponyms and totems historically in the Eastern Woodlands. Second, they reference the power of the species, which corresponds to the historic belief that a clan-associated animal species is a source of power, protection, health and longevity, information, and abundant fulfillment of earthly needs for its clan members. Third, the number of species of animal power parts found in Scioto Hopewell sites is about the same as the number of clans per historic tribe in the Woodlands. Fourth, the particular species of Hopewell animal power parts closely matches the most common clan eponyms of historic tribes across the Woodlands (80% match; Table 4.5). Fifth, the rank-order commonality of the represented species of animal power parts, measured by the number of deceased individuals buried with each species, correlates well with the rank order of commonality of clan eponym

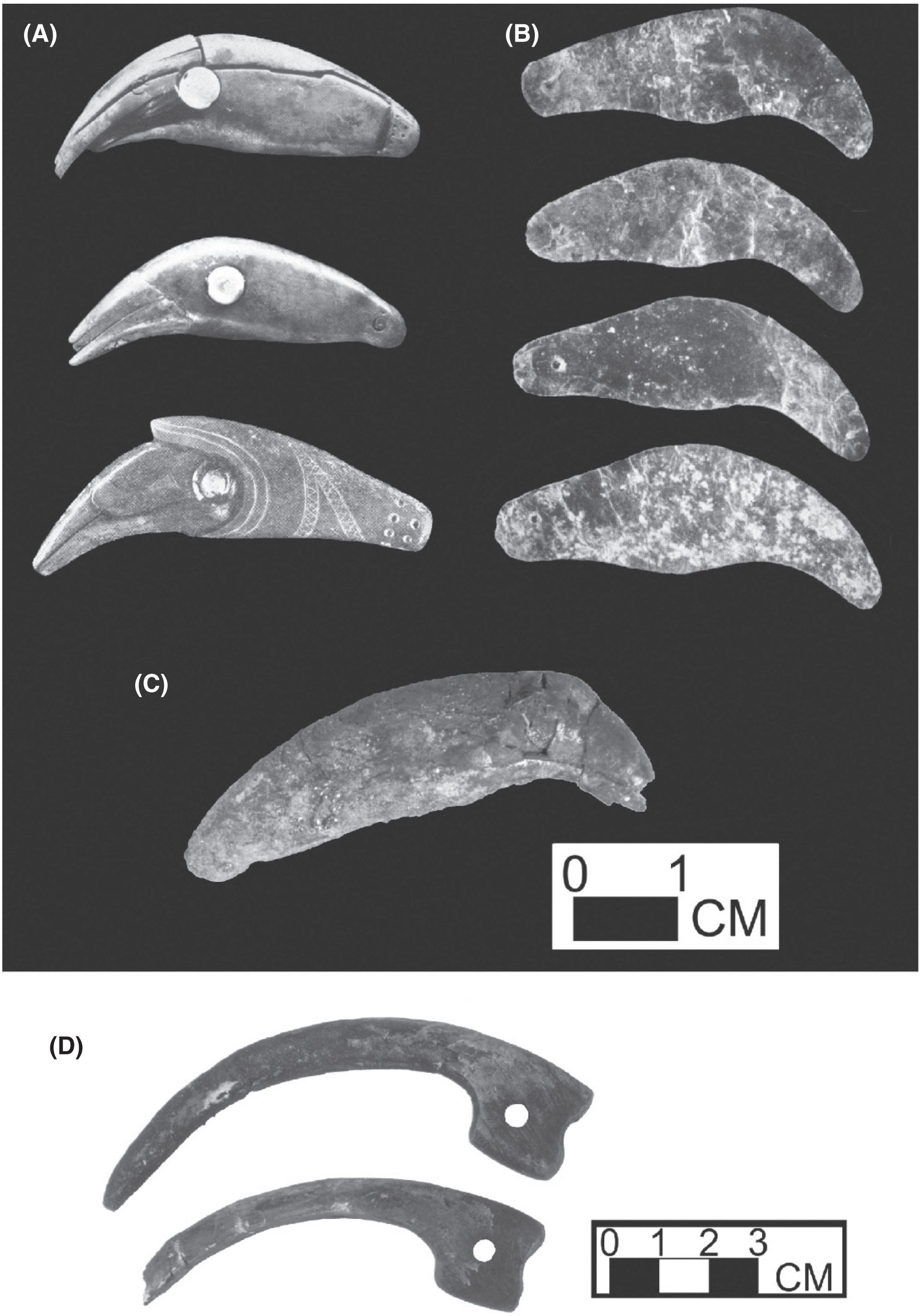

Figure 4.12. Power parts of the animal totems of Scioto Hopewell clans. (A) Bear canine pendants, cut, drilled, and inset with pearls, from the Hopewell earthwork. Note that a naturally vertical bear canine, when rotated horizontally, split, and inserted with a pearl, resembles a bird head and beak. The relationship of birds and bears

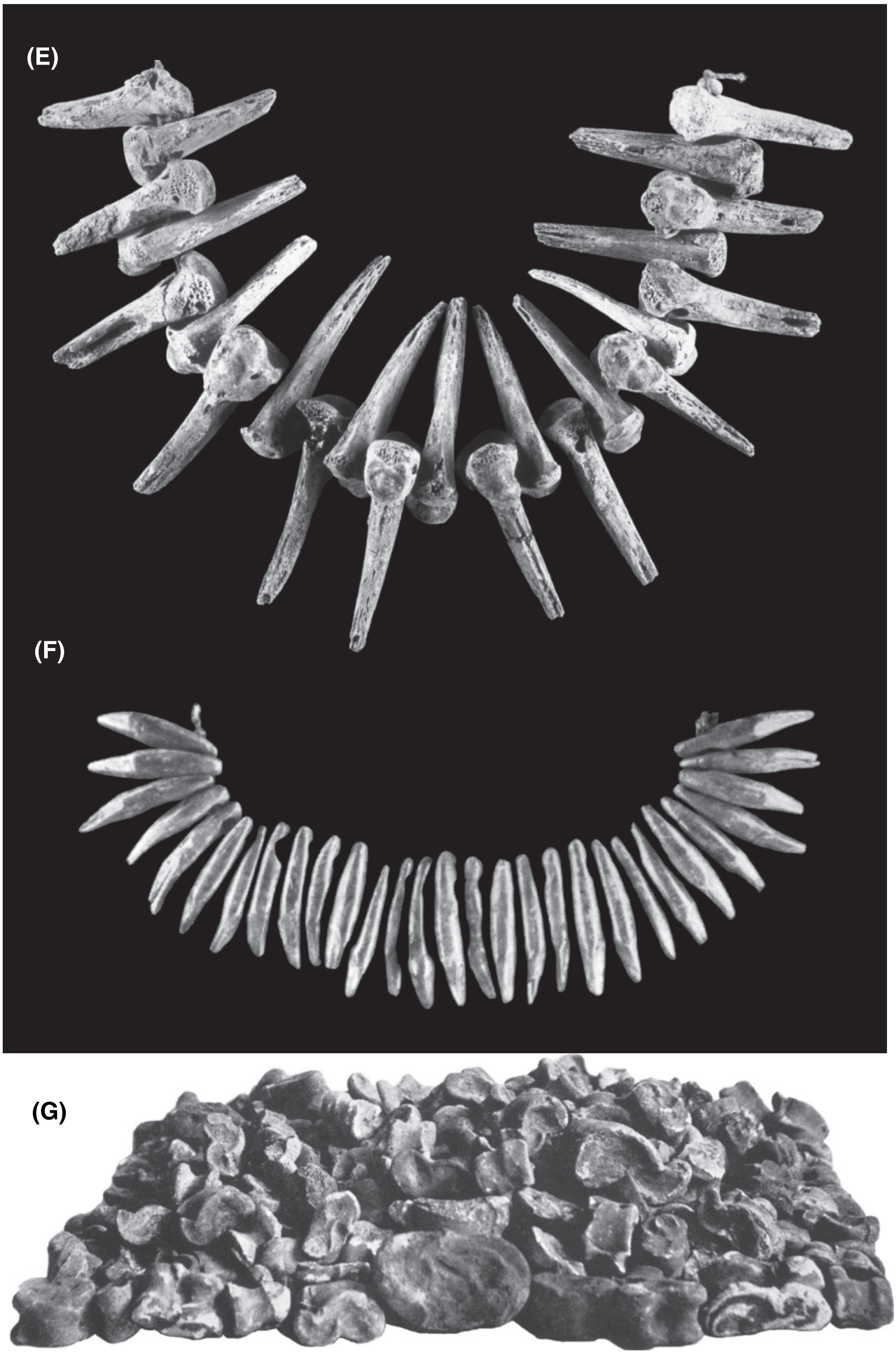

Figure 4.12. (*continued*) to each other in Hopewell thought recalls the categorization of both as two-legged creatures by some historic Woodland Indians. It also recalls the complementarity of earth and sky, bears being associated with the earth and birds with the sky, in some historic Woodland world views. (B) Mica effigy bear

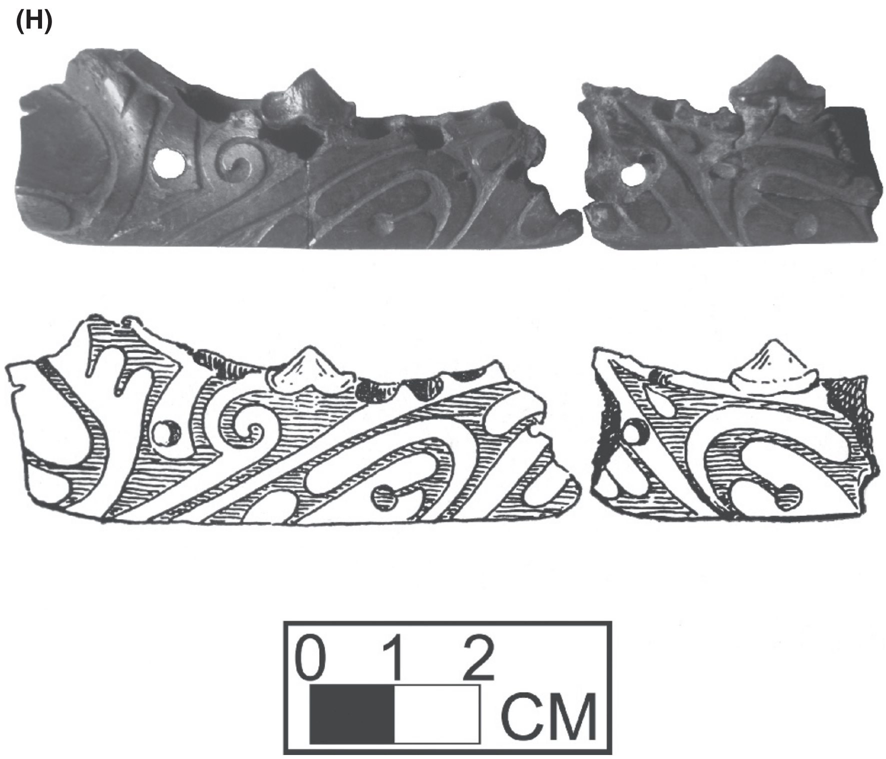

Figure 4.12. (*continued*) **canine pendants, from the Hopewell earthwork, Mound 25, Burial 42. (C) Copper effigy bear canine, Hopewell earthwork, Mound 25. (D) Bone necklace pieces carved in the ambiguous form of a mammal's claw (proximal end) and a bird or reptile's talon or claw (distal end). From the Seip earthwork, Conjoined Mound. (E) Bear claw necklace, from the Hopewell earthwork, Mound 25, Burial 41. (F) Raccoon teeth necklace, from the Hopewell earthwork, Mound 25. (G) Deer and elk astragali (ankle bones), from the Turner earthwork, Mound 4, Altar 1. (H) Elaborately carved mandible of a wildcat from the Seip earthwork, Pricer Mound, Burial 28. See credits.**

species across the Woodlands ($r = 0.43$; $R^2 = 66\%$; Table 4.5). Sixth, the animal power parts are distributed widely among burials within cemeteries and across many cemetery sites and communities, as one would expect of clan markers; if Scioto Hopewell societies had clans, each person would have had a clan affiliation. Finally, among historic Woodlands tribes, animal power parts were sometimes drilled and made into pendants or necklaces, which marked the wearer's clan affiliation (Figure 4.13).

The features of Scioto Hopewell clan organization described here are based on an analysis of 85 individuals buried with clan markers in 16 cemeteries (Thomas et al. 2005). Of this sample, most individuals ($n = 76$; 89%) were buried in cemeteries in the Scioto drainage ($n = 10$). The remainder came from southwestern, northeast, and east-central Ohio; they add to the sample size and confidence of findings, and seem to recapitulate and strengthen patterns found in the Scioto drainage (Thomas et al. 2005:363, table 8.10). The sample shows a cultural selection biased toward the elite from each clan, rather than a proportionate sampling from each clan: the marked individuals constitute only about 12% of all documented Middle Woodland burials in Ohio, often (ca. 70%) held positions of leadership or importance, and were primarily adult males. As a result of these sampling biases, the relative sizes of the clans can be estimated only roughly. However, the other sociological topics listed above are well addressed by the sample.

Throughout this chapter, the phrase "animal-associated clans" is used rather than

Table 4.5. Comparison of Proposed Ohio Hopewellian Clan Eponyms to Clan Eponyms of the Historic Eastern Woodlands[1]

Number of Tribes	Clan
Northeast	
14	Canine
13	Bear
13	Deer/Elk/Moose
12	Raptor
9	Non-Raptorial Bird
9	Waterfowl
9	Turtle
7	Beaver
4	Raccoon
4	Fish
Great Lakes-Riverine	
7	Canine
7	Bear
7	Deer/Elk/Moose
7	Raptor
7	Waterfowl
4	Raccoon
4	Turtle
3	Non-Raptorial Bird
3	Turkey
3	Beaver
3	Fish
Southeast	
8	Canine
8	Bear
7	Deer/Elk/Moose
7	Non-Raptorial Bird
6	Raccoon
6	Beaver
5	Snake
5	Alligator
4	Turkey
4	Skunk
4	Fish
4	Otter
4	Raptor
Number of Clan-marked Burials	**Clan**
Ohio Hopewell	
68	Bear
20	Canine
15	Feline
11	Raptor
8	Raccoon
6	Elk
5	Beaver
4	Non-Raptorial Bird
2	Fox

[1]Historic eponyms are listed in descending order of prevalence. The top nine eponyms, along with all those tying for tenth are listed. See Thomas et al. (2005:Note 7) for qualifications regarding the comparability of the historic and prehistoric data.

Figure 4.13. Sauk and Mesquakie leader, Keokuk, dressed with a bear claw necklace. See credits.

"animal-totemic" clans. It is not known currently whether, among Scioto Hopewell peoples, a clan was a descent group comprised of actual or conceptually related lineages, and whether its members claimed descent from a totemic animal species or only a close spiritual relationship with an animal species through having its name, i.e., the species as an eponym. Clan systems of analogous, historic, nineteenth Century Central Algonkian tribes, including those of the Prairie (Sauk, Fox, Kickapoo, Potawatomi), Woodland (Menomini), and Ohio Valley (Shawnee, Miami, Illinois) tribes, differed from one another in these ways.

Animal-associated clans in the Scioto-Paint Creek area minimally numbered nine: Bear, Canine, Feline, Raptor, Raccoon, Elk, Beaver, Nonraptorial Bird, and Fox. Opossum may or may not have been an additional clan eponym. Opossum teeth were found in two ceremonial deposits, at the Seip and Turner sites, but were not found in burials. Although Deer was a very common clan eponym among historic tribes in the Woodlands (Table 4.5), it does not seem to have been present among Ohio Hopewell peoples. Deer antler tine, teeth, and astragali power parts have not been found in Ohio Hopewell graves, save one deer incisor suggestive of shaman-like animal impersonation (Figure 4.8F), and astragali have been found only in bulk in one ceremonial deposit. Six copper deer antler headdresses and one deer antler effigy cutout known from four graves and one ceremonial deposit in Ohio might be thought to represent a Deer clan, but a variety of archaeological contextual evidence suggests otherwise (Thomas et al. 2005:359, 382).

The actual number of clans in the Scioto-Paint Creek area may have been greater than nine. Some clans might have had eponyms that were phenomena other than animals and not visible archaeologically. Historically in the Eastern Woodlands, some clans had eponyms such as natural forces, plants of various kinds, paint, arrow, and long hair (Thomas 2005:344–346, table 8.1). Also, some of the categories of Ohio Hopewell clans that we can recognize, such as Feline, Raptor, Nonraptorial Bird, may have been divided more finely by Hopewellian peoples (e.g., Bobcat versus Cougar; Falcon versus Eagle; Crane versus Crow, respectively). However, the nine animal-totemic clans identified for Ohio Hopewell peoples agrees well with the historic Woodland pattern for 8 to 10 collapsed clan categories, or 9 to 11 actual clans, per tribe (Thomas et al. 2005:343).

Clans in the Scioto-Paint Creek area varied in size. This is indicated roughly by the numbers of burials with markers of one clan or another (Table 4.5). The Raptor, Raccoon, Elk, Beaver, Nonraptorial Bird, and Fox clans were probably similar in size. The Feline clan was probably larger. The Bear and Canine clans may have been as well; however, the abundance of burials with Bear and Canine clan markers may reflect certain special roles that the Bear and Canine clans had in mortuary ceremony, and the placement of their totemic markers within the graves of persons they served. Several circumstances suggest this. First, individuals buried with bear power parts are disproportionately common compared to what one would expect for natural variations in clan size in a demographically healthy society. Second, bear and canine power parts co-occur frequently in burials with other animal power parts, which one would not expect for symbols that marked only clanship. Third, two sculptures appear to indicate the roles of the Bear and Canine clans in mortuary ceremony. The Wray figurine (Figure 4.6B, see above, Depictions, Costumery, and Symbols of Position of Leaders; Dragoo and Wray 1964) shows a bear impersonator – a man in a bearskin costume or with a bear spirit behind him – who has a possibly decapitated head on his lap. The Bear clan or certain of its members may have been responsible for processing corpses, and possibly psychopomp work, within the community. A large, Copena-style effigy pipe, deposited in the Seip-Pricer mound, depicts a dog eating a decapitated human head between his front paws (Shetrone and Greenman 1931:416, 418; figure 2.14). Again, corpse processing and possibly psychopomp work are implicated. The pipe was found with others that also potentially connoted psychopomp work.[8]

Clans were probably localized to a degree. The three major clusters of burials under Hopewell Mound 25, which were comprised by members of three different local symbolic communities (Chapter 3, Sustainable Communities), varied somewhat from one another in the species of clan markers present in them or in the proportions of species. The three clusters of burials under the Seip-Pricer mound, which also represented three local symbolic communities, likewise varied from one another in these ways (Thomas et al. 2005:364, Table 8.11). These differences may reflect simply informal variation in the frequencies and patterns of marriage exchanges among the three communities rather than institutionalized segregation of clans among communities. This pattern for only mild localization of clans aligns with that for historic tribes of the Eastern Woodlands (Thomas et al. 2005:347), and for tribal societies generally across cultures, in which cases clans serve as one kind of pan-tribal, nonresidential-base sodality.

Alternatively, it is possible that localization of some clans reflects their having moved into the Scioto-Paint Creek area during the course of the early to middle Middle Woodland period from other sections of the Scioto drainage. Increases in the flamboyance of ceremonies in the Scioto-Paint Creek area may have attracted some new clans there (see below, Change over Time; also Chapter 5, Hopewellian Societies in Transition).

Roles of social, political, and religious leadership and importance in the Scioto-Paint Creek area were each recruited from a wide variety of clans rather than centralized in the hands of one or a few clans (Table 4.6). On average, half of the clans (4.2 of 8 analyzed clans) filled any one specific role of leadership or importance, such as diviner, public ceremonial leader, or community-wide leader marked by celts, considering ten such roles (Table 4.6, Footnote 2). Different suites of multiple clans were recruited into these different roles. Additionally, most clans filled many different, important social, political, and religious roles. The modal number of specific roles of leadership or importance filled by any one clan was 6 of 10 roles, considering eight clans (Table 4.6, Footnote 2). This overall pattern of relatively open recruitment of clans into roles of leadership and importance is similar to that found among historic Woodlands tribes (Thomas et al. 2005:347). The pattern is also found across the globe, generally, in societies of middle-range complexity having

Table 4.6. Clans That Most Commonly Filled Various Social Roles[1]

Role	Common Clans
Shamanic Roles	
War or hunt divination[2]	**Canine, Raptor, Raccoon**, Feline, Elk, Beaver, Nonraptorial Bird
Other divination[2]	**Raccoon**, Canine, Raptor, Elk, Nonraptorial Bird
Public ceremonial leadership[2]	**Nonraptorial Bird**, Canine, Feline, Raptor, Beaver
Body processor/psychopomp[2]	**Canine, Raccoon**, Feline, Elk
Philosopher[2]	**Nonraptorial Bird**, Feline, Raptor
Trancing/ceremony	**Raptor**, Canine, Feline, Beaver
Other possible shamanic equipment	**Raccoon, Nonraptorial Bird**, Canine, Feline, Raptor, Elk
Important Nonshamanic Roles	
Crescents[2]	Canine, Raptor, Beaver
Reel-shaped gorgets[2]	Canine
Trophy skulls, jaws, fingers, hands[2]	Feline, Raptor, Raccoon
Community-wide Leadership	
Headplates[2]	**Raccoon**, Canine, Feline, Raptor, Beaver, Nonraptorial Bird
Celts[2]	**Raptor, Nonraptorial Bird**, Canine, Feline, Beaver
Sodalities	
Breastplates	**Feline, Raccoon**, Nonraptorial Bird, Canine, Raptor, Beaver
Earspools	**Feline, Raptor**, Canine, Beaver, Nonraptorial Bird, Fox
Prestigious Personal Roles	
Metallic artifacts	**Canine, Raccoon, Elk, Beaver, Nonraptorial Bird**, Feline, Raptor
Nonmetallic artifacts	**Canine, Feline, Raptor, Raccoon, Beaver**, Elk, Nonraptorial Bird
Ordinary Personal Roles	Canine, Feline, Raptor, Raccoon, Elk, Beaver, Fox

[1]Bolded clans are those that filled the given social role in the case of more than 50% of the members of theirs marked with animal power parts in their graves. Also bolded are those clans the marked members of which filled the given social role 50% more frequently than expectation and two burial counts more than expectation, where expectation assumes a random distribution of roles among clans and is calculated from marginal totals of a 2×2 count table of clans versus roles. The Bear Clan has been excluded from analysis because it's clan markers do not appear to pinpoint it's social roles. It's markers seem to have been placed in the graves of many individuals, who had many roles, as a part of its social responsibility for processing bodies of the deceased and/or psychopomp work.

[2] These are the ten specific roles of leadership or importance discussed in the text.

multiple, differentiated, powerful shaman-like leaders but lacking powerful priests or priest-chiefs (Winkelman 1992), as was the case for Scioto Hopewell communities.

Not all clans, however, had equal access to all roles of leadership and importance. Members of the Raccoon clan were recruited with frequency (Table 4.6, bolded) into the greatest diversity of the ten specific roles of leadership and importance, followed by the Nonraptorial Bird, Canine, and Raptor clans. The Feline and Elk clans did not hold any of these important roles frequently, and there is no evidence that members of the Fox clan held any of these roles at all.

Clans that frequently filled particular social roles of leadership or importance (Table 4.6, bolded) typically had totems or eponyms with natural characteristics relevant to those roles, or were clans known historically among Woodland Native Americans to have filled those roles. Hunt or war diviners, who were marked in their graves by points made largely of quartz, translucent gems, obsidian, copper, and mica, were commonly recruited from the Canine, Raptor, and Raccoon clans. Both canines and raptors are predatory. The Wolf clan led war parties among the Shawnee (Callender 1978c:627), a position that required the gathering of information. The Winnebego Hawk clan also was specially charged with warfare (Lurie 1978:693). The Raccoon clan's association with warfare and with death as an aspect of it is expectable, given the raccoon's nocturnal nature, its apparent symbolic association with warfare in the Mississippian society of Spiro, Oklahoma (Phillips and Brown 1978:154), and its ties to trickery in the Historic Northeast (Gill and Sullivan 1992:19, 253). The Raccoon clan's association with divination of warfare is natural because the raccoon is a night animal capable of seeing through darkness, analogous to diviners who see through the darkness of the present into the future (Harner 1980:28).

Other divination activities using mica mirrors, cones, hemispheres, or boatstones were frequently carried out by the Raccoon clan. Again, the raccoon's piercing night vision makes it a natural symbol for divination.

The role of body processor and possibly psychopomp, like the role of hunt or war diviner, was frequently filled by members of the Canine and Raccoon clans. Both animals have natural associations with death, as just discussed. The role of the Canine clan in processing corpses may also indicated by a Copena-style effigy pipe sculpture of a dog eating a decapitated human head between his front paws, excavated from the Seip-Pricer mound (Figure 4.14; see also Shetrone and Greenman 1931:416, 418).

Both the roles of shamanic public ceremonial leader and shamanic philosopher were frequently recruited from the Nonraptorial Bird Clan. The association of the same one clan with both roles is not surprising, given the representation of both roles in certain same copper and mica geometric forms. For example, copper geometrics from the Copper Deposit under Mound 25 at the Hopewell site possibly decorated the clothing of public ceremonial leaders (Greber and Ruhl 1989) and, at the same time, denoted cosmological Hopewellian concepts and indicated the role of shamanic philosophers concerned with these matters. The association of a bird clan with the role of cosmologist-philosopher also follows a natural

Figure 4.14. Copena-style effigy pipe sculpture of a "dog" eating a decapitated human head between his front paws. From the Seip-Pricer mound, above the Great Multiple Burial. See credits.

logic: birds in flight have a broad view of the cosmos and its layout and come closest of all animals to the Above Beings as sources of knowledge (Grant 1994:119; Hudson 1976:129, 164; Mails 1978:149).

Unspecified shaman-like roles that involved trance, as indicated by ceremonial equipment for inducing trance or symbolic of it, were commonly filled by members of the Raptor clan. This association is logical, given that shamanic trancing is frequently experienced crossculturally as the flight of one's soul and becoming a bird in flight (Harner 1980:26). For many historic Woodland tribes, the eagle – a raptor – is the paramount bird in spiritual affairs, because it flies higher and closer to the Above Beings than any other bird (Grant 1994:119; Hudson 1976:129, 164; Mails 1978:149).

A community-wide leadership role marked by metallic headplates was commonly filled by members of the Raccoon clan. In contrast, another community-wide leadership role marked by metallic celts was frequently filled by the Raptor and Nonraptorial Bird clans. This segregated distribution of clans among community leadership roles follows the strong mortuary pattern, found across Ohio Hopewell societies, where headplates and celts were almost never buried together in the same grave (Carr 2005a:280–283). It is possible that this crisp division of roles and the analogous segregation of the clans that filled them reflects a distinction between "internal" leaders and "external" leaders, analogous to the peace chiefs and war chiefs of historic Native American tribes in the Eastern Woodlands. However, ethnohistoric and archaeological support for this interpretation are mixed (see above, Segregation of Leadership Roles; Thomas et al. 2005:369–370).

"Trophy" skulls, jaws, fingers, and hands, which may indicate achievement as a warrior (Seeman 1988; but see Johnston [2002]), are limited to deceased persons accompanied by markers of the Feline, Raccoon, and Raptor clans. The natural logic and ethnohistoric evidence for the association of the Raccoon and Raptor clans with warfare is summarized above. The tie of the Feline clan with warfare accords with the pattern of the historic Shawnee to fill the office of war chief with a member of the Great Lynx clan (Callender 1978c:627). The Panther clan of the historic Creeks was usually apart of the People of Different Speech division, which was responsible for warfare (Swanton 1928:167).

Distinct from the above shaman-like and nonshaman-like roles of leadership and importance were roles within two kinds of prestigious sodalities, marked by metallic breastplates and metallic earspools (Table 4.6; see also Carr 2005a:283–285). These items indicated either ordinary membership in a prestigious sodality or the achievement of a prestigious level in a sodality. Many clans participated in each of the sodalities – 6 of the 8 studied clans (not considering Bear), in contrast to the average of 4.2 of 8 studied clans that filled any one specific role of leadership or social importance (see above). The diversity of clans that participated in each of the two sodalities is expectable: a sodality by definition draws its members from multiple kinship and residence groups across a society (Service 1962:105–106; see Carr 2005a:285 for ethnographic examples). Only the Elk clan appears to have not had representatives in one or the other of the two sodalities.

Although recruitment of clans into the above roles of leadership, social importance, and/or prestigious sodality membership was relatively open, different clans did vary significantly in the number of such roles they filled (Figure 4.15). In this sense, they varied in their sociopolitical power. Members of the Raccoon clan were recruited commonly into twice the number of important social roles than the next most socially successful clans. The Nonraptorial Bird, Raptor, Canine, and Feline clans commonly were recruited into a moderate number of important roles, whereas the Beaver clan was commonly recruited into only one important role, and the Elk and Fox clans apparently into none at all.

The chance that a clan frequently filled any one socially important role correlates with the number of these important roles that the clan held – that is, the scope of the clan's sociopolitical power base. For example, community-wide leadership positions were held frequently

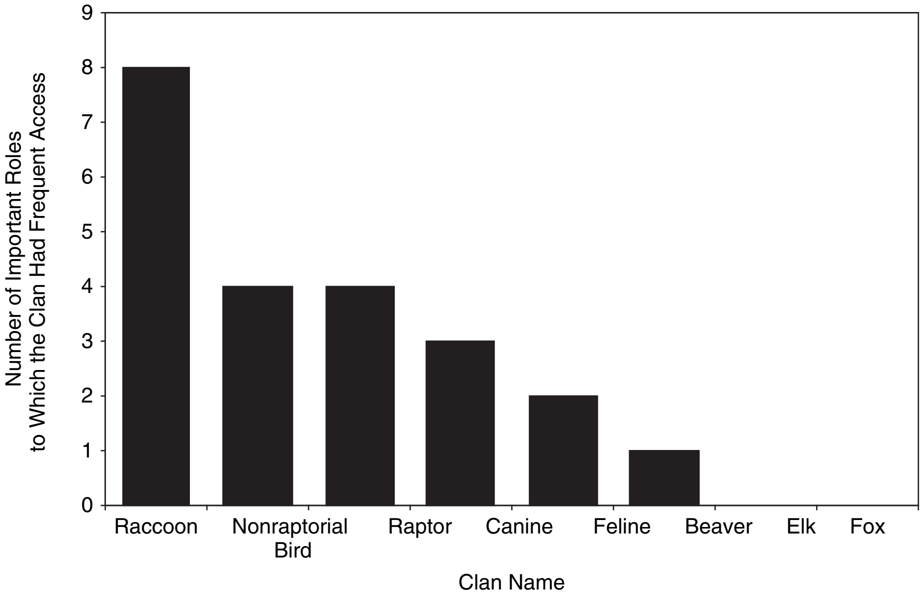

Figure 4.15. Number of important roles that various Scioto Hopewell clans commonly held, i.e., the scope of the clan's social power base.

by only those clans that filled three or more other roles of leadership, social importance, and/or prestigious sodality membership. The clans are the Raccoon, Nonraptorial Bird, and Raptor clans (Table 4.6). Likewise, public ceremonial leaders and shaman-like philosophers who wore clothes decorated with large copper or mica geometrics intended for a large audience were drawn from only the Nonraptorial Bird clan, which frequently filled three other socially important roles. Diviners of the hunt and/or warfare were recruited frequently from the Raccoon, Raptor, and Canine clans, the first two of which commonly filled three or more other important roles.

The scope of a clan's social power base and the chances of recruitment of its members into shaman-like roles, important nonshamanlike roles, or community-wide leadership roles, as enumerated in Table 4.6, depended most fundamentally on the wealth of its personnel and their membership in sodalities, which offered a person an opportunity to network with individuals of multiple kinship and residence groups. Clan size, as a potential basis for social power, shows little relationship to the success of a clan in having attained these important positions. These relationships were revealed by correlating a measure of clan wealth, a measure of clan networking through sodalities, and an approximation of clan size with the percentage of burials of a clan that attained shamanlike roles, important nonshamanlike roles, or community-wide leadership roles (Thomas et al. 2005:375–377, Table 8.15). Clan wealth was measured by the percentage of burials of a clan that had metallic and nonmetallic items of wealth, such as necklaces and bracelets. Clan networking was estimated by the percentage of burials of a clan that had breastplate or earspool markers of sodality membership or achievement. Clan size was approximated by the number of burials with markers of a clan (excluding the Bear Clan).

Although a clan's wealth and sodality networking did affect its degree of access to positions of leadership and social importance, most clans actually differed little from one another in wealth and sodality networking. Five of eight clans were moderately wealthy, in that 40% to 60% of the burials with their clan markers also had items of wealth. Six of eight clans were moderately networked socially, in that 40% to 60% of the burials with their clan markers also had markers of sodality membership or achievement. No one or few clans monopolized wealth and social power in the Scioto-Paint Creek area.

The similarity of most clans in wealth relates in part to the weak localization of clans. Because each clan was distributed across multiple communities and natural environments within the Scioto-Paint Creek area, it was unlikely that one or a few clans would have been ecologically and materially advantaged relative to others.

Change over Time

It is likely that, over time, the number of clans within the Scioto-Paint Creek area increased. Within the very early, large charnel house of Tremper were placed the animal power parts of only three clan categories that probably constituted four clans: bear, wolf-coyote, puma, and bobcat. Later, within charnel houses in each of the Mound City, Hopewell, and Seip earthworks, animal power parts of six to eight different clans were buried (Table 4.7). This variation in the number of clans represented at the sites is not attributable to the sizes of the burial populations and sampling issues. The number of individuals laid to rest in the Tremper charnel house is two to three times greater than the number placed in each of the other sites. In addition, the clans not represented at Tremper but found in later sites include larger ones (e.g., Raptor, Raccoon) that would not have been as susceptible to the stochasticity of deaths of members of clans as would have the smaller clans. Thus, it is likely that the relatively large clans of Raptor and Raccoon, and perhaps the smaller ones of Elk, Beaver, Nonraptorial Bird, and Fox, were not present in the Scioto-Paint Creek area at the initiation of Hopewellian life there.

These new clans may have formed during local processes of social differentiation in the Scioto-Paint Creek area. They also may represent the immigration of people of new clans into the area during the time of use of the Mound City and Hopewell earthworks, as ceremonial flamboyance in the area increased and made it attractive to neighboring people (see above and Chapter 5, Hopewellian Societies in Transition).[9] In either case, the increase in number of clans in the Scioto-Paint Creek area over time may relate to and have encouraged the increase in ceremonial diversity there over time. Among North American Native American tribes generally (Tooker 1971:360), and among the Prairie Central Algonkians specifically (Callender 1962:31), clans commonly were responsible for the performance of ceremonies that they owned. The ceremonies concerned various aspects of community welfare and often were associated with a sacred bundle or fetish of a kind. Among the Ohio valley Algonkian tribes and the Menominee, however, clans did not serve this ritual function or own sacred bundles (Callender 1962:35–36, 41).

A Possible Phratry

The partnering of clans within a phratry, that is, formalized relationships of reciprocity and/or complementarity in duties among two or more clans, is suggested by archaeological

Table 4.7. Clans Indicated to be Present in the Scioto-Paint Creek Area over Time

Sites, "Youngest" to "Oldest"	Number of Clan Categories Present	Clans Indicated to be Present				Burial Population Size[1]
Ater	5	Bear Canine	Raptor	Elk	Beaver	59+
Seip-Pricer	8	Bear Canine Feline	Raptor Raccoon		Beaver Nonraptorial Bird Fox	110
Hopewell	8	Bear Canine Feline	Raptor Raccoon		Beaver Nonraptorial Bird Fox	214+
Mound City	6	Bear Canine Feline	Raptor Raccoon	Elk		105+
Tremper	3	Bear Canine Feline				~375+

[1] Counts include only those individuals on the floor of mounds, not within mound mantels or intrusive into them.

evidence at only one site in the Scioto drainage: Tremper. And there, alternative interpretations are possible. Within the Great Cache of decommissioned items on the mortuary floor at Tremper were placed 110 pieces of animal jaws and animal jaw pendants attributable to bear, wolf/coyote, puma, and bobcat (Thew n.d.). These items were likely indicative of clans and their totems or eponyms, as were jaw pendants historically in the northeast Woodlands (e.g., Callender 1978a:641). The bear and wolf/coyote jaws were almost all maxilla, whereas the puma and bobcat jaws were all mandibles. The complementarity of the jaw elements suggests complementary social relationships between the Bear and Wolf/Coyote clans, on one hand, and the Puma and Bobcat clans on the other. A phratry, dual division, and/or moiety might be inferred from this archaeological pattern.

Beyond Tremper, there does not appear to be any other archaeological evidence to suggest that clans in the Scioto drainage were organized into phratries, The corresponding and complementary distributions of particular social roles among clans may indicate simply which clans were successful or not in gaining access to those roles. The number of burials with markers of multiple clans (excluding those of Bear), which might indicate clans that stood in a phratry relationship, are limited to 7 of 85 burials with clan markers, and the clans that co-occur do not do so consistently across the seven burials (Thomas et al. 2005:377–378, table 8.16).

Summary

Hopewell people of the Scioto-Paint Creek area divided themselves minimally into nine animal-associated clans: Bear, Canine, Feline, Raptor, Raccoon, Elk, Beaver, Nonraptorial Bird, and Fox. Subdivisions of some of these, a possible Opposum clan, and clans characterized by things other than animals may have augmented the number. The clans were probably mildly localized, as a result of informal variation in frequencies and patterns of intermarriage among local symbolic communities. Leadership roles were not centralized in the hands of one or a few clans: multiple clans were recruited into each kind of leadership role, and different suites of clans were recruited into different roles. On average, half of the Scioto Hopewell clans filled any one particular role of leadership or importance, and any one clan filled about half of such roles. The clans that filled a leadership role typically were those with animal totemic or eponym species having characteristics most relevant to the task at hand. For example, the fine night vision of raccoons made Raccoon clan members a natural choice for leadership roles involving divination. Most clans differed little from one another in their wealth, degree of social networking through memberships in sodalities, and size. The Feline clan was probably larger than most, and the Bear and Canine clans may have been, also. Clans did, however, differ in the scope of their social power, as measured by the number of leadership roles and other important social roles into which they were recruited. Members of the Raccoon clan filled double or more the number of such prestigious roles than other clans, whereas the Elk and Fox clans apparently held none. The scope of social power of a clan depended moderately to strongly on its wealth and the richness of its social linkages through sodalities. It's size apparently mattered little.

Clan organization was a key means by which residential communities of Hopewell people were able to remain integrated with one another in the face isolating factors, including their spatial dispersion, small size, and fair degree of sedentism. Weak localization of clans meant that households over large areas were interconnected by clan ties. Because different suites of multiple clans were recruited into different essential social roles in a partially complementary, partially overlapping manner, members of different clans depended on one another to meet their daily and long-term social, ritual, and material needs. Had all clans filled most important social roles, or one clan filled most of them, clan organization in the area would not have been as effective in integrating residential communities.

Finally, the roughly similar size, wealth, and social connectedness of most clans, and their fairly equitable recruitment into roles of leadership and other importance, were expressions of the larger Scioto Hopewellian social pattern for predominately equitable, horizontal, crosscutting, and complementary relationships among social groups. Vertical relationships of domination–subordination among groups and centralization of roles were de-emphasized.

SODALITIES AND CEREMONIAL SOCIETIES

A sodality is a corporate group with members who come from multiple residential units and multiple kinship groups. Fraternities, sororities, clubs, ceremonial societies, and some age grades and work groups are examples of sodalities. Sodalities occur in a wide range of societies, from tribal to state in complexity. In tribal societies, sodalities are the broadest mechanism of social integration and, thus, are critical to defining the geographic scope of a tribe and tribal organization generally (Service 1962:105–106; see also Braun and Plog 1982; Fried 1968; Voss 1980, 1982). As a corporate group, a sodality has an explicit purpose and is capable of united decision making and action relative to that purpose (Befu and Plotnicov 1962). In these two regards, its members have a sense of shared identity. More generally, sodalities also integrate and/or regulate the members of a tribe and can be vehicles for buffering localized residential groups and localized kinship groups from various kinds of localized risks. By bringing together persons from multiple residential and kin units, a sodality integrates individuals who might not otherwise normally cross paths in life. Multiple crosscutting sodalities can create a rich network of connections that define a society practically. These social connections have the potential for serving as conduits for mutual aid among residential or kin units in subsistence, economic, social, and/or political affairs. Sodalities also may have pan-societal regulatory functions, such as scheduling planting and harvesting through the timing of ceremonies they perform, maintaining social order, protecting the society from external violence, and providing spiritual healing and well being for the society at large.

In the Great Lakes-Riverine region of Eastern North America, sodalities were not very common or well documented among historic Native American tribes. For the Central Algonkians, tribal-wide integration and organization appears to have been achieved primarily through clans and phratries based on patrilineal descent, and sometimes through moieties, and only secondarily through special societies that crosscut kinship and residence. Spiritual and ritual matters focused on visions and "sacred packs", which were most commonly made and owned by the individual and inherited within his lineage (Callender 1962:26, 31, 65, 77), as well as on the eponynmous relationship, the totemic relationship, and/or naming, which were associated with the lineage or clan (Callender, pp. 29–31; see also Radin [1945:68] for the Siouan Winnebago). The best known sodalities in the region were the Midewiwin or Medicine Lodge, and more recently the Dream Drum or Dream Dance cult and Peyote cult. Other, less well documented sodalities included certain sacred pack organizations for healing individuals, healing the whole community, sorcery, warfare, hunting, those blessed by the same spirit, or dance cults; ritual societies of persons who shared some common supernatural experience; and dual divisions that competed in games, especially la crosse, and for war honors, and that organized dances and rituals.[10] Most historic Great Lakes-Riverine tribes had only a few sodalities at most, in contrast to the half dozen to two dozen sodalities that operated in many historic Puebloan tribes of the American Southwest (Carr 2005a:332, Note 15).

Given the occurrence but infrequency of sodalities among historic tribes of the Great Lakes-Riverine area, and the secondary importance of sodalities compared to clans among the Central Algonkians, one might expect Scioto Hopewellian societies to have had some sodalities but not many, and perhaps none at all, depending on the pace of population growth and development of tribal organization in the region over the millennia (e.g., Braun 1977, 1986: 123–125).

At the same time, a crosscultural correlation between the rise of sodalities and the development of segregated leadership role organization like that which occurred in Scioto Hopewell societies (see above, Leadership) would suggest the likelihood that they did have sodalities. Specifically, in the transition from hunting-gathering to horticultural life, as the centralized roles of the classic shamanic practitioner become divided among multiple, more specialized, shaman-like practitioners, the mode of training of these practitioners shifts from individual spiritual experiences to formalized teaching and initiation into full status by institutionalized, professional groups with their own collective ceremonies (Winkelman 1989; 1990:335, 338; 1992:58, 61, 65, 71). Early in this role-segregation process, members of such professional groups are recruited from multiple clans (Winkelman 1992:58). In Service's (1962) terms, these professional groups are sodalities. Because Hopewellian leadership in the Scioto-Paint Creek area was comprised in the main by multiple, role-differentiated, shaman-like practitioners (see above, Leadership), one would expect that Hopewellian societies there had such professional groups/sodalities. The fact that each kind of specialized, shaman-like Hopewellian leader was recruited from multiple clans (see above, Clan Organization) also fits the crosscultural pattern of social settings in which professional groups/sodalities operate.

A fundamental feature of the Scioto Hopewell archaeological record that hints at shaman-like professional groups and other sodalities is the occurrence in some charnel houses of large ceremonial deposits comprised of tens to hundreds of examples of primarily one kind of ceremonial paraphernalia or element of costumery used by one kind of shaman-like practitioner (e.g., mica mirrors; Figures 1.9 and 4.16). These deposits suggest the ceremonial assembly of many more practitioners of one kind than a single local community would

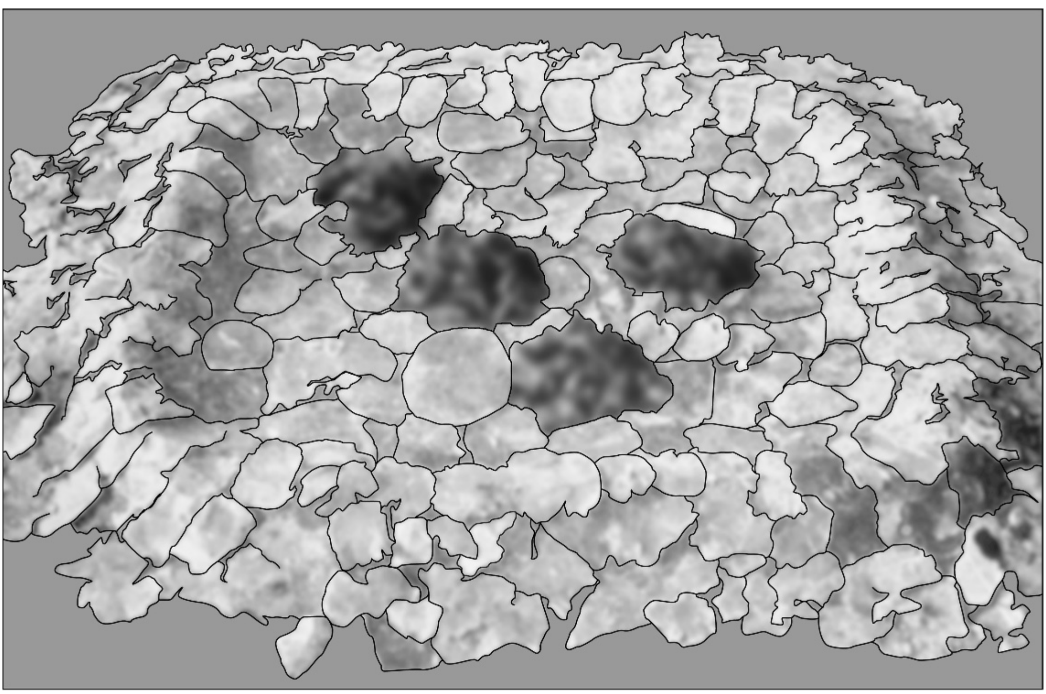

Figure 4.16. Over 100 mica mirrors and pieces of mica were arranged in a 7× 6.5 foot area to create a tomb floor, upon which 4 piles of cremations were placed (number of individuals unknown), forming the Great Mica Grave (Burial 1) in Mound 13 of the Mound City earthwork. Many of the mirrors are round to subrectangular and have been placed overlapping one another like fish scales. The deposit possibly indicates a collective ritual of a ceremonial society concerned with divination using mica mirrors. See Mills (1922:450, figure 11) for the original excavation photograph of the grave. See credits.

have supported, and could reflect the collective ceremonies of professional, multicommunity groups. Other abundant deposits are comprised of artifact classes that probably do not indicate the workings of shaman-like practitioners but, instead, sodalities that, like Scioto Hopewell communities at large, embraced a shamanic-rooted world view and symbolism (e.g., copper, silver, and iron earspools). Large deposits of primarily a single kind of artifact occur at the sites of Tremper, Mound City, Hopewell, Seip, Liberty, and Ater, with smaller, analogous deposits in some smaller sites. The list of artifact classes deposited in this manner define a starting point in the search for whether sodalities existed in Scioto Hopewellian societies. The artifact classes number 19 and include: mica mirrors, galena cubes, quartz crystal bifaces, obsidian bifaces, cones/hemispheres, quartz crystals, chlorite disks, smoking pipes, copper breastplates, metallic earspools, mica and copper crescents, metallic panpipes, bear canines, bear claws, elk canines, wolf teeth, fox teeth, raccoon teeth, and copper effigy alligator teeth (Appendix 4.1; Carr et al. 2005:486–488, table 13.2).[11]

Six criteria are helpful in identifying the existence of a sodality archaeologically with mortuary remains, given the definition of a sodality and certain of their characteristics in historic tribes of the Eastern Woodlands, as well as in tribes of the American Southwest, where sodalities are documented better. (1) If a sodality symbolizes its shared identity by an artifact marker, such as an item used in the task it performs, and if that marker is placed in the burials of its members at their death, then the marker should occur in multiple community cemeteries across the region integrated by the sodality. This criterion follows directly from the definition of a sodality as crosscutting residence units. (2) The individuals buried with the marker of a sodality should be affiliated with multiple kinship units – clans with different animal totems or eponyms, in the Scioto Hopewell case – rather than only one kinship unit. This criterion also follows directly from the definition of a sodality. (3) Within a community cemetery, burials with a sodality's marker should be more numerous than the few burials with artifacts marking community-wide leadership. Burials with sodality markers may range from moderately low to high percentages of a burial population, considering historic Eastern Woodlands and Southwestern analogs.[12] (4) Individuals buried with a sodality marker should be exclusively or largely adults – those capable of carrying out the task of the sodality. This was the case historically among Eastern Woodlands and American Southwestern tribes.[13] (5) Individuals buried with a sodality marker will more likely be exclusively males or largely males, although a mix of males and females with emphasis on males is possible. Algonkian and Puebloan sodalities follow this pattern.[14] (6) The different artifact markers of different sodalities may indicate the sodalities' varying social power and prestige. Such social distinctions are common among Algonkian and Puebloan sodalities.[15] Characteristics of the artifact markers that may express differences in power and prestige include variations in raw materials, workmanship, relative frequency, and/or other qualities.

In the Scioto Hopewell case, artifact classes that meet most or all of these six criteria could represent sodalities that had members from multiple residential communities within a single local symbolic community or sodalities that had members from multiple residential and local symbolic communities within a larger sustainable community (Chapter 3). Distinguishing these two situations is accomplished with context-specific evidence in the cases presented below.

Three sodalities can be identified with good certainty in Scioto Hopewellian societies using these six criteria. They were marked by metallic earspools, copper breastplates, and platform smoking pipes. The sodality marked by earspools, as expressed by the shiny spools themselves, drew upon the shaman-like world view and symbolism of Scioto Hopewellian communities, but was not involved in any obvious shaman-like tasks and appears to have not been comprised of shaman-like practitioners. The sodalities marked by breastplates and platform pipes may have had shaman-like duties and been composed of shaman-like practitioners. Another two sodalities may have existed but are indicated by fewer of the above six criteria. These possible sodalities were marked by mica mirrors and galena cubes, which suggest shaman-like tasks and professional groups of shaman-like practitioners. A clear ceremonial society, but one with members from only a single clan and thus not strictly a sodality, was marked by bear canines. Its members probably had one or more shaman-like duties and comprised a shaman-like professional society. Three other clan-specific ceremonial societies may have existed, marked by wolf, fox, and elk teeth. The remainder of the 19 artifact classes listed above as potential sodality markers do not hold well to the criteria for identifying sodalities and/or cannot be assessed for lack of sufficient data.

Earspools and Breastplates as Sodality Markers

Earspools and breastplates are the clearest markers of sodalities in Scioto Hopewell societies (Figure 4.17A–G). Both kinds of items were placed in large numbers in ceremonial deposits at the Hopewell site (Table 4.8), probably indicating the collective ceremonies of two sodalities. Also, each of the six criteria for identifying sodalities is met by earspools and breastplates.[16] The case for a sodality marked by earspools and its collective ceremonies is strengthened by the deposit of earspools in Altar 1 of Hopewell Mound 25. The deposit contained a large group of earspools bound together in a bundle with a heavy cord, suggesting a group offering rather than individual contributions to the deposit (Figure 4.18; Greber and Ruhl 1989:149–150, figure 4.63; Ruhl 2005:709). Precedence of a sodality over the individual may also be indicated by the generally more refined quality of earspools placed in mass deposits than those placed in the burials of individuals (Ruhl 2005:709).

The specific corporate purposes of the sodalities marked by earspools and breastplates are not known currently. The flat, polished, reflective surface of a copper breastplate is analogous to that of mica and suitable as a mirror for shaman-like "gazing into" the past, the future, or a soul during divination. A professional society of shaman-like diviners may be implied. It may be significant that one breastplate was found placed like a mask over the skull of a deceased person, with the two holes of the plate positioned over the person's eyes and the lower center of the plate broken out in a subconoidal form to accomodate the nose (Moorehead 1890:60–61, plate 37). The metaphor of "gazing" is accentuated in this case.[17] There is also some evidence that the common, sub-trapezoidal shape of breastplates from the Hopewell and Seip sites were meant to reference bear heads.[18]

No specific shaman-like task is suggested by earspools. Both earspools and breastplates, usually being made of copper, reference transformation as a shamanic-derived world view concept that was widespread through Scioto Hopewellian society and not specifically attached to shaman-like practitioners (see above, Leadership). Also, both kinds of items were commonly patinated with various imagery – a transformative process (Carr 2000c, d, 2005e; Carr and Lydecker 1998; Carr et al. 2002). The format of earspools, with an outer convex annulus and a central concave depression, created a dark-to-light contrasting and transforming visual effect (Ruhl 2005) – again a shaman-like theme that occurs broadly throughout Scioto Hopewellian material culture and is not necessarily indicative of shaman-like practitioners (Carr and Case 2005b:200, Table 5.3). The circular and rectangular shapes of earspools and breastplates also probably referenced cosmological concepts that circulated widely among Scioto Hopewellian people. Indeed, one elaborate set of earspools found in the Copper Deposit under Hopewell Mound 25 was impressed with four radial lines and drilled with four holes, implying the Cardinal and the Semi-cardinal Directions of the cosmos (Figure 4.17B).

The sodalities marked by metallic earspools and breastplates most probably began in the middle portion of the Middle Woodland period. In Early Woodland Adena mounds, metallic earspools and breastplates have seldom been found (Otto 1970; Webb and Snow 1974:156, 212–213 chart). Later, during the beginning of the Middle Woodland period,

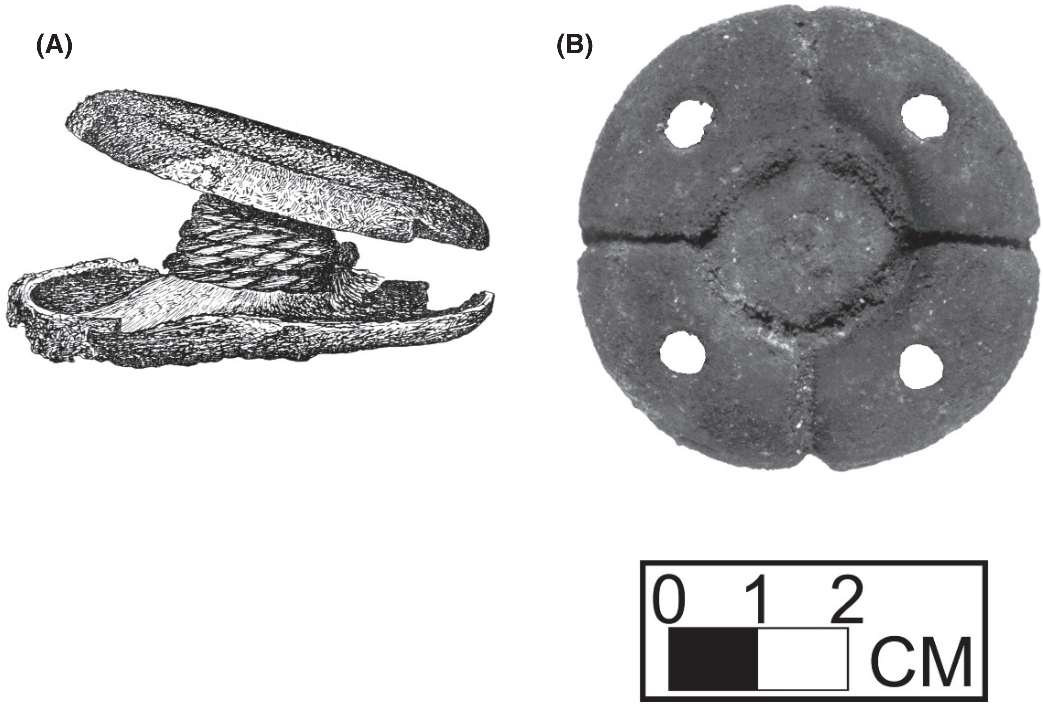

Figure 4.17. (A) Copper earspools of common form, from the Hopewell earthwork, Mound 25, internal provenience unknown. (B) Copper earspool with lines and holes indicating the four Cardinal Directions, four Semi-cardinal Directions, and four Quarters of the circular cosmos. From the Hopewell earthwork, Copper Deposit. (C, *left*) Copper earspool with organic covering depicting two intertwined birds, light and dark, circling in opposite directions, and (C, *right*) corresponding line drawing. From the Turner earthwork, Mound 12. For better definition of the two intertwined birds, see the color enhancement, Figure 4.17C, in the Appendix on the CD-ROM. (D, *left*) Copper earspool with silver covering molded to depict a hummingbird circling counterclockwise, and (D, *right*) corresponding line drawing. From the Mt. Vernon mound, Indiana. For better definition of the hummingbird, see the image, Figure 4.17D, in the Appendix on the CD-ROM. (E) A copper breastplate of common form, from the Hopewell earthwork, unknown internal provenience. (F) Copper breastplate with four raptor talon cutouts in the four Semi-cardinal or Solstice Directions. From the Hopewell earthwork, Mound 26, Ceremonial Offering. (G) Copper breastplate cutout and embossed effigy of a human head, from the Seip earthworks, Conjoined mound. The face is in profile, with its lips and a hairlock facing left and three hairbuns are on the right. The eye is one of the two holes of the plate. The two holes can also be envisioned as two eyes of a face looking forward. The plate can be rotated 180° creating a face that faces right, with the same lips and mirrored hairlock. A similar person of importance with a forward hanging hairlock is shown on the Meigs Adena tablet, Figure 4.7C, far lower left block of the of the tablet's composition, head facing left. See credits.

very few metallic earspools were buried at the Tremper site ($n = 4$), but more were recovered from the slightly later Mound City site ($n = 23$) (Ruhl 1992:67, table 1). Breastplates were absent from the Tremper site and occurred in small numbers at Mound City ($n \sim 9$). At Mound City, earspools and breastplates were found with only 5.7% ($n = 6$) and 4.7% ($n = 5$) of all burials (Appendix 4.1). It is uncertain whether earspools and breastplates in these sparse numbers at Tremper and/or Mound City indicate sodalities as did earspools and breastplates found in plenty later in time. If the sodalities did exist, it is also unknown whether their members came from multiple residential communities within a single local symbolic community or from multiple local symbolic communities. However, by the middle Middle Woodland period, sodalities marked by earspools and breastplates had clearly formed, were very popular, and drew their members from multiple local symbolic communities.

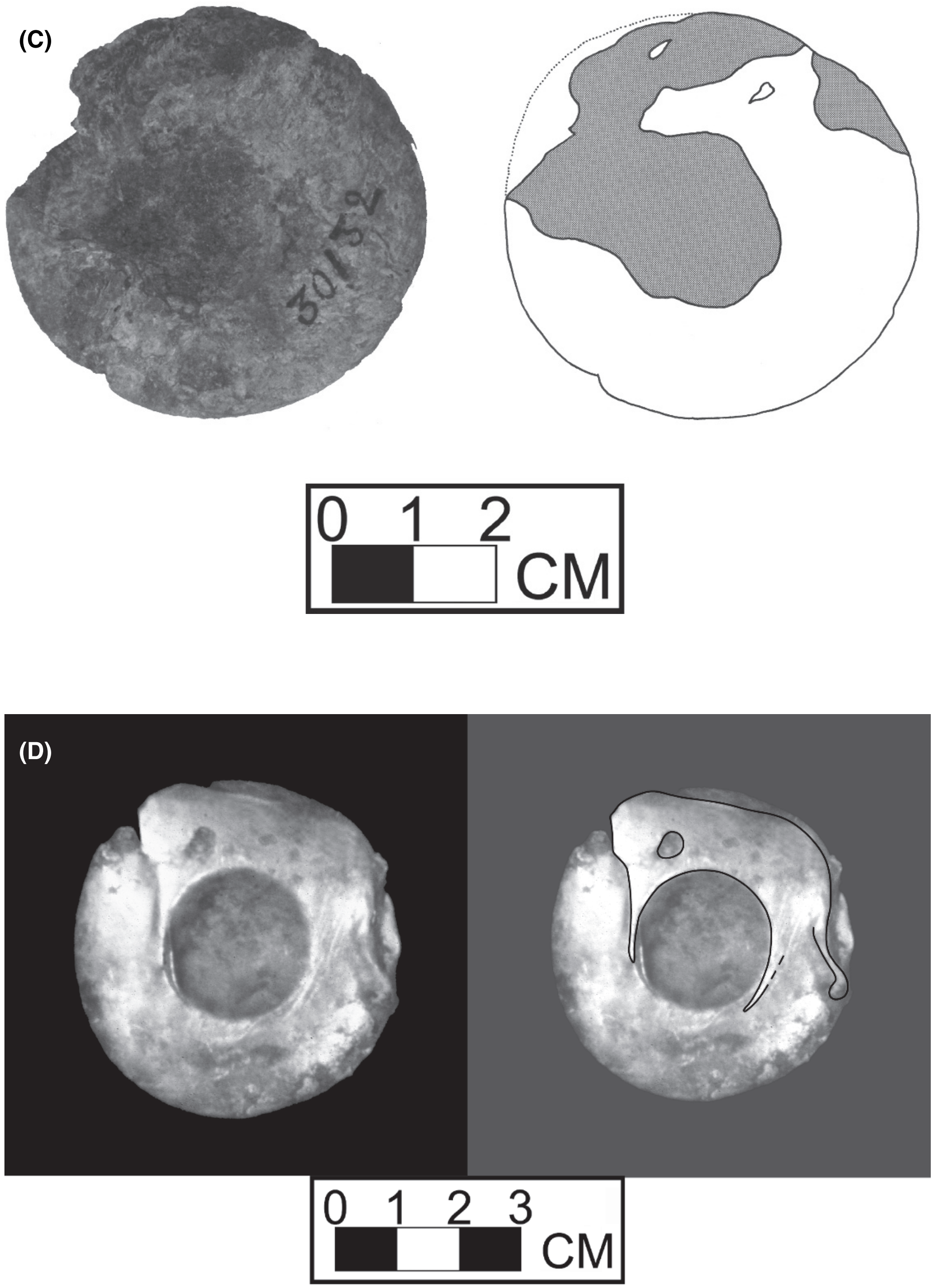

Figure 4.17. (***continued***)

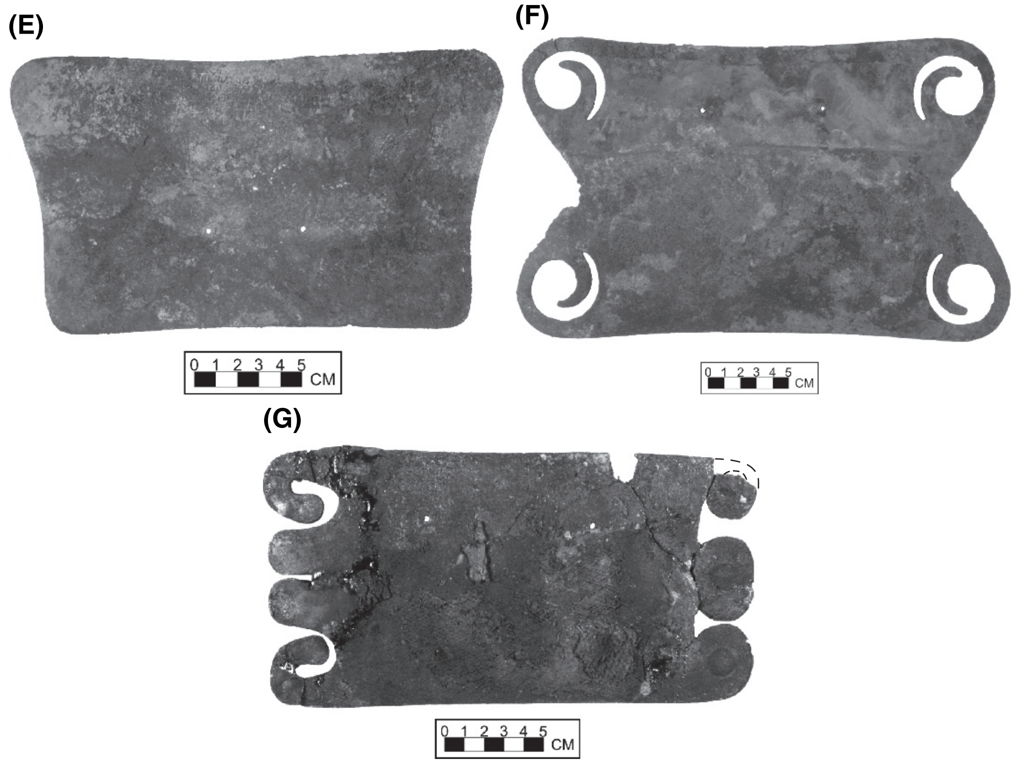

Figure 4.17. (*continued*)

These conditions are evidenced by the large numbers of earspools and breastplates found in Hopewell Mound 25 and the Seip-Pricer mound, by the presence of these items in multiple burial chambers dedicated to distinct local symbolic communities within the charnel houses under those mounds, and by the actual pooling of large numbers of earspools and breastplates in single deposits under Hopewell Mound 25 (Carr 2005a:288–291, table 7.1).[19] At Hopewell, a site functionally analogous to and comparable to Mound City as a place for burial of

Figure 4.18. Copper earspools bound together by a heavy cord and deposited with a large suite of other kinds of offerings in an altar, not in a grave, suggesting the collective offering of a sodality. From the Hopewell earthwork, Mound 25, Altar 1. See credits.

primarily select, important people, earspools and breastplates were respectively found in 22.4% ($n = 48$) and 14.1% ($n = 30$) of all burials (Appendix 4.1). Ceremonial deposits at Hopewell contained 500–1,000 earpools, 60 earspools, 50 earspools, and 94–95 breastplates.

At face value, the shift over time in the numbers and depositional contexts of earspools and breastplates would suggest a widening of the geographic expanse of the two sodalities marked by them in addition to an increase in their popularity. The solidification of tribal life with pan-tribal sodalities by the second half of the Middle Woodland period is one reasonable interpretation. This evidence runs counter to Braun's (1977, 1986:123–125) idea that the end of Scioto Hopewellian ceremonial life was tied to the origin of pan-tribal, economically and politically based sodalities, which made ceremonially flamboyant means of integration superfluous.

Smoking Pipes as a Sodality Marker

There is strong evidence that platform smoking pipes, with and without animal effigies carved on them, were markers of a sodality. Platform pipes were ceremonially decommissioned in large numbers in a deposit at the Tremper site and in another at the Mound City site (Table 4.8). The two deposits could indicate sequential, climactic collective ceremonies within a long-term cycle of ceremonies of a sodality. The six criteria for identifying the existence of a sodality archaeologically are all met well by the platform pipes from Tremper and Mound City.[20]

The idea that the platform pipes from Tremper and Mound City marked a single sodality is reinforced by the tight contents and styles of the pipes. All of the effigy pipes and most of the platform pipes are closely similar in size and morphology. The effigy pipes all depict animal species in a naturalistic style with incredible attention to details of the species' characteristics (Figure 4.19A–D). Pairs and triplets of pipes with effigies of the same species show them in the same postures (e.g., crouching felines, standing squirrels) and doing the same things (e.g., a heron arching its head to the ground to eat a fish carved in relief on the pipe's platform). The two collections from Tremper and Mound City overlap 80% in the species represented. A small number of less-than-masterful productions occur in both collections, and the Mound City specimens tend to be abbreviated in detail (Penney 1989:175–178; see also Otto 1984:24, 1992:5). These extraordinary similarities with minor variations imply manufacture by relatively few artists who worked very closely together and learned from each other while carving. It appears that many people came to these artists to obtain pipes and possibly the rights to perform ceremonies for which the pipes were designed (Penney 1989:159–229), and then maintained contact with each other as a regularly meeting sodality. The latter ensured the deposition of their pipes together at Tremper and Mound City years to decades after their manufacture. The pipes at Tremper and Mound City would have taken 22 and 38 man-years, respectively, to carve with close to full-time work (Otto 1992:5), implying that an institutionalized mechanism kept integrated those who obtained, used, and ultimately decommissioned together their smoking pipes.

If platform pipes marked a sodality, as they appear to, its immediate corporate purpose would have been to facilitate individuals in their relationships with their personal power animals. In the historic Eastern Woodlands, pipes with animal effigies carved on them were smoked by individuals to go into a trance state and commune with and/or merge with their personal power animals (see above, Leadership). Those connections to power would then have been used for any number of ultimate individual or corporate purposes. The harnessing of power from personal power animals for a corporate purpose is a reasonable possible interpretation, recalling the crosscultural practice of multiple shaman with diverse power animals assembling to accomplish some especially difficult shamanic task, such as psychopomp work (Harner 1980:90–91). The possible Hopewellian practice of multiple sodality members working with their individual sources of spiritual power toward a corporate goal is distinct from the practices of Algonkian sodalities comprised of people blessed by the same

Table 4.8. Large Deposits of Artifacts Indicating Sodalities and Other Ceremonial Societies

Large Deposits Indicating Sodalities

Metallic earspools and *breastplates* are the clearest markers of sodalities in Scioto Hopewell societies. Metallic earspools were deposited in large numbers in Altar 1 of Mound 25 at the Hopewell site ($n = 250$–500 pairs; Greber and Ruhl 1989:134; Moorehead 1922:113) and Burial 7 of Mound 25 ($n = 30$ pairs; Shetrone 1926a:65–66). Copper breastplates were deposited abundantly with Skeletons 260–261 in Hopewell Mound 25 ($n = 94$–95; Shetrone 1926a:75–76). These deposits could indicate the collective ceremonies of two sodalities. A smaller deposit of copper breastplates ($n = 12$) was placed in the Ceremonial Cache of the Seip-Pricer mound.

Platform pipes were ceremonially decommissioned in large numbers in the Lower Cache under the Tremper mound ($n = 136$ pipes; Mills 1916:285) and the Central Altar and Depository Bag under Mound 8 at the Mound City site ($n = 226$ pipes; Brown 2004:15; Mills 1916:285; Shetrone 1926a:44–45). The two deposits could indicate sequential, climactic collective ceremonies within a long-term cycle of ceremonies of a sodality.

Large Deposits Indicating Clan-Specific Ceremonial Societies

Bear canines were amassed and buried in significant numbers in Cremation Basin 1 under the Seip-Pricer mound ($n = 30$ canines; Shetrone and Greenman 1931:366), in Burial 34 under Mound 25 at the Hopewell site ($n = 26$; Shetrone 1926a:87–89), and with a cremation in the Edwin Harness mound at the Liberty site ($n = 20$; Mills 1907:168–169). *Bear claws* were placed in large numbers in Deposit 2 under Mound 17 at the Hopewell site ($n = 10$; Shetrone 1926a:49), Burial 41B under Mound 25 at the Hopewell site ($n = 35$; Shetrone 1926a:93), and Burial 58 under the Pricer Mound at the Seip site ($n = 18$; Shetrone and Greenman 1931:394). *Bear jaws* were deposited in unknown numbers in deposit ShetroneField 7-9A under Mound 25 of the Hopewell site (Shetrone field notes 7-9-1929) . These several deposits of canines, claws, and jaws could reflect the repeated, collective ceremonies of a Bear society drawn from the Bear clan. Bear jaws were also placed in large, unspecified numbers in the Great Cache under the Tremper mound (Mills 1916:285, Thew, n.d.), but these may have marked Bear clan members, in general, and their phratry relationships to one or more other clans (Chapter 4, Phratries) rather than a Bear ceremonial society.

Large Deposits Possibly Indicating Sodalities[1]

Mica mirrors were deposited in large numbers to form a slightly curved rectangle covering an area 8 by 4 feet adjacent to Burial 9 under Mound 7 at the Mound City site (Mills 1922:492; Squier and Davis 1848:473), over a 7×6.5 foot area adjacent to Burial 1 in Mound 13 at the Mound City site (Mills 1922:448–451), and with Burial 1 under Mound 23 at the Mound City site (Mills 1922:461).

Galena cubes were decommissioned in large numbers under Shetrone's Mound 29 (Moorehead's Mound 17) at the Hopewell site (Moorehead 1922:91), in the Altar under Mound 5 at the Mound City site (Squier and Davis 1848:149), and within the ridge of soil surrounding Burial 1 under Mound 13 at the Mound City site (Mills 1922:448–451).

Large Deposits Possibly Indicating Clan-Specific Ceremonial Societies

Wolf and fox canines were deposited with Skeleton 207 under Mound 23 at the Hopewell site ($n = 506$; Moorehead 1922:98).

Elk teeth were placed in Burial 3 under Mound 8 at the Mound City site ($n = 150+$; Mills 1922:434; Mound City artifact catalog), in Burial 2 of the same mound ($n \sim 100$; Mills 1922:434), in Burial 16 under Mound 2 ($n = 35$; Mills 1922:445–446), and in Deposit 5 under Mound 13 (Mills 1922:452–453).

Raccoon teeth were deposited in Burial 41 under Mound 25 at the Hopewell site ($n = 30$; Shetrone 1926a:92–93).

[1] Other large deposits of artifacts that do not appear to indicate sodalities or other ceremonial societies, or for which evidence is ambiguous or lacking, are listed in Carr, Goldstein, et al. (2005:486–488, table 13.2).

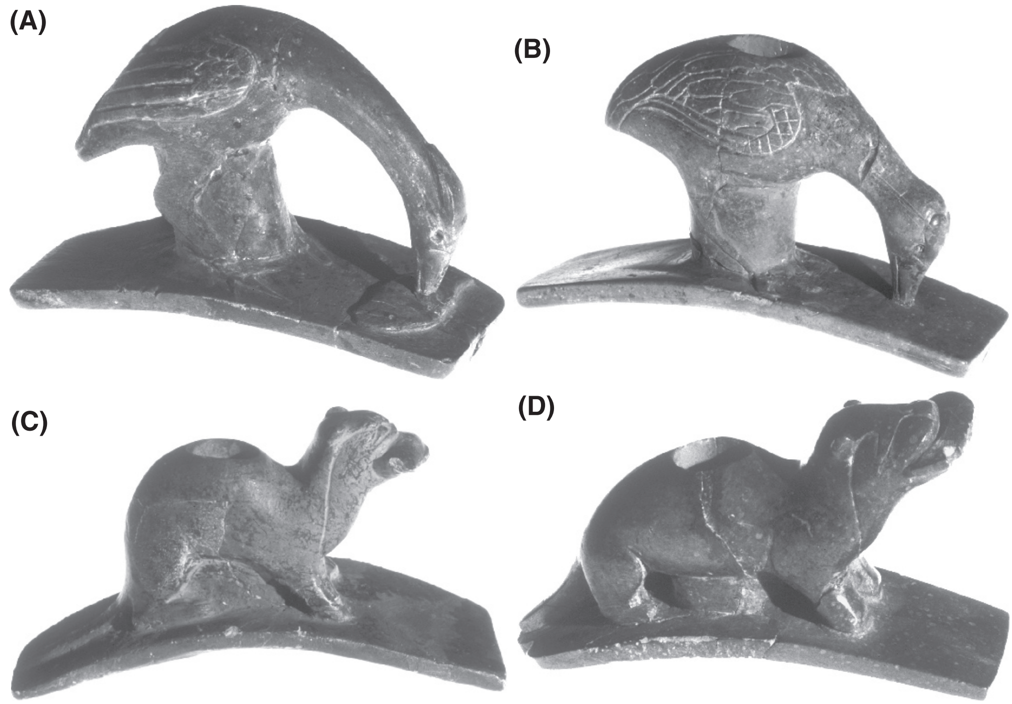

Figure 4.19. Smoking pipes from the Tremper earthwork, the Great Cache. (A) Effigy of a great blue heron. (B) Effigy of a sandhill crane in similar posture and act. (C) Effigy of an otter. (D) Effigy of an otter in similar position and act. See credits.

spirit or people who associated themselves with the same sacred pack and its powers (Callender 1962:31, 35; Skinner 1915; Tax 1937:267).

The sodality marked by platform smoking pipes had its origin at least at the beginning of the Middle Woodland period, and probably somewhat earlier. The site of Tremper marks the beginning of Hopewellian-style ceremonialism in the Scioto drainage, and was followed shortly thereafter by the Mound City site. The fact that the pipes found at Tremper and Mound City occurred in large numbers ($n = 136$, ~ 226 pipes, respectively; Table 4.8) and already had a mature artistic style suggests the development of the sodality somewhat earlier. Indeed, a deposit of 32 tubular smoking pipes, foreshadowing the deposits at Tremper and Mound City, was found in the Beech Bottom Mound in West Virginia (Webb and Snow 1974:85–86). Adena tubular smoking pipes, although not embellished with animal effigies, are relatively common in the Scioto drainage and upper Ohio valley (Webb and Snow 1974:86).

The earliest platform pipe in the Scioto drainage, and also in the Midwest, was excavated from the Adena-style Toephner mound, near Columbus (Norris 1985), and dates to no later than 250 B.C. It's smoke-stack style bowl and other attributes anticipate the smoke-stack platform pipes found in the Tremper site (Seeman 1977b:53) and imply a long (if uncommon) tradition of platform pipe manufacture in the Scioto drainage (see Chapter 5, Note 10). The platform nature of the pipe, in contrast to the tubular form of earlier pipes, suggests the possibility of a qualitative difference in how smoking was coming to be conceived and experienced, and its spiritual purpose. The single pipe does not reflect upon the social-ritual organization of smoking and the timing of development of a sodality marked by platform smoking pipes.

It is likely that the members of the sodality marked by smoking pipes at Tremper and Mound City came from multiple local symbolic communities within a sustainable community.

The large numbers of pipes deposited at each of these two sites, the pooled placing of the pipes in single deposits, and the association of the Tremper pipes with the cremated remains of some 375 individuals who would have come from multiple local symbolic communities within a sustainable community (Chapter 3, A Second Example of a Sustainable Community) point to a sodality of broad, regional scope.

A Clan-Specific Ceremonial Society

A clear ceremonial society, but one with members drawn from a single clan and thus not strictly a sodality, was marked by bear canines (Figure 4.12A–C, above). Bear canines were amassed and buried in significant numbers in one ceremonial deposit and two burials at the sites of Hopewell, Seip, and Liberty (Table 4.8). The three large assemblages could reflect the repeated, collective ceremonies of the Bear clan, or of a Bear ceremonial society composed of select Bear clan members. Bear claws and jaws, much less frequent than canines in the Scioto Hopewell record, may also have represented this clan or ceremonial society. Bear claws were placed in significant numbers in one ceremonial deposit and two burials at the Hopewell and Seip sites. Bear jaws were placed in large numbers in two ceremonial deposits in the Tremper and Hopewell sites.

Bear canines, like other animal power parts placed in burials in the Scioto drainage, can strongly be argued to have symbolized clan membership, for five reasons given above (see above, Clan Organization). However, bear canines appear in burials 3–34 times more frequently than the power parts of other clan totems. This inequity suggests a role of the Bear clan or a Bear society in mortuary ceremonies and in placing bear canines within the graves of the deceased persons they served. A mortuary role for the Bear clan or a Bear society is also indicated by the frequent co-occurrence of bear canines in burials with the power parts of other clan-associated animals, when a person normally would belong to only one clan and would be buried with only one clan marker. This pattern is unique to bear canines; totemic or eponym markers of clans other than Bear and different from one another are seldom found together in a burial. Finally, the sculpture from the Newark earthworks, of a bear impersonator possibly with a decapitated human head in his lap (Figure 4.6B, above; Dragoo and Wray 1964), could evidence the role of the Bear clan or a Bear society in processing corpses for burial and perhaps in the psychopomp work of guiding souls of the deceased to an afterlife.

A Bear clan or Bear society concerned with the arena of death makes sense in light of beliefs and practices of historic Native Americans of the northeastern Woodlands. Historic Algonkian Menominee, Chippewa, and Cree identified the bear with the Below realm because the bear hibernates in a den within the earth (Gill and Sullivan 1992:23). In turn, the Below realm was connected with death, in two ways. The Chippewa believed that a journey through the Below realm was necessary to reach the Land of the Dead (Barnouw 1977:18–19, 136). The Iroquois believed the Below realm to be the Land of the Dead, itself (Barbeau 1914:290–294). Also, a natural symbolic tie between the bear and death is found in the bear's habit of hibernating (i.e., apparently dying) in winter. In line with such beliefs, in the Woodlands, bear meat was commonly the food of choice for offering the dead (Zeisberger 1910:140).

A complementary interpretation is that bear canines identified a Bear clan or Bear society concerned with doctoring in addition to, or instead of, corpse processing and/or psychopomp work. The inclusions of canines in graves would represent gifts of medicine from the Bear clan or medicine society members to the deceased for their journey to an afterlife and in an afterlife. Medicines may have been placed in the canines, themselves, which often were split to expose the pulp cavity, reassembled, and decorated (Figure 4.20; Zurel 2002). Bear doctors and bear medicine societies are common across the northern Woodlands, Plains, and the Northwest Coast (Berres et al. 2004:16–17; Catlin 1860:77; Gill and Sullivan 1992:24–25; Kurath 1964:70). Huron medicine dancers dressed in bearskin costumes during curing ceremonies (Kinietz 1940:140–141;

Figure 4.20. Bear canines, split to expose the pulp cavity and reassembled, may have been filled with medicines by bear doctors, to heal the living and/or for use by the deceased in an afterlife or on their journey to it. See credits.

Kurath 1964:70; Smith 1985:111) and Munsee Delaware in Ontario wore bearskin or deerskin costumes to drive out diseases from houses (Speck 1950:56). The Iroquois believed in a Great Bear Spirit, who could cause and cure illnesses (Kurath 1964:13, 67). The bear played a significant spiritual role in the Great Lakes Midewiwin Medicine Society (Ritzenthaler 1978:756), and black bear paws were used to make the medicine bags of the Midewiwin (Casagrande 1952:113; Driver 1969:355). Dried mukopin or "bear potatoes" were stored in the medicine bundle of the Prairie Potowatomie Bear clan and used to doctor wounds (Skinner 1924:144).[21]

Four of the six criteria for identifying sodalities seem to be met by bear canines and imply the workings of the Bear clan or a Bear society across residential units. However, the strength of fit is difficult to specify because bear canines appear to have been buried not only with members of the Bear clan or Bear society that they identified, but also with deceased persons that the clan or society members processed. Consequently, the geographic, age, and sex distributions of burials with bear canines present mixed signatures. Bear claws meet two of the criteria for identifying sodalities. They pose the same problem as bear canines for evaluating their geographic, age, and sex distributions. They also occurred in too few a number of burials to effectively apply the criteria. A bear jaw was found with only one burial and does not allow evaluation by any of the criteria.[22]

It is more likely that bear canines and claws symbolized a Bear society, as a select portion of the Bear clan, than they did the entire Bear clan. Bear canines are limited in their age and sex distributions almost entirely to adults and males, where age and/or sex are known. Bear claws are limited to adults, with no information on their sex associations. Further, one would expect only adults to be members in a society that had the task of processing the dead or working with their souls. Souls of the recently dead can be dangerous (e.g., Harner 1980; Ingerman 1991) and children are commonly thought to be especially vulnerable to the spirit world (Senior 1994).

If bear canines and claws did symbolize a Bear society, it may have formed early in the Middle Woodland period and certainly was extant by the middle portion of the Middle Woodland. Cut and drilled bear canines isolated from the jaw are very rare to nonexistent in Early Woodland, Adena mounds generally (Webb and Snow 1974:97, 155, 212–213 chart). In the Scioto valley, no cut and drilled bear canines were recovered from the very early Hopewellian ceremonial center of Tremper. However, drilled bear molars and several drilled bear or wolf/coyote canines were recovered from the site (Thew n.d.). Drilled bear canines are first recorded definitely at the slightly later center of Mound City. Their frequency there is low (3.8% of burials, Appendix 4.1). Later, during the middle Middle Woodland, at the functionally similar ceremonial center of Hopewell, the frequency of bear canines was much greater (11.6% of burials, Appendix 4.1), and one burial under Mound 25 had an accumulation of 26 bear canines (Table 4.8). Somewhat later, under the late Middle Woodland mound of Seip-Pricer, which contained fewer elite deceased than at Mound City and Hopewell, bear canines were buried with less frequency (4.8% of burials, Appendix 4.1), but also were decommissioned in a large ceremonial deposit with 30 canines (Table 4.8). Allowing for the lower proportion of elite persons buried at Seip-Pricer gives the impression of the healthy continuation of the Bear society from the middle through late Middle Woodland period.[23]

Members of the probable Bear society likely came from multiple local symbolic communities. Bear canines were found with burials in multiple burial chambers dedicated to distinct local symbolic communities within the charnel houses under the Hopewell 25, Seip-Pricer, and Ater mounds. Moreover, clans in general in the Scioto-Paint Creek area were not localized (Thomas et al. 2005:363–365). However, none of the three, large deposits of bear canines, within and separate from graves, contained so many bear canines as to necessarily represent the collective ceremonies of much or all of a Bear society that spanned multiple local symbolic communities (Table 4.8).[24] The same is true for deposits of bear claws within and separate from graves (Table 4.8).

Other Clan-Specific Ceremonial Societies?

Four clans besides the Bear clan placed markers of their animal totems or eponyms in substantial ceremonial deposits within charnel houses in the Scioto-Paint Creek region: the Canine, Fox, Elk, and Raccoon clans (Table 4.8). The deposits occur at the sites of Mound City (Elk), early in the Middle Woodland period, and at Hopewell (Canine, Fox, Raccoon) during the middle of the Middle Woodland period. These remains indicate the ceremonies of either entire clans, or clan-specific societies whose members included only certain persons from a clan. Other criteria for identifying sodalities also suggest these two possible interpretations, but they cannot be distinguished for lack of enough burials with age and sex information.[25]

Other Artifact Classes Placed in Large Deposits

Of the remaining 11 of the 19 artifact classes that were placed in large deposits in Scioto Hopewell sites and that were listed above as potential sodality markers for this reason, two – mica mirrors and galena cubes – might indicate sodalities. Their signatures are not as strong as those of earspools, breastplates, and platform pipes.[26] Because both mica mirrors and galena cubes would have been used in shaman-like tasks, they may represent two professional sodalities of shaman-like practitioners. A less likely interpretation is that mica mirrors and galena cubes represent two kinds of shaman-like leaders, both of which were found in multiple local symbolic communities but neither of which were organized socially into formal groups. Mica mirrors would have been used to divine information, for any of a variety of purposes, and galena cubes might have been used in either divination or activities involving paint.

If mica mirrors and galena cubes do represent sodalities, these organizations were well formed by the early Middle Woodland. Large gatherings of both groups at the early Middle Woodland site of Mound City are indicated there by three large ceremonial deposits of mica mirrors and two of galena cubes (Table 4.8). Smaller accumulations of mica mirrors and galena crystals formed into cones were found in the somewhat earlier Tremper site in the Great Cache (Mills 1916:285), but not as deposits separate from other decommissioned paraphernalia. No such deposits are currently known from earlier times during the Early Woodland period in the broader region, although mica was worked then into cutouts and galena into hemispheres (Webb and Snow 1974:89, 101, 155–156), and galena/barite was mined and worked heavily at the Kentucky Adena site of Peter "Village" (Clay 1987:50).

A third artifact class – obsidian bifaces – meets a couple criteria suggestive of sodalities.[27] It might mark a sodality or a professional society of shaman-like practitioners from multiple local symbolic communities but of uncertain clan affiliation(s). Less probably, obsidian bifaces might represent similar shaman-like leaders affiliated with a few different local symbolic communities but not organized as a group. Obsidian bifaces could have been used in hunt or war divination, or to pull out or send power intrusions.

The antiquity of a ceremonial society that used obsidian bifaces extends back in time at least to the middle Middle Woodland period. A large deposit of obsidian debris (about136 kilograms) from the production of many large obsidian bifaces was buried under Mound 11 at the Hopewell site (Cowan and Greber 2002; Shetrone 1922). The mound appears to date between about A.D. 185 and A.D. 230 uncalibrated radiocarbon time, by two radiocarbon dates (Cowan and Greber 2002; see also Hatch et al. 1990:476, table 7; Stevenson et al. 2004). Obsidian bifaces (n∼10) and fragments of them were also found in dispersed burials and one small deposit at the early Mound City site. Obsidian bifaces were not recovered from the Tremper site, which constitutes the beginning of Hopewellian style ceremonialism in the Scioto-Paint area, and are unknown from Early Woodland Adena sites. The largest assemblage of obsidian bifaces (several hundred) was found at the Hopewell earthwork in Mound 25, Altar 2 (Moorehead 1922:114), which dates most likely toward the end of the Middle Woodland period (Chapter 15, Chronology and Its Implications for Defining Communities and Community Organization).

Eight artifact classes (quartz crystal bifaces, quartz crystals, chlorite disks, metallic panpipes, cones/hemispheres, mica and copper crescents, bear claws independent of bear canines, copper effigy alligator teeth) do not seem to have represented sodalities, given that they have been found in few sites and few or no burials.[28] However, the large sizes of two deposits of quartz bifaces and one of cones/hemispheres do suggest the collective ceremonies of professional societies of shaman-like practitioners from multiple local symbolic communities. Whether the society members also came from multiple clans, and which clans those might have been, cannot be determined with current archaeological evidence.

Overlap in Membership Among Sodalities and Grades of Achievement

Membership in the sodalities marked by earspools and breastplates, and in the possible sodalities marked by mica mirrors and galena cubes, was overlapping. A person who belonged to any one sodality could belong to any of the other three. This pattern is inferred from burials that had markers of more than one sodality within them. The pattern follows the historic Central Algonkian practice of a person being able to join multiple sodalities (Callender 1962; Skinner 1920). The amount of overlap between pairs of sodalities in their membership was significant to substantial, ranging most commonly between 4% and 44%. The sharing of members among sodalities, like sodalities having members from multiple residential communities and clans, provided additional lines of integration among households in the Scioto-Paint Creek area.[29]

For no pair of sodalities was overlap fully asymmetrical, in that a person had to be a member of one sodality in order to be a member of another. In this regard, the four sodalities and possible sodalities were not placed on a single scale of prestige. However, the sodalities marked by earspools, breastplates, and bear power parts may have each had internal, ladder-like grades of achievement within them, indicated by material variations in the items. Metallic earspools were usually made of just copper, but some copper spools were fancier in that they were covered by a silver foil, or rarer yet, a meteoric iron foil. Two pairs of earspools were unique in having embossed or cutout designs (Moorehead 1922:plate 56, p. 121). Earspools of a single time plane did not, however, vary much in their size (Ruhl 1992; Ruhl and Seeman 1998). Breastplates were almost always made of copper in the Scioto-Paint Creek area, but two or three of meteoric iron are known.[30] In addition, copper breastplates differ substantially in area and thickness. Most bear power parts that symbolized a Bear ceremonial society or the Bear clan were canines, usually drilled and/or cut. However, rarer claws and jaws also were used. These three different forms of bear power parts appear to have had different meanings to Scioto Hopewell peoples, because they were placed separately from each other in different major ceremonial deposits.

Sodalities, Societies, and Ceremonial Complementarity?

Beyond their own unique ceremonial purposes, it is possible that some sodalities and ceremonial societies coordinated their efforts and played complementary roles in performing a joint ceremony. Sodalities and ceremonial societies also might have taken their turns over time in performing a sequence of ceremonies that comprised an annual or other ceremonial cycle. Both kinds of cooperation among ceremonial societies are found crossculturally – for example, among Puebloan societies of the American Southwest. However, cooperation among sodalities in producing a ceremony or a ceremonial cycle is not documented for the historic Central Algonkians (Callender 1962) or historic tribes of the Great Lakes-Riverine region generally (Trigger 1978).

Scioto Hopewell sustainable communities appear to have occasionally had ceremonies that involved the complementary efforts and roles of multiple sodalities and/or ceremonial societies. The ceremonial deposits within Altar I and Altar II in Mound 25 of the Hopewell site each were comprised of huge numbers of items of multiple classes of ceremonial paraphernalia and prestigious personal items (Moorehead 1922:113, 114). Altar I contained, among other artifacts, 500+ earspools, 167 perforated bear claws, and 110 small mammal foot bones. The artifact assemblage suggests the joint participation of the sodality marked by earspools, the Bear clan-specific ceremonial society marked by bear claws, and one or more other clan-specific ceremonial societies marked by mammal foot bones. Altar II included, among other artifacts, 128 bear claws, 690 small animal foot bones, mica books in unknown quantity, and 150 obsidian projectile points. This accumulation suggests the combined ceremonial efforts of the Bear clan-specific ceremonial society marked by bear claws, one or more other clan-specific ceremonial societies marked by mammal foot bones, a possible sodality marked by mica mirrors, and a possible sodality marked by obsidian projectile points.

Evidence for Scioto Hopewell sodalities and/or ceremonial societies having taken turns in performing a sequence of ceremonies within a cycle is lacking. Single ceremonial centers, and also temporally nearly synchronous ceremonial centers, very rarely contain multiple examples of ceremonial deposits or burials with the same artifact compositions, which would indicate the repetition of a ceremonial cycle (Carr et al. 2005:499–500). Multiple, unique ceremonial deposits of different artifact contents placed within a ceremonial center and representing different sodalities or ceremonial societies could indicate one "cycle" that was never repeated, but corroborating evidence is currently lacking.

The Development of Sodalities and Ceremonial Societies over Time

Sodalities and ceremonial societies crystalized and rose in kinds and size over a long duration, spanning the late Early Woodland and Middle Woodland periods, in the Scioto-Paint Creek area and the broader upper Ohio valley region. Integrating the temporal information given above for sodality paraphernalia, it appears that sodalities of the kind marked by smoking pipes were the first to form. Their beginnings can be traced to sometime in the Early Woodland period in the upper Ohio valley, including the Scioto-Paint Creek area. In the latter area, the peak membership size of the sodality marked by smoking pipes occurred during the very early Middle Woodland period, as seen at the Tremper and Mound City sites. Thereafter, the sodality waned in membership, which is indicated at the sites of Hopewell and Seip.

The two probable sodalities marked by mica mirrors and galena cubes also were well formed by the early Middle Woodland and reached the height of their popularity then, as evidenced by large accumulations of these items at the Mound City site. Somewhat earlier, in the Great Cache of the Tremper site, mica mirrors and galena cubes were deposited in only smaller numbers, and their distributions among Early Woodland Adena sites are equally sparse. During the middle to late Middle Woodland period, membership in the two probable sodalities dropped to moderate levels relative to their peak expression, which is seen at the sites of Hopewell and Seip.

The sodalities marked by metallic earspools and copper breastplates most likely developed later than ones marked by smoking pipes, mica mirrors, and galena cubes. The origins of the sodalities represented by earspools and breastplates may go back to the early Middle Woodland period, but these items were infrequent then at the sites of Tremper and Mound City. By the middle portion of the Middle Woodland period, however, the sodality indicated by breastplates had a membership as large as those of each of the three sodalities that had preceded it, and the sodality marked by earspools was substantially bigger. The popularity of the earspool and breastplate sodalities is evident at the sites of Hopewell and Seip.

The ceremonial society represented by drilled and cut bear canines formed sometime between the early and middle Middle Woodland period. The items are absent to low in frequency in late Early Woodland Adena mounds and the early Middle Woodland Hopewellian mound of Tremper, but then became quickly popular during the middle Middle Woodland period, as seen at the Hopewell site. The Bear society appears to have continued with a solid membership until the end of the Middle Woodland period.

Most if not all of these well-defined sodalities and ceremonial societies had shaman-like functions: facilitating relationships of individuals with their personal power animals for personal and perhaps corporate sodality or community-wide purposes (smoking pipes), divination in various forms (mica mirrors, galena cubes, copper breastplates?), and psychopomp work or doctoring (bear canines). Other possible but not certain sodalities or ceremonial societies (marked by large obsidian bifaces, quartz bifaces, cones and hemispheres) also focused on shaman-like activities: hunt or war divination and/or sending and extracting of power intrusions, and divination in general.

The consistency of the correlation of shaman-like functions with these sodalities, possible sodalities, and ceremonial societies, and their very development, directly reflect and were a part of the larger process of redistribution of shaman-like social, political, and religious roles from single classical shaman to multiple kinds of specialized shaman-like leaders and ceremonial groups within the Scioto-Paint Creek area (see above, The Process of Segregation of Leadership Roles over Time). The process also probably involved changes in the manner of recruitment, training, and initiation of important community-serving persons from individualized means such as being called by spirits, vision questing, and directly communing with tutelary spirits to oversight by the sodalities and ceremonial societies as formal professional groups, if the Scioto Hopewell case aligns with crosscultural patterns (Winkelman 1989; 1990:335, 338, 1992:58, 61, 65, 71). At the least, collective ceremonies of these groups are indicated in the Scioto Hopewell record by the large and frequent homogeneous archaeological deposits of their decommissioned paraphernalia (Carr, Goldstein et al. 2005:486–488, table 13.2). The broad process of social differentiation, formation of shaman-like specialists and professional societies, and reallocation of roles began late in the Early Woodland period in the context of Adena ceremonialism, to judge from the evidence provided by smoking pipes, and accelerated quickly thereafter in the early Middle Woodland as communities grew in size and overall complexity and as Hopewellian ceremonialism emerged.

Sodalities and Gender

Most of the sodalities and clan-specific ceremonial societies that developed earliest in the Scioto-Paint Creek area appear to have had exclusively male members. The sodality marked by smoking pipes, the clan specific ceremonial society marked by bear canines, and the possible clan-specific society marked by elk teeth each developed sometime between the late Early Woodland and early Middle Woodland periods. The possible clan-specific societies symbolized by wolf, fox, and raccoon teeth developed somewhat later, in the early to middle Middle Woodland period (Carr, Goldstein et al. 2005:486–488, table 13.2). The markers of all of these sodalities, clan-specific societies, and possible clan-specific societies are found exclusively with males when the markers occur in graves. Only the possible sodality that employed mica mirrors was established early in the Middle Woodland period and may have had roughly similar numbers of male and female members, to judge from their inclusions in graves (small sample size; Field et al. 2005:393, table 9.2).

By the middle of the Middle Woodland period, females played a significant, although still minority, role in sodalities. The apparently exclusively male sodality that used smoking pipes and the possible clan-specific society marked by elk teeth waned in their memberships, while large gains were made in the popularity of the two sodalities marked by metallic breastplates and earspools (Carr et al. 2005:486–488, table 13.2). In these latter two sodalities, females appear to have constituted respectively about a quarter and two-fifths of the members, to estimate from burial inclusions (Field et al. 2005:393, table 9.2).

The strong bias for most of the earliest sodalities and clan-specific ceremonial societies to have had exclusively male members is expectable. Some, if not most or all of these organizations, performed tasks that once had been fulfilled by classic, general-purpose shaman earlier in the Woodland and Archaic periods, prior to the segregation of classic shamanic roles. These earlier practitioners were probably largely male in the Ohio area (Converse 1979) – a strong crosscultural and Native North American tendency for shaman in societies lacking intensive agriculture (Driver 1969; Eliade 1964; Grim 1983; Harner 1980).

Summary

Three sodalities and at least one clan-specific ceremonial society were instrumental in integrating Scioto Hopewell people socially and in structuring their ceremonial life. Two sodalities, marked by breastplates and platform pipes, as well as the clan based ceremonial society marked by bear canines, may have had varying shaman-like duties: divination, harnessing the power of personal power animals for some corporate purpose, and corpse processing, psychopomp work, or healing, respectively. A third sodality, marked by earspools, was inspired by the shaman-like world view that was widespread in Scioto Hopewellian thought and employed some of its symbolism, but does not seem to have been involved with shaman-like tasks. The four organizations, with complementary ceremonial functions, also differed in their gender orientations. The society marked by bear canines apparently had exclusively male members, and the sodality marked by smoking pipes may have, as well (small sample size). The sodalities marked by earspools and breastplates had both male and female members, with a bias for males.

Six other possible sodalities or clan-specific societies may also have existed and been important in Scioto Hopewell societies: a sodality indicated by mica mirrors that likely were used in divination, a sodality marked by galena cubes that might have been used in divination, and four clan-specific ceremonial societies symbolized by canine, fox, elk, and raccoon power parts. The possible mica mirror sodality had both male and female practitioners, with a possible bias for females (small sample size).

Rarely, multiple sodalities and/or ceremonial societies appear to have joined together to perform a ceremony at the large gathering of a sustainable community, with different sodalities or societies having played different, complementary roles in the ceremony. However, there is no corroborated evidence currently for sodalities and ceremonial societies having sequentially performed their unique rites as part of a larger ceremonial cycle.

Sodalities were a part of Scioto Hopewellian life from its beginning, evidenced by large deposits of smoking pipes at Tremper and Mound City, a deposit of some mica mirrors at Tremper and large deposits of them at Mound City, large deposits of galena cubes at Mound City, a few earspools at Tremper and Mound City, and a few breastplates at Mound City. The clan-specific organization marked by bear canines also probably arose during this early time. Over the Middle Woodland period, the two sodalities symbolized by earspools and breastplates became much more popular, and apparently more widely spread among local symbolic communities. The clan-specific ceremonial society marked by bear canines also became more popular and widespread. At the same time, the sodality indicated by smoking pipes and the possible sodalities that used mica mirrors and galena cubes saw reductions in their memberships.

Most of the sodalities and clan-specific ceremonial societies, and possible ones, that arose late in the Early Woodland period or early in the Middle Woodland period in the Scioto-Paint Creek area had exclusively male members. A somewhat more equitable number of sodalities and clan-specific ceremonial societies that had largely men and some women, compared to only men, characterizes the middle Middle Woodland period.

The rise of sodalities and ceremonial societies in the Scioto-Paint Creek area was a part of a broader cultural process in which shaman-like social, political, and religious roles were reallocated from single classical shaman to multiple kinds of specialized shaman-like leaders and ceremonial groups. The ceremonial groups likely served as formal professional groups that recruited, trained, initiated, and oversaw their members in their practices.

The appearance of sodalities at the initiation of the Middle Woodland period in the Scioto-Paint Creek area coincided there with the change of burial sites from vertical accretional mounds to horizontal charnel structures (Chapter 5; Greber 1991), and with the beginning of burying members from multiple local symbolic communities together in large numbers under single mounds or within single earthworks to create and solidify alliances among these groups (Chapter 5; Weets et al. 2005:549–550). The development of these new practices, and the increasing popularity and apparently geographic expanse of sodalities over time, suggest the solidification of tribal life with pan-tribal sodalities and other horizontal means of integration by the second half of the Middle Woodland period. This record does not support Braun's (1977, 1986:123–125) proposal that the end of Scioto Hopewellian ceremonial life resulted from the origin then of pan-tribal, economically and politically based sodalities, which made ceremonially flamboyant means of integration unnecessary. Instead, the development of sodalities added to the ceremonial flamboyance of Scioto Hopewellian life and material culture.

Like nonlocalized clans, nonlocalized sodalities and ceremonial societies were important means of social integration and communication. At least three sodalities, identified by metallic earspools, copper breastplates, and stone pipes, each drew together as their members people from multiple, spatially dispersed residential communities within a local symbolic community and from multiple local symbolic communities within the broader Scioto-Paint Creek area. One clan-based ceremonial society marked by bear canines minimally had members from multiple residential communities within a local symbolic community, and might have had a membership that spanned multiple local symbolic communities. Overlapping memberships among all four of these ceremonial organizations provided additional channels of communication and support among geographically wide-spread households. As in historic Central Algonkian societies, sodalities were fewer than clans and possible clan-based organizations, and played a supplemental role to them in integrating Scioto Hopewellian people.

There is no evidence that sodalities and ceremonial societies in the Scioto-Paint Creek area were ranked, nor of vertical relationships of domination–subordination among them.

The appearance and rising popularity of sodalities, with their apparently similar degrees of prestige, overlapping memberships, and differentiated purposes, fit the characteristic Scioto Hopewellian pattern of social relations that were largely equitable, horizontal, cross-cutting, and complementary.

GENDER, GENDER RELATIONS, AND KINSHIP STRUCTURE

In the context of anthropology, gender is defined as the culturally constructed and interpreted categories of personhood that frequently, but not always, are tied to differences in biological sex, age, and/or labor (Claassen and Joyce 1997:2–5). Scioto Hopewell peoples recognized two genders and possibly a third: a masculine gender associated with certain social roles, a feminine gender associated with other social roles that sometimes overlapped those performed by men, and possibly a transitional gender that combined roles and personal qualities of the two. The arena of social leadership was dominated by men more so than women. Women did not have access to the most powerful position of leadership, but were considered for some positions of leadership or importance, commonly at a lower rate than men, and occasionally at an equal rate. Over the course of much of the Middle Woodland period, the contribution of women and men to sociopolitical and ritual life remained approximately the same, despite increases in the size and complexity of Scioto Hopewell societies. At the very end of the period, however, women came to play many fewer, key sociopolitical and ritual roles. In general, the gender system of Scioto Hopewell societies did not show the complementarity in the distribution of social and ritual roles that the clan, sodality, and leadership systems did. How roles in subsistence activities were distributed among genders is unknown at this time.

Genders and gender relations in Scioto Hopewell societies are known from patterns of association in graves between artifact classes that indicate particular social roles and the sexes and ages of deceased individuals. A total of 95 adult sexed individuals (53 males and 42 females) and 45 children and subadults from five large ceremonial centers and one small one in the Scioto-Paint Creek area have been analyzed for such patterns (Field et al. 2005) and are summarized here. Table 4.9 presents the key associations that have been found.

The overall pattern was one of male dominance in the sociopolitical and ritual realms, with equivalence among the genders in personal forms of prestige and/or wealth. Males exclusively held the highest leadership position – one of community-wide leadership marked by copper headplates (11% of all Male burials). Specialized, shaman-like leadership positions in general were held more commonly by males than females (47% of Males, 29% of Females, 18% of Subadults). Shaman-like practitioners involved in body processing and perhaps psychopomp work, marked by sets of bone awls, and diviners of the hunt or warfare, marked by projectile points of quartz, gems, or obsidian, or effigy points of mica, were almost always males (body processors: 15% of M, 2% of F; diviners: 10% of M, 2% of F). The few excavated barracuda jaw scratchers used by shaman-like, public ceremonial leaders in the Scioto-Paint Creek area were found with males. Prestigious clan positions symbolized by the power parts of totemic or eponymous animal species were filled almost entirely by males (38% of M, 2% of F, 7% of S). Persons buried with "trophy skulls", which sometimes might have indicated prowess in warfare but may suggest other important social roles (Johnston 2002), were more commonly found in male burials (15% of M, 5% of F). The clan-specific ceremonial society symbolized by bear canines apparently had exclusively male members (see Note 22). The sodality marked by smoking pipes may have as well, but the sample size is too small to evaluate firmly (see Note 20). High achievers and/or members of sodalities marked by breastplates and earspools were more frequently men than women (breastplates: 55% of M, 24% of F; earspools: 83% of M, 20% of F).

The general pattern of men filling the bulk of important sociopolitical and ritual roles, as seen in the mortuary records of Scioto Hopewell peoples, is repeated and corroborated in their artistic output. All known formal depictions of Scioto Hopewell people of social importance (Carr and Case 2005b:198, table 5.2) are either male, or of undeterminable sex because their ritual ornamentation obscures it. Only one clear image of a female exists to our knowledge, and it is an artwork made impromptu in the process

Table 4.9. Distribution of Artifact Classes among the Sexes

Artifact Class	M+[a]	F+	M−	F−	χ^2	P value	Fisher's Exact P value	$2\hat{I}$	P value
Scioto-Paint Creek Area[c]									
Mica sheet	2	2	51	40	0.057	0.812	1.000	0.056	0.813
All other divination	4	4	49	38	0.119	0.730	0.729	0.118	0.731
Awl	7*	1	46	41	3.561	0.059	0.073	4.073	0.044
Conch	9	5	44	37	0.481	0.488	0.569	0.488	0.485
All public ceremonial	15*	5	38	37	3.790	0.052	0.075	3.969	0.046
War divination	5*	1	48	41	1.970	0.160	0.223	2.186	0.139
All shamanic leadership	26*	12	27	30	4.097	0.043	0.058	4.163	0.041
Breastplate	19*	8	34	34	3.251	0.071	0.108	3.338	0.068
Earspool (metal only)	24*	7	29	35	8.728	0.003	0.004	9.144	0.002
Celt	4	3	49	39	0.006	0.940	1.000	0.006	0.938
Headplate	6*	0	47	42	5.075	0.024	0.032	7.322[b]	0.007
"Trophy" skull	7*	2	46	40	1.949	0.163	0.290	2.084	0.149
All nonshamanic leadership/high prestige	37*	14	16	28	12.540	< 0.001	< 0.001	12.794	< 0.001
Clan	20*	1	33	41	17.010	< 0.001	< 0.001	20.662	<0.001
Personal prestige	6	4	47	38	0.080	0.777	1.000	0.081	0.776
Southwestern Ohio[d]									
Mica sheet	0	1	14	5	2.456	0.117	0.300	2.534[b]	0.111
All other divination	0	1	14	5	2.456	0.117	0.300	2.534[b]	0.111
Awl	2	1	12	5	0.019	0.891	1.000	0.018	0.893
Conch	0	3*	14	3	8.235	0.004	0.018	8.591[b]	0.003
All public ceremonial leader	0	3*	14	3	8.235	0.004	0.018	8.591[b]	0.003
War divination	0	1	14	5	2.456	0.117	0.300	2.534[b]	0.111
All shamanic leadership	2	3*	12	3	2.857	0.091	0.131	2.692	0.101
Earspool	1	2*	13	4	14.001	< 0.001	< 0.001	2.065	0.151
All nonshamanic leadership and/or high prestige	1	2*	13	4	2.260	0.133	0.202	2.065	0.151
Clan	1	1	13	5	0.423	0.515	0.521	0.392	0.531
Personal prestige	0	1	14	5	2.456	0.117	0.300	2.534[b]	0.111
Northeastern Ohio[e]									
Mica sheet	1	0	8	5	0.598	0.439	1.000	0.926[b]	0.336
All public ceremonial leader	1	0	8	5	0.598	0.439	1.000	0.926[b]	0.336
War divination	2	0	7	5	1.296	0.255	0.505	1.949[b]	0.163
All shamanic leadership	3*	0	6	5	2.121	0.145	0.258	3.091[b]	0.079
Breastplate	1	0	8	5	0.598	0.439	1.000	0.926[b]	0.336
Earspool (metal only)	1	0	8	5	0.598	0.439	1.000	0.926[b]	0.336
"Trophy" skull	1	0	8	5	0.598	0.439	1.000	0.926[b]	0.336
All nonshamanic leadership and/or high prestige	1	0	8	5	0.598	0.439	1.000	0.926[b]	0.336
Clan	1	0	8	5	0.598	0.439	1.000	0.926[b]	0.336
Personal prestige	2	0	7	5	1.296	0.255	0.505	1.949[b]	0.163

[a]A plus indicates that the artifact type is present for males and probable males, or females and probable females. A minus indicates, conversely, that the artifact type is absent for these sexes.
[b]This value is an approximation of $2\hat{I}$, using $\ln(0) = 0$ for cells with counts of zero.
[c]The ceremonial centers upon which these statistics are based include Hopewell, Seip, Liberty, Ater, Rockhold, and Hopeton.
[d]The ceremonial center upon which these statistics are based is Turner.
[e]The ceremonial centers upon which these statistics are based include Esch, Martin, and North Benton.
*Indicates a sex with which an artifact type or set of artifact types is positively associated, strongly to moderately.

of decommissioning and breaking apart a larger copper artifact before burial (Figure 4.21). The woman in the image does not wear any items or carry any paraphernalia indicating importance. Further, her hair is straight rather than tied in a topknot or backknot, in contrast to the hair styles of some apparent elite males and females depicted on elaborate figurines recovered from the Turner earthwork in southwestern Ohio and the Knight and Schuyler mounds in Illinois (Griffin 1970:plates 69 and 70–73, and 83–84; Willoughby and Hooton 1922:plates 20 and 21; see Keller and Carr 2005:430–431, table 11.1 for an inventory of these figurines and their depicted hair styles and sex).

Scioto Hopewell women were recruited with frequency, according to mortuary records, into six kinds of sociopolitical and ritual roles, certain of which were core to Scioto Hopewell societies. (1) Community-wide leaders marked by copper celts, which were almost always different persons from community-wide leaders symbolized by copper headplates (see above, Segregation of Leadership Roles; Carr 2005a: 283, 332), were women as often as men (8% of M, 7% of F, 9% of S). The position marked by copper celts may have dealt with external societal relations, such as warfare and long-distance interactions, analogous to "war chiefs" of historic Woodland tribes (see above, Segregation of Leadership Roles). (2) Women also were recruited frequently into an essential public ceremonial role that employed conch shell dippers (20% of M, 14% of F). This role appears to have gained a domain of power beyond the level of the local symbolic community by the late Middle Woodland period (see above, Geographic Domains of Power of Leadership Roles). (3, 4) Women as commonly as men were specialized, shaman-like diviners who used mica mirrors (4% of M, 5% of F), or boatstones and quartz or colored pebbles (8% of M, 11% of F). Those diviners who used mica mirrors may have been members of a sodality with responsibility for divination about concerns other than the hunt and warfare, for which other paraphernalia were used (see above). That Scioto Hopewell diviners were women as well as men fits the crosscultural pattern for women or men to be diviners in agricultural societies with supralocal forms of sociopolitical integration and professional societies (e.g., sodalities) of specialized, shaman-like practitioners (Winkelman 1989, 1992:60–61, 64–65). Women play an increasing role in certain shaman-like activities as a society becomes larger and more complex, and as the multiple roles of the classic shaman become decentralized among several different kinds of specialists (Winkelman 1989, 1992). In sodalities other than that possibly indicated by mica mirrors, specifically those marked by breastplates and earspools, members were men rather than women two to four times more frequently (see above). (5) Women also partook with men in a very rare (shaman-like?) role symbolized by copper nose inserts. (6) Blown musical instruments – flutes and panpipes – were placed in the graves of women more often than men (2% of M, 5% of F), although the sample of sexed burials with blown instruments is small.

Thus, although women were not channels of sociopolitical and ritual power nearly as frequently as men, women were not depreciated either, and had a share in social management. In addition, personal prestige and/or wealth, indicated by metallic pins, bracelets, buttons and necklaces, as well as hair skewers and smoking pipes, were distributed equitably among the sexes (11% of M, 10% of F, 2% of S). The gender theory, that women may seek out religious roles, especially as spirit-possessed mediums, as the only refuges of power and prestige available to them in male-dominated societies (Lewis 1971; see also Winkelman 1989, 1990, 1992) does not appear applicable to the Scioto Hopewell case.

Over the Middle Woodland period, the contribution of women to the sociopolitical and ritual realms appears to have increased somewhat, and then declined abruptly at the tail end of the period. The trend for an increase in the importance of women is attributable to the rise of sodalities, and of sodalities that admitted both men and women as members. The earliest sodality to develop and accumulate a large membership, at the very beginning of the Middle Woodland period, was marked

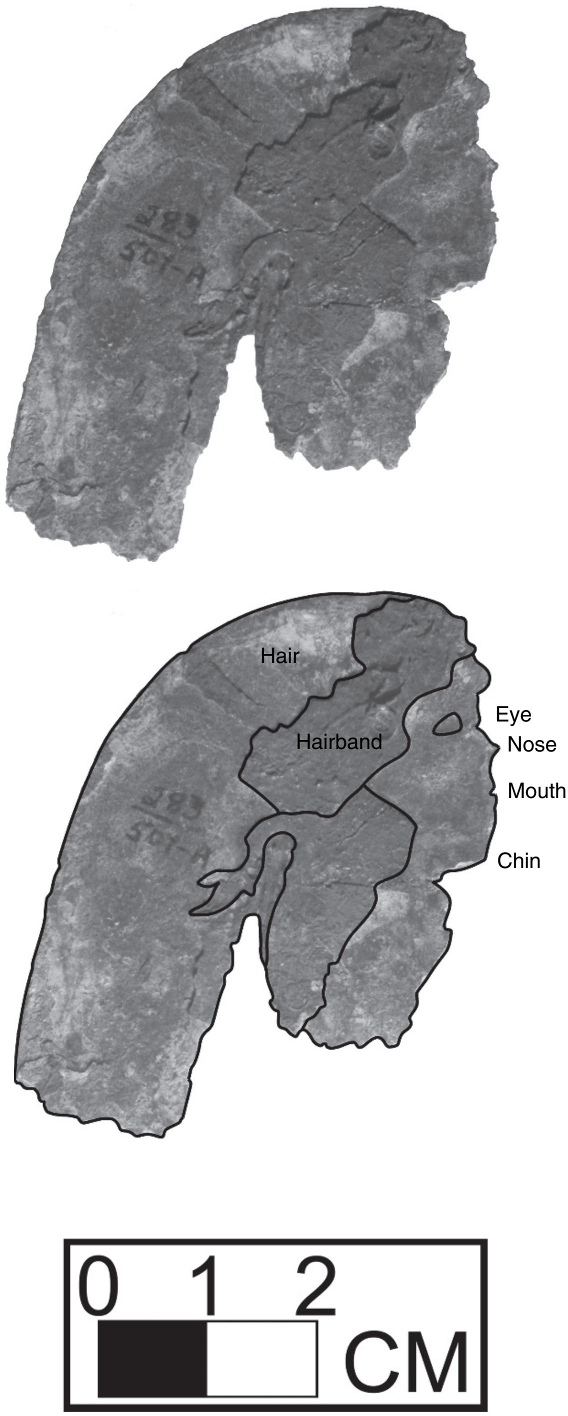

Figure 4.21. ***Top:*** **Copper effigy of a woman's head in profile, facing left,** ***Bottom:*** **Corresponding line drawing. From the Hopewell site. Created from a large sheet copper artifact as part of the ritual process by which it was decommissioned and broken into pieces in preparation for burial. Decommissioned Scioto Hopewell ceremonial artifacts were commonly broken into life forms, especially birds. See credits.**

by smoking pipes. It may have had exclusively male members. A bit later in the early Middle Woodland, the sodalities marked by earspools and then breastplates formed. These blossomed in popularity in the middle and late portions of the Middle Woodland period. Significantly, both sodalities admitted both men and women as members, giving women more roles of sociopolitical and ritual importance at that time than they had enjoyed earlier. In line with this apparent trend, the sodality marked by breastplates, which developed somewhat later than the sodality marked by earspools, had a membership with a higher proportion of women than that of the sodality marked by earspools.[31] Women were not depreciated as Scioto Hopewell societies became larger, more complex, and more interrelated, unlike the broad crosscultural trend for greater gender inequality with societal growth and elaboration (Brettel and Sargent 2001).

At the tail end of the Middle Woodland period, there appears to have been a marked decline in the participation of women in the sociopolitical and ritual realms. There were several roles that women shared somewhat to equally with men (see above) during the both the middle and late portions of the Middle Woodland period, as indicated at the sites of Hopewell, and then Seip and Liberty. However, at the very end of the Middle Woodland period, at the site of Ater, of the four of these several roles evidenced there, which were marked by conch shell dippers, metallic celts, breastplates, and earspools, all were filled by males, alone (albeit, a small sample size). This apparent gender shift in the distribution of sociopolitical and ritual power corresponds in time to the breakdown of the three-community alliance in the area, and may reflect this historical event.

The generally moderate to strong dominance of males over females in filling most roles of sociopolitical and ritual importance in Scioto Hopewell societies over the Middle Woodland period indicates a male-focused ethic consistent with patrilineal kinship. This was the form of kinship found historically among Algonkian speakers of the Great Lakes-Riverine area.[32] Hopewellian traditions in northern Ohio were also androcentric, but more strongly. There, only males were buried with grave goods marking social stature, including artifacts indicating their apparently exclusive roles as shaman-like leaders and practitioners, prestigious clansmen, sodality members or high achievers, and perhaps "trophy" takers (Table 4.9; Field et al. 2005). In contrast, in the Little and Great Miami drainages of southwestern Ohio, Hopewellian traditions appear to have been matrilineal, based on artifactual and osteological mortuary evidence, although the numbers of individuals is small (Table 4.9; Field et al. 2005; Rodrigues 2005). Women there predominated in the arenas of shaman-like leadership and practices, clan prestige, and sodality membership or achievement (Field et al. 2005). Women also participated in maintenance and subsistence activities more commonly done by Native American men (Murdock and Provost 1973), including flint knapping and running possibly involved in hunting (Lee and Vickery 1972; Rodrigues 2005). Inversely, men shared in processing plant foods, stereotypically associated with women. These conclusions for southwestern Ohio Hopewell societies are expectable, given Hopewellian ceramic ties of the area to the southeastern Woodlands, where matrilineality was the rule among historic Native American tribes (Hudson 1976).

The symbolic meanings, philosophical categories, and personal attributes associated with the masculine and feminine genders in Scioto Hopewell societies are largely unknown. However, males do appear to have been associated with death and the life-death contrast or transition. Largely males were recruited into the roles of body processor and/or psychopomp, and hunt or war diviner. "Trophy" skulls were buried primarily with males.

Evidence for a third gender, transitional between the masculine and the feminine, is rare for Scioto Hopewellian societies, and is restricted to the very end of the Middle Woodland period at the Ater site. A transitional gender can be inferred when shaman-like paraphernalia usually associated with one sex occur occasionally in burials of the opposite sex. Shaman-like paraphernalia are useful in this way because gender variance is primarily associated with persons of spiritual power in most Native American societies (Nanda 2000:19; see also Fulton and Anderson 1992:609; Halifax 1979; Hollimon 2001:128; Ivanov 1978; Roscoe 1998:8, 26). At Ater, a male who was interred with shaman-like hunt or war divination items (three mica effigy projectile points), which were almost always buried in the Scioto-Paint Creek area with males (see above), was also buried with a metallic panpipe, which along with flutes were otherwise buried only with females in the Scioto area. A female was buried with a shaman-like hunt or war divination item (quartz biface), which otherwise were buried only with males in the area. The woman was in her teens, and was not an instance of a senior woman who had changed status and taken on a man's role after menopause – a historic Native American pattern (Crown and Fish 1996), and one found specifically among the Shawnee (Howard 1981:109, 117).[33] These two findings of possibly gender-variant individuals within a Scioto Hopewell society are expectable. Records of French explorers in North America provide much evidence showing the presence of multiple genders there historically (Lahontan 1905; Roscoe 1998), and in particular among tribes that surrounded the Scioto Hopewell area. These tribes include the Illinois, Miami, Potawatomi, Winnebago, Fox, and Sauk (Hauser 2000; Roscoe 1998).

Summary

In the Scioto-Paint Creek area, men dominated much of sociopolitical and ritual life. Men exclusively held the highest, community-wide leadership position, membership in the Bear clan-specific society that processed the dead and/or doctored, and possibly a sodality for connecting with one's personal power animal via smoking. Predominately men filled specialized shaman-like leadership positions, prestigious clan positions, position(s) associated with possible trophy skulls, and memberships in the two largest sodalities, marked by earspools and breastplates. Women, however, were not depreciated. Women were recruited equally with men into a community-wide leadership position marked by copper celts, shaman-like divination roles of several distinct kinds, and rarer roles marked by copper nose inserts, flutes, and panpipes. Women, somewhat less than men, also filled an essential leadership role marked by conch shell dippers, which had a domain of power across multiple local symbolic communities by the late Middle Woodland period. Women also had a place in the large sodalities marked by earspools and breastplates. In addition, women wore markers of personal prestige and wealth as commonly as did men. This overall balance of the masculine and feminine in their relative contributions to the sociopolitical and ritual realms changed modestly over the course of the Middle Woodland period, as women became more active through sodalities that emerged and became popular and that admitted both men and women. At the very end of the Middle Woodland period, a number of roles previously held by men and women equally became filled instead by men, alone. This situation arose when a major alliance among three local symbolic communities in the area began to dissolve.

Three genders have been identified in Scioto Hopewellian socieites: masculine and feminine, as just summarized, and a rare transitional gender associated with shamanic roles. The transitional gender role was filled by individuals of both sexes.

Unlike the clan, sodality, and leadership systems of Scioto Hopewell societies, their gender system did not exhibit as strong a complementarity in the distribution of sociopolitical and ritual roles and power among social categories. Whereas different suites of clans filled different leadership roles, and different sodalities and clan-specific societies had different ceremonial roles, which they occasionally blended in complement for large gatherings of a sustainable community, men much more so than women were recruited into positions of sociopolitical and ritual importance. Further, the organization of clans, sodalities, clan-based ceremonial societies, and leadership roles in Scioto Hopewell societies had a markedly horizontal character, whereas their gender system had a good degree of verticality to it. Although male domination was a feature of Scioto Hopewell social life, extensive female depreciation was not the result.

The gender system of Scioto Hopewell societies was not an essential means for integrating residential communities or local symbolic communities with each other through its expression in the domains of sociopolitical leadership and ceremony. However, through marriage exchanges and the division of subsistence and public construction labor, its contribution to social integration must have been fundamental, even though this has not yet been documented.

RITUAL GATHERINGS AND ALLIANCES

Scioto Hopewell mound groups and earthen enclosures were ceremonial centers where many categories of people gathered for rituals: shaman-like specialized practitioners and nonshaman-like leaders, elite and ordinary people, clans and clan-based societies with diverse animal associations, sodalities of several kinds, and men and women. The fabric of Scioto Hopewell societies was woven during these ritual occasions, when different numbers and sets of people in different social groups and combinations of social groups assembled for varied purposes. This social fabric, although always balancing the dispersed settlement strategy of Scioto Hopewellian people, changed in substantial ways over the course of the Middle Woodland period.

Gatherings within the ceremonial centers of the Scioto-Paint Creek area varied in many ways among ceremonial centers and over time: the number of participants, the kinds of social roles the participants filled, the diversity of social roles of the participants, and their purposes for mortuary rites of separation, mortuary rites of liminality (van Gennep 1909, 1960) or for ceremonies not focused specifically on the deceased. In turn, these variations in the nature of gatherings were related to whether a ceremonial center serviced only a segment of a local symbolic community or one or more local symbolic communities, whether the center was a place of burial of primarily leaders and other important persons or a cemetery for a fuller spectrum of society, whether the alliance strategies that people of different local symbolic communities used to interrelate with one another at the time were founded on dyads of individuals or funneled through the hands of leaders, and the number of local symbolic communities that were allied. These differences in the contexts of ceremonial gatherings in the Scioto-Paint Creek area must be understood first before exploring the nature and variation of the gatherings, themselves.

This section on gatherings and alliances begins by describing four key characteristics of the sociocultural contexts in which Scioto Hopewell ceremonial gatherings occurred that varied among ceremonial centers and over the Middle Woodland period. The diverse nature of the gatherings, which reflect these different contexts, is then introduced and summarized with a natural typology of gatherings. The typology was constructed considering the funerary or nonfunerary purposes of the gatherings, their numbers of participants, and the homogeneity or diversity in the roles of the participants. This overview of the gatherings is followed by more detailed discussions of their sizes, social compositions, and changes through time in size and composition, and the cultural situations to which these variations pertain.

The Diverse Sociocultural Contexts of Gatherings

Local Symbolic Community Representation at Ceremonial Centers

Small mound groups without earthen enclosures, including Bourneville, McKenzie, Rockhold, and West, appear to have served only a few residential communities – portions of local symbolic communities – given their small burial populations, sparse grave offerings, general lack of grave goods indicating important community-wide leadership roles, and the small amount of labor required to build them. In contrast, large mound groups and earthen enclosures, including Tremper, Mound City, Hopewell, Seip, Liberty, and Ater, were places for the assembly of persons from multiple local symbolic communities – sometimes most or all persons in these communities, and sometimes only moderately sized to very small segments of one or more communities. The wide scope of the social groups that large ceremonial centers served is indicated by their large burial populations, abundant grave offerings and special ceremonial deposits, many grave goods that marked community-wide leadership roles, the large amounts of labor that their construction entailed, and their partitioned or separate charnel houses where different local symbolic communities separately prepared their dead for burial and laid them to rest (Chapter 3, An Example of a Sustainable Community, A Second Example of a Sustainable Community). Differences in the range of residential units that used ceremonial centers directly impacted the size and social composition of gatherings at them.

Select Social Statuses of the Individuals Buried at Ceremonial Centers

The sites of Hopewell and Mound City contrast from Seip, Liberty, and Ater in having been burial grounds for largely select individuals who played key social roles of leadership and responsibility, as opposed to cemeteries for a somewhat broader yet still prestige-biased spectrum of persons. In turn, these five sites are distinguishable from Tremper, where apparently all or most persons from several local symbolic communities who died within a period were cremated and buried. Multiple lines of archaeological evidence support these characterizations (Chapter 3, An Example of A Sustainable Community, A Second Example of a Sustainable Community). These functional differences among ceremonial centers affected the sizes and social compositions of ceremonial gatherings at them.

Changes in Alliance Strategies

The strategies that Scioto Hopewellian people in different local symbolic communities used in order to create alliances with one another changed over time and also affected the nature of gatherings at ceremonial centers. During the early Middle Woodland time of use of the Tremper site, alliances appear to have been worked out largely through the economic and social relations of *individual* commoners as dyads in nonmortuary contexts. These relationships were then solidified through mortuary ritual at Tremper. Later in the Middle Woodland period, when the sites of Hopewell, Seip, and Liberty were used, alliance negotiations seem to have been funneled through leaders who were *representative* of their local symbolic communities and who may have dealt with intercommunity matters primarily at the ceremonial centers, themselves.

Five forms of evidence suggest this change in alliance strategies over time. First is whether artifacts of ordinary individuals from different communities or artifacts of leaders were deposited together ceremonially to express alliance. In the Tremper mound, the Great Cache of items that were decommissioned at the end of the site's use was predominated by smoking pipes, which were sculpted to reflect the personal trance experiences of individuals and which were thus owned individually. The pipes were very plentiful and would have been owned by many socially ordinary persons, not just a limited number of leaders or important persons. Alliance created by dyadic relationships among ordinary individuals, reinforced by their membership together in a sodality concerned with personal trance experiences (see above, Smoking Pipes as a Sodality Marker), was symbolized by the depositing of these personally owned artifacts together in the Great Cache. In contrast, in the Hopewell 25, Seip-Pricer, and Seip-Conjoined mounds, almost all ceremonial deposits were comprised primarily of items used by leaders or other socially important persons, who seem to have represented their communities in ceremony (Carr et. al. 2005:486–488, table 13.2). Alliance created through the relationships of leaders and important persons in behalf of their communities was symbolized by the decommissioning of the paraphernalia of those important persons together.

A second and closely related indication of the change in alliance strategies is that leaders and important persons were not singled out for attention in mortuary rituals at Tremper, while they were at later sites. At Tremper, the paraphernalia of leaders and important persons in many different social roles, as well as many items of ordinary persons, were placed together in the one Great Cache. In contrast, at Hopewell 25, Seip-Pricer, and Seip-Conjoined, the role-symbolic paraphernalia of leaders and important persons were usually deposited separately by role, and apart from the goods of ordinary persons, calling attention to those roles and the alliance-making efforts that those important persons had in life.

A third indication of the change in alliance strategies is that the Tremper mound and charnel house contained two to four times the number of deceased persons than each of the Hopewell 25, Seip-Pricer, and Edwin Harness mounds and charnel houses (see below, Table 4.13). At Tremper, alliance of local symbolic communities was symbolized by the burial together of all or most persons from those communities who died over a period of time. At Hopewell 25, Seip-Pricer, and Edwin Harness, alliance among local symbolic communities was symbolized by the joint burial of select leaders and socially important representatives from those communities, some persons of whom probably had been essential to intercommunity alliance building during their lives.

A fourth sign of how alliance strategies changed over time in the Scioto drainage is a change in the disposition of deceased persons. At Tremper, the cremated remains of persons from different local symbolic communities were placed together and intermingled in the same depositories, directly symbolizing their dyadic relationships in life. At Hopewell 25, Seip-Pricer, Seip-Conjoined, and Edwin Harness, the remains of persons from different local symbolic communities were placed separately from one another in different charnel house rooms. Only leaders and other important persons from different communities were symbolized for their strategic relationships in life, and this was done through the decommissioning of their paraphernalia together in ceremonial deposits.

A fifth kind of evidence of the change in alliance strategies is the different layout of human remains at Tremper compared to the later sites. At Tremper, the cremated remains of persons were placed in four, spatially separated depositories, apparently dividing persons by clan affiliation (Chapter 3, A Second Example of a Sustainable Community). This layout emphasized the social and economic relationships among individual kinsmen–commoners and more important persons alike, and regardless of local symbolic community affiliation. In contrast, at each of Hopewell 25, Seip-Pricer, Seip-Conjoined, and Edwin Harness, the deceased were placed in three or more separated chambers of a charnel house or separated charnel buildings, divided by community (Chapter 3, An Example of a Sustainable Community). The deceased of all communities were then buried, ultimately, under a single earthen mound. These spatial divisions and their common mantling symbolized the relationships of local symbolic communities to one another as wholes.

The development of a community basis for cemetery organization in the Scioto-Paint Creek area was a gradual one, over more than two centuries. After the Tremper site, at Mound City, connections among communities were built by their burying some of their dead together within the walls of a single earthwork enclosure, but in multiple, different small mounds. It is unclear whether persons from more than one community were buried in a single charnel house under a single mound, but large numbers of persons from different communities were not buried in one charnel structure, spatially segregated by community. This pattern of building multiple small mounds within an earthwork enclosure was continued at the Hopewell site. Later, under Hopewell Mound 25, large numbers of persons from multiple communities were buried on one prepared ceremonial floor, in adjacent charnel buildings and adjacent rooms of one of the charnel buildings, all of which eventually came to be mantled by one large mound. Finally, the means by which communities allied with one another through mortuary rites were perfected. At each of the Seip, Liberty, and probably Old Town earthworks, large numbers of persons were buried on one prepared floor in one charnel house, separated by community among the building's rooms. The entire charnel house was eventually mantled by one large mound.

Changes in the Number of Allied, Local Symbolic Communities

The sizes and social compositions of gatherings at ceremonial centers in the Scioto-Paint Creek area were related to one last contextual matter. This is the number of local symbolic communities that were allied and formed a sustainable community in the area, which varied through time. Specifics are most clear for the last third of the Middle Woodland period. Between approximately A.D. 250 and A.D. 320 radiocarbon time, three local symbolic communities, which were situated in the main Paint Creek valley, the North Fork of Paint Creek valley, and an adjacent section of the Scioto valley, were closely allied and comprised a sustainable community with a sense of self-identity. Settlement pattern analysis, the similar sizes and morphologies of the communities' earthen enclosures and charnel houses, mortuary patterning within the charnel houses, stylistic analysis of the communities' fabrics, and a labor analysis all support this reconstruction (Chapter 3, Sustainable Communities). Sometime shortly after A.D. 320, the local symbolic community in the Scioto valley discontinued or was discontinued from its participation in the alliance, and the alliance was reduced to the two communities in main Paint Creek valley and its North Fork. This smaller alliance continued afterwards for only a few decades. Ceremonial gatherings in the Scioto-Paint Creek area reflect this change.

Evidence for this historical reconstruction is found in the charnel houses under the Seip-Pricer, Seip-Conjoined, and Ater mounds. These charnel houses were built and used sequentially (Greber 1979b:37; 1997:215; Prufer 1961a; 1964a; Ruhl 1996; Ruhl and Seeman 1998). The charnel house under the Seip-Pricer mound had three rooms, each filled with deceased persons (Figure 3.9A). The three sets of burials represented and consisted of members of the three local symbolic communities in main Paint Creek valley, its North Fork, and the Scioto valley. The placing of these burials under one roof expressed the family-like ties of cooperation and alliance of the three communities with one another (Chapter 3, An Example of A Sustainable Community). After the charnel house was decommissioned, three mounds were constructed over its three rooms, and these were then capped to form a single mound, again expressing the unity of the three local symbolic communities. This metaphor for the three-way alliance was continued with the building of the charnel house under the Seip-Conjoined mound (Figure 3.9B). It, too, had three rooms. However, burials were placed in only two of them. Mounds were then built over each of the rooms, but a cap uniting the mounds was not constructed. It appears that the Seip-Conjoined charnel house was built by all three local symbolic communities with the intention of their burying their dead together in its three chambers to express their alliance, as they had done at Seip-Pricer, but that this event was not fully realized. One community ended or had ended its alliance with the other two, and the two proceeded alone with burying their dead together. This residual, two-community alliance was continued for a while and materialized again at the site of Ater. There, a two-room charnel house was built and deceased from the two local symbolic communities were placed in its two rooms (Figure 4.22). It was then decommissioned and a single mound was built over the two rooms, expressing close ties between the two communities. Unlike at each of Seip, Liberty, and Old Town, where a tripartite earthen enclosure had earlier been built, reiterating the metaphor of the three-way alliance expressed in a three-chambered charnel house, no earthen enclosure was built around Ater. Nor was an enclosure built around any Hopewell

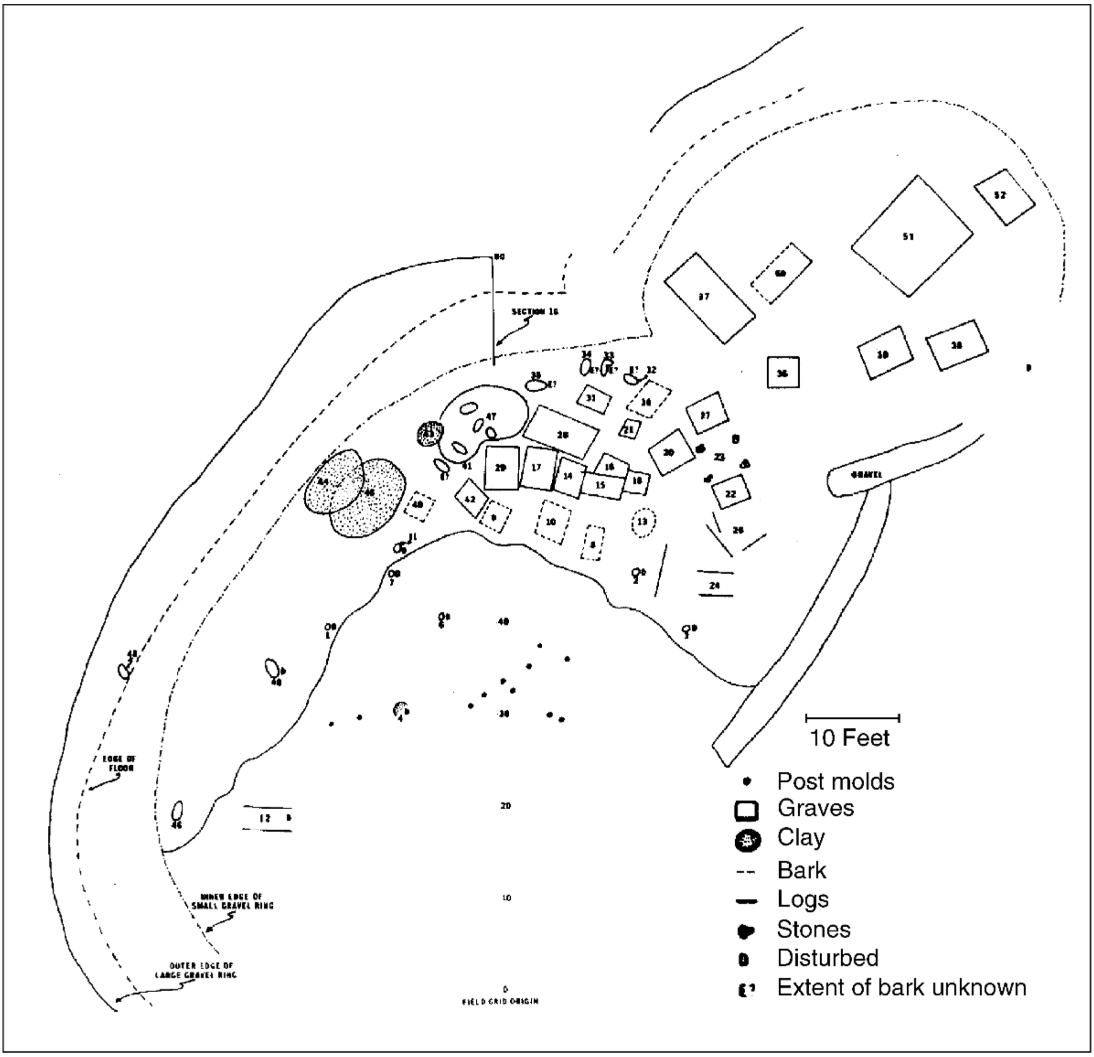

Figure 4.22. Floor plan of the charnel house under the Ater mound. See credits.

mound group in the Scioto-Paint Creek area thereafter. Waning efforts at alliance creation and the contraction of labor pools for building enclosures that symbolized alliance explain the ending of Hopewellian earthwork construction in the Scioto-Paint Creek area.

The local symbolic community that withdrew or was removed from the three-way alliance was the one located in the main Scioto valley. This can be inferred from three pieces of evidence. First, the two charnel houses with only two burial clusters – under the Seip-Conjoined and Ater mounds – are located in main Paint Creek valley and the North Fork of Paint Creek valley, respectively. This arrangement implies the continuation of the mortuary alliance by the local symbolic communities in these two valleys, and the splitting off of the local symbolic community in the Scioto valley. Second, the two communities thought to have retained their alliance, in Paint Creek valley and its North Fork, are sensibly the ones that are closest to each other geographically. The more distant community in the Scioto valley is the one thought to have parted ways. Finally, the chamber of the charnel building under the Seip-Conjoined mound that was empty of burials and that indicates the local symbolic community that departed the alliance is the smallest chamber. This room can be tied to the local symbolic community in the Scioto valley by material patterning in the tripartite charnel houses in the three river valleys.[34]

As a result of these changes over time in the number of local symbolic communities that were allied in the Scioto-Paint Creek area, ritual gatherings at the Seip-Pricer and Ater mounds differed considerably from each other in their sizes and social compositions.

A Typology of Gatherings

Ritual gatherings at mounds and earthen enclosures in the Scioto-Paint Creek area varied in three fundamental ways that can be detected archaeologically. First is the distinction between ceremonies that were concerned directly with the recent dead and social adjustment and that were necessarily tied to the mortuary setting versus ceremonies that had other purposes such as world renewal, initiation, and thanksgiving yet were enacted in mortuary settings. The latter kinds of ceremonies were choreographed in charnel houses or near burial mounds perhaps to enhance their potency, or to ensure inclusion of the dead as well as the living members of the society in the ceremony.

Ceremonies focused on the deceased in the Scioto drainage are reflected in artifact assemblages directly associated with the deceased. An assemblage found within a grave points to either rites of separation of the deceased from society, or rites of liminality for helping the deceased's soul(s) to an afterlife, or both (van Gennep 1909, 1960). The log tombs with removable and replaceable covers that were used in many Scioto Hopewellian charnel houses and mounds indicate periodic visitations to the deceased and repeated openings and closing of these crypts for rites of separation and liminality (Brown 1979). Some artifacts within these graves, as well perishable food, water, and/or medicines, may have been placed within the graves at these later times rather than at the time of initial interment. An artifact assemblage found on top of a primary mound covering a permanently closed grave more likely suggests a rite of liminality than a rite of separation. In contrast to these two kinds of rites focused on the deceased, ceremonies that were not specifically dedicated to the deceased and that had other purposes are indicated by artifact assemblages that were placed not within or on top of burials but, rather, on or above mound floors or in cremation basins empty of human remains.

Ritual gatherings varied in a second essential way: whether they involved only a segment of a local symbolic community, all of a community, or multiple local symbolic communities. These distinctions can be defined approximately by estimating the overall sizes of gatherings and the numbers of attendees who had specific roles that were rare within a local symbolic community. Attendance of a very large number of persons, and of many who had a rare, community-wide role, implies the involvement of multiple communities in the ceremony.

The minimum size of a gathering and minimum number of attendees of given roles at a gathering can be estimated for both a grave assemblage and a ceremonial deposit not within a grave. The estimate can be made by noting the number of artifacts within the grave or ceremonial deposit that are indicative of each social role and that are redundantly repeated within the feature. This figure suggests the number of persons who contributed gifts to the deceased's grave or the ceremonial deposit. For example, a ceremonial deposit with 25 pairs of earspools would indicate the attendance of 25 persons who were members of the sodality marked by earspools and who placed earspools in the deposit. A grave with 25 pairs of spools might indicate 25 or 24 persons who placed gifts in the deceased's grave, depending on whether the deceased was also a member of the sodality and one of the pairs of earspools belonged to him or her. This method gives only a minimum estimate of the numbers of persons who attended a ceremony because it does not count other persons who may have attended but who did not give gifts.

The third essential way in which Scioto Hopewell ritual gatherings varied is in whether they were socially homogeneous, involving primarily one social role or a closely related sets of roles, or whether they were socially diverse, involving many kinds of social roles. Some socially homogeneous ceremonies were attended primarily by members of one sodality or one clan, both of which having not been localized imply attendees from multiple local symbolic communities when the ceremonies were of moderate to large size. Other socially homogeneous ceremonies were each attended by primarily leaders of one kind – too many for one local symbolic community and again implying attendees from multiple local symbolic communities in the case of ceremonies of moderate to large size. Socially diverse ceremonies were each attended by persons of the many kinds of social roles that would be found in a local symbolic community or a sustainable community and typically were very large in size. Their diverse social compositions and large sizes imply attendance by multiple local symbolic communities. Socially homogeneous and socially diverse ceremonies are evidenced archaeologically by grave assemblages or ceremonial deposits comprised of artifact classes indicating, respectively, largely one kind of social role or many kinds of social roles.

To create a typology of ritual gatherings, their sizes and the spectrum of social roles of those who participated in them were characterized from the artifact assemblages in each of 358 graves with 403 individuals and each of 55 ceremonial deposits not tied to graves, in a total of 22 Hopewellian mound and/or earthwork ceremonial centers distributed across Ohio (Carr, Goldstein, et al. 2005:506–513). The number of gatherings characterized sums to a maximum of 458. The method of "number of gift givers", described above, was used to estimate the size of each gathering and the frequencies of attendees in various social roles from the artifact assemblages. Social roles were lumped into four general categories: shaman-like leaders, nonshaman-like leaders, clan roles, and personal roles. The artifact classes that define these four general categories of social roles and that were used to count the numbers of gift givers in each category are summarized in Appendix 4.2. Once counts of gift givers of the four general social categories had been calculated for each of the 458 gatherings, classes of gatherings of particular size ranges and general social role compositions were determined. The gatherings were then further sorted into ones focused on the deceased or not by whether the artifact assemblages were found in graves or whether they were recovered from non-grave ceremonial deposits on or above mound floors or from cremation basins cleaned of human remains. Gatherings focused on graves of deceased persons were then characterized for whether they had assembled for rites of separation or rites of liminality or both, based on tomb form and the locations of grave goods (see above). Graves, deposits, and gatherings from the Scioto-Paint Creek area dominate the sample (373 of 458 gatherings; 16 of 22 ceremonial centers). However, the results do reflect to a degree the variations in gatherings sizes and social compositions in other areas of Ohio.

Crosscutting the three dimensions of variation in Scioto Hopewell ritual gatherings led to the typology of gatherings shown in Table 4.10. The table provides examples of graves and ceremonial deposits produced by each kind of ritual gathering, lists the total numbers of persons who made offerings to each of the example graves and ceremonial deposits, and shows the social composition of each example gathering in terms of the numbers of nonshaman-like leaders, shaman-like leaders, clan members, and individuals in personal roles who gave offerings to the grave or ceremonial deposit. The typology is a natural one, reflecting social patterns in Scioto Hopewellian ceremony, because the dimensions are derived out of archaeological patterning rather than imposed a priori upon the data, and because only certain combinations of dimensional states manifest rather than a full paradigm of states.

The largest and rarest gathering in the Scioto-Paint Creek area (Class IA) occurred once – on the floor of Hopewell Mound 25. It had more than 500 gift givers. This ceremony was not directly associated with the deceased

Table 4.10. A Typology of Scioto Hopewell Ceremonial Gatherings

I. Moderate to large, cooperative and/or competitive ritual displays involving multiple communities Not directly associated with the dead.

A. Gift givers of diverse social roles. Nonshaman-like leaders emphasized over shamanic leaders.

Hopewell Mound 25, Altar 1. Total: 514 gift givers.[a] Social composition[b]: **463** : 32 : 12.5 : 3
Ater, B51A,B. Total: 36 gift givers. Social composition: **18** : 6 : 3 : 2
(see also Turner Mound 3, Central Altar. Total: 441 gift givers. Social composition: **337** : 77 : 7 : 16)[c]

B. Gift givers of a specialized social role. Shaman-like leaders predominate.

1. Shaman-like war diviners predominate.
   Hopewell, Mound 25, Altar 2. Total: 52 gift givers. Social composition: 7.5 : **27** : 12.5 : 2
   Mound City, Mound 3, Altar. Total: 31 gift givers. Social composition: 0 : **24** : 4: 0
   Mound City, Mound 13, Deposit 5. Total: 24 gift givers. Social composition: 3 : **13** : 6 : 2
2. Shaman-like diviner in general.
   Hopewell, Mound 17, Deposit 2. Total: 111 gift givers. Social composition: 13 : **90** : 7 : 1
   Seip-Pricer, Burnt Offering. Total: 29 gift givers. Social composition: 4 : **14** : 3 : 7
3. Shaman-like philosopher/cosmologist predominate.
   Hopewell, Mound 25, Copper Deposit. Total 127 gift givers. Social composition: 11 : **114** : 2 : 1
4. Shaman-like practitioners of unknown roles, associated with bulk fancy raw materials.
   Mound City, Mound 5, Altar. Total: unknown. 30 lbs. of galena in 2 oz −3lb pieces.
   Hopewell, Mound 1. Total: unknown. 30–40 chlorite disks.
5. Shaman-like practitioners of several specializations.
   (See also Turner, Mound 4, Central Altar. Total: 67 gift givers. Social composition: 0 : **64** : 2 : 0)[c]

C. Gift givers of specialized social role. Role of nonshaman-like leader predominates.

Tremper, Sandstone Grave. Total: 12 gift givers. Social composition: **9** : 0 : 1 : 0
(See also Turner, Mound 15, Cache. Total: 27 gift givers. Social composition: **25** : 0 : 2 : 0)[c]

D. Gift givers of specialized social role. Role of the individual (prestigious?) predominates.

Tremper, Lower Cache. Total 172 gift givers. 3 : 17 : **147** : 5
Hopewell, Mound 17, Offering 1. Total 113 gift givers. 5 : 30 : **75** : 0
Hopewell, Mound 26, Crematory Basin. Total: unknown. 5000+ shell and bone beads.
Hopewell, Mound 28, Crematory Basin. Total: unknown. 1800 shell or bone beads.

II. Moderate to large, cooperative and/or competitive ritual displays involving multiple communities. Directly associated with the dead.

A. Gift givers of diverse social roles.

1. Gifts in a grave. Rites of separation.
   Mound City, Mound 13, B1 Mica Grave. Total: 14+ gift givers. Social composition: 2 : 7 : 10 : 1
   Mound City, Mound 7, B9. Total: 12 gift givers. Social composition: 4 : 5 : 0 : 0
2. Gifts in a log tomb (which can be reopened) or on top of it or a primary mound. Rites of liminality.
   Seip-Pricer, B1. Total: 11 gift givers. Social composition: 6 : 2 : 1 : 0

B. Gift givers of one or two specialized social roles and closely related roles in lesser representation.

1. Gifts in a grave. Rites of separation.
   a. Shaman-like leaders or practitioners of a kind predominate.
      Hopewell, Mound 11, Crematory Basin. Total: unknown. 136 kg. of obsidian debitage.
      Hopewell, Mound 29, M1922:91A. Total: 11 gift givers. Social composition: 0 : **11** : 0 : 0
      Snake Den, Mound C, Cremation. Total: 17 gift givers. Social composition: 0 : **12** : 2 : 0
   b. Nonshaman-like leaders predominate.
      Mound City, Mound 2, B16. Total: 15 gift givers. Social composition: **9** : 0 : 1 : 0
   c. High achievers in a sodality (earspools or breastplates) predominate.
      Hopewell Mound 25, B7. Total: 38 gift givers. Social composition: **33** : 0 : 2 : 0
      Seip-Pricer, Ceremonial Cache? Total 15 gift givers. Social composition: **13** : 0 : 1 : 1
      (In a normal looking grave but no human remains. Memorial?)
   d. Role of the individual predominates.
      Mound City, Mound 8, Central Altar. Total: 209 gift givers. Social composition: 0 : 6 : **202** : 0
      (See also Esch, Mound 1, B1. Total: 14 gift givers. Social composition: 2 : 1 : **8** : 0)[d]
      (See also Esch, Mound 2, B13a. Total: 20 gift givers. Social composition: 1 : 0 : **14** : 1)[d]

(*continued*)

Table 4.10. (*continued*)

2. Gifts in log tomb (which can be reopened) or on top of it or a primary mound. Rites of liminality.
   a. Society-wide leaders (celts) and high achievers in a sodality (breastplates) predominate.
      Hopewell, Mound 25, Sk260-261. Total: 186 gift givers. Social composition: **163** : 11 : 0 : 0
      Mound City, Mound 7, B12. Total: 32 gift givers. Social composition: **22**? : 5 : 0 : 0

III. Small ceremonies (1–3 gift givers). Not directly associated with the dead.
A. Gift givers are nonshaman-like leaders but not shamanan-like leaders or individuals in personal roles.
B. Gift givers are shaman-like leaders but not nonshaman-like leaders or individuals in personal roles.
C. Gift givers are individuals in personal roles but not shaman-like or nonshaman-like leaders.
Classes A and B are of equal frequency. Classes A and B combined are equally as common as Class C.

IV. Small ceremonies (1–3 gift givers). Directly associated with the dead.
A. Gift givers are nonshaman-like leaders but not shaman-like leaders or individuals in personal roles.
B. Gift givers are shaman-like leaders but not nonshaman-like leaders or individuals in personal roles.
C. Gift givers are individuals in personal roles but not shaman-like or nonshaman-like leaders
Class A is more frequent than class B, 3:2. Classes A and B combined are more frequent than Class C, 2:1.

[a] This estimate assumes that the number of earspools deposited in Hopewell Mound 25, Alter 1, is 500 (250 pairs). If the number of earspools in the Altar was 750–1000 (Carr, Goldstein, et al 2005:488, table 13.2, footnote a), then the estimated size of gathering represented by this feature would be 643–768 persons.
[b] Social composition statistics for gift givers are given as follows: # nonshaman-like leaders : # shaman-like leaders : # prestigious or ordinary individuals in personal roles : # clan members. The total number of gift givers cited usually is more than the sum of the number of nonshaman-like leaders, shaman-like leaders, individuals in personal roles, and clan members because some artifacts in graves and ceremonial deposits represent roles of unknown kinds, which are not tabulated here.
[c] The Turner earthwork is located in the Little Miami River Valley.
[d] The Esch mound group is located in north-central Ohio near Lake Erie.

and involved gift givers in many different kinds of leadership, sodality, clan, and ordinary social roles. Nonshamanic-like leaders and sodality members were the most common attendees. The size of this gathering is larger than each of the largest burial mound populations in the Scioto drainage (Tremper, Hopewell Mound 25, Seip-Pricer, Seip-Conjoined, Edwin Harness, Ater), suggesting that it involved multiple local symbolic communities.

Intermediate to large-sized gatherings of about 24–172 gift givers (Classes IB, IC, ID) again were not focused on the deceased and were fairly rare. However, they were more socially homogeneous, having involved persons from predominately one social role. Shaman-like roles concerned with hunt or war divination, divination in general, philosophy and cosmology, and other unknown roles were the most commonly predominant roles at these occasions. Gatherings in this size range that emphasized nonshaman-like leaders of whole communities or community-wide sodalities, sodality members, clan members, certain other institutionalized roles, or individuals in their personal (prestigious?) roles were less frequent. Most ceremonial gatherings of intermediate size, like the largest one, must have involved representatives of multiple local symbolic communities, because the numbers of leaders that attended these gatherings were more than one would expect to have resided in a single local symbolic community at one time.

Moderately sized gatherings comprised of about 11–38 gift givers and focused on the deceased (Class II) were also infrequent. They were variable in their nature, sometimes attended by gift givers of diverse social roles, sometimes predominated by gift givers of one kind of social role. The socially homogeneous gatherings varied widely in the kinds of roles they featured: shaman-like leaders, nonshaman-like leaders, sodality members, and individuals in personal roles. Gatherings of this moderate size need not, by their empirical signatures, have involved persons from multiple communities, but they could have. Both rites of separation and rites of liminality may have been the focus of these gatherings, given the varying opportunities that different kinds of tombs afforded for adding, subtracting, or rearranging grave goods, and given the varying placements of grave goods.

Very small gatherings of one to three gift givers (Classes III and IV) dominate the Scioto Hopewell record of ceremonial assemblies. These were sometimes centered on the deceased, sometimes not. Almost all were homogeneous in the kinds of social roles had by the gift givers who gathered. Gift givers at a single gathering were either only shaman-like leaders or only nonshaman-like leaders or only individuals in personal roles, in almost all cases. The ceremonies held at these gatherings most likely emphasized relationships with the deceased, including rites of separation and/or liminality, given the small number of attendees. The attendees, being few, probably came from only one local symbolic community.

In all, ritual gatherings in the Scioto-Paint Creek area must have had many different specific purposes, considering their great diversity in focus, size, and social compositions. Although the exact purposes of these different kinds of ceremonies have yet to be investigated systematically and are largely unknown at present, likely possibilities are suggested by the many goals of the various ceremonies that historic Native Americans of the Eastern Woodlands performed or by certain telling archaeological evidence. Large, public ceremonies of Scioto Hopewell people within their ceremonial centers probably had such goals as ensuring the fertility, balance, and well-being of the world by re-creating it through re-enactments and recountings of primordial mythic events or sequences; celebrating first fruits; offering thanks to important spiritual beings and ancestors for a variety of needs they provided and praying that these needs be met; divining for the hunt and other purposes; protecting crops; ensuring the well being and success of members of a specific clan or sodality through their ceremonies; obtaining personal power and blessings from personal spirit power animals through ceremonies of the sodality marked by platform smoking pipes; healing individuals; removing disease or misfortune from an entire community and renewing its health; purifying an entire community; wiping the social slate clean of social wrongdoings and pardoning crimes; settling serious crimes; instructing community members in moral behavior and traditional culture; cleaning and renewing a ceremonial center; performing rites of passage of youths into adulthood and uninitiated persons into sodality members; preparing corpses for burial and guiding souls of the deceased to an afterlife; disposing of powerful, decommissioned ritual paraphernalia of a group in a spiritually safe manner; and playing games, socializing, and having fun. Table 4.11 summarizes and provides bibliographic references for the purposes and components of large public ceremonies performed by historic Eastern Woodlands tribes.

Smaller public and private ceremonies that Scioto Hopewell peoples possibly held in their earthworks, and that have historic Woodland analogs or are indicated by archaeological evidence, had such purposes as ensuring the well being and success of clan or sodality members through ceremonies; obtaining personal power and blessings from personal spirit power animals; divining for the purposes of planning future actions, ensuring a productive hunt, diagnosing personal ailments, revealing guilty parties, and finding lost objects; healing the sick; performing rites of passage of youths into adulthood and uninitiated person into sodality members; arranging marriages across clan lines; readying corpses for burial and guiding souls of the deceased to an afterlife; disposing of powerful, decommissioned ritual paraphernalia of a group in a spiritually safe manner; exchanging staples among clans; reciprocally fulfilling social obligations to a linked clan; and organizing work groups for labor-intensive subsistence or building activities.

Ceremonies of some purposes probably involved gatherings that varied widely in their sizes, and in whether they were public or private. For example, among the historic Huron and Choctaw, healing an individual was undertaken most commonly in small, private ceremonies, yet also was a cause for calling together the community for a large feast (Swanton 1931:221; Trigger 1969:94, 96, 117–118).

Table 4.11. Supra-Household to Community-Wide Ceremonies Performed Historically by Woodlands and Plains Native Americans

Function[1]	Reference
to offer thanks	Callender 1978c:628; Callender 1978e:686; Howard 1981:224, 245; Hudson 1976:367; Mails 1972:158–175; Swanton 1928:574, 595; Trigger 1969:94
to cure one or more individuals	Callender 1978d:677; Grim 1983:68; Hoffman 1891:173; Swanton 1931:221; Trigger 1969:94, 96, 117–118
to remove disease and misfortune from an entire town	Driver 1969:357; Lurie 1978:696; Swanton 1928:535; 1946:769
to purify a community by all taking a medicine	Swanton 1928:568–569, 528
to purify a community by all bathing or fasting	Hudson 1976:324–325, 367, 374; Swanton 1928:553, 564, 582, 600–601, 603, 606
to renew a sacred pack/bundle, fire, or other object for community welfare	Callender 1962:31; Callender 1978a:643; Dillingham 1963:165–167; Hudson 1976:370–372; Swanton 1928:583, 591; 1946:771
to fast for a community's well-being	Driver 1961:415; Hudson 1976:369; Swanton 1928:546
to feast for a community's well-being	Trigger 1969:97
to renew and perpetuate the health of the community	Swanton 1928:546–547, 563, 1946:775
to pray for community wealfare, health, peace	Swanton 1946:758
to beseech ancestors for a long and happy life	Radin 1945:70
to beseech ancestors for one's return to earth after death with continuous consciousness	Radin 1945:7–8, 70–71
to pray to clan totems	Swanton 1928:549
to commune with powerful spirit-beings who can grant wishes	Hoffman 1891:151, 1896:78
to call in the deceased in preparation for a ceremony	Hoffman 1896:73, 78–79
to re-enact or recount a primordial, mythic event or sequence	Grim 1983:68, 70; Hoffman 1896:67, 87–89
to gather situationally to deal with some distress	Swanton 1928:548, 1946:747
to wipe the social slate clean of social wrongdoings, pardon crimes, forgive	Callender 1978c:629; Driver 1961:414–415; Hudson 1976:375; Swanton 1928:568, 595, 1946:759, 775
as a penance by a wrongdoer	Hoffman 1896:127
to renew peace	Swanton 1928:548
to affirm friendships	Swanton 1928:551
as a prelude to settling serious crimes	Hudson 1976:370
to instruct community members in moral behavior	Hudson 1976:372; Swanton 1928:582, 588, 596
to instruct adult sodality members in traditional culture	Grim 1983:68; Hoffman 1896:80
to instruct an initiate in the right way of life	Hoffman 1896:78, 96
to enculturate youths in cultural morals, mythology, tradition	Swanton 1946:756, 775
to "harden" children	Swanton 1946:709
to name children or title adults	Hudson 1976:325
to mark the passage of boys to manhood and girls to womanhood;	Callender 1978d:675; Chaudhuri and Chaudhuri 2001:53; Swanton 1928:570, 583
to encourage hard work and fighting among young men	Swanton 1946:756, 772
to marry a man and a woman	Swanton 1931:132–138; Swanton 1946:707
to bestow titles on adults or honor warriors	Callender 1978d:677; Hudson 1976:325; Swanton 1928:585, 1946:775
to initiate a community leader	Hudson 1976:326
to initiate a person or persons into a sodality	Hoffman 1891:187, 1896:67, 110
to raise the prestige of an individual	Trigger 1969:94
to demonstrate by deed the power of a person	Hoffman 1896:97–99
to offer a first born son as sacrifice to a chief	Swanton 1946:760

(*continued*)

Table 4.11. (*continued*)

Function[1]	Reference
to separate the dying or newly dead from the living and mourners from nonmourners	Callender 1978a:639, 1978c:626, 1978e:684; Swanton 1946:719, 722, 727–729, 755; Trigger 1969:49, 94, 106
to guide the deceased to a land of the dead or other liminal activities	Callender 1978d:676; Grim 1983:70–72; Hoffman 1896:67–68; Lurie 1978:696; Swanton 1931:171, 176, 179, 188; Swanton 1946:726–729
to reincorporate mourners with nonmourners and/or the deceased with the ancestors	Callender 1978c:626; Swanton 1931:174, 176–181, 183–185, 191–194; Swanton 1946:759, 726–727; Trigger 1969:106–112
for specifically an adoption ceremony that ended the mourning period	Callender 1978a:639, 1978d:684; Callender et al. 1978:659–660; Hall 1987
to pray for the reincarnation of spirits of dead animals who supply food	Swanton 1928:549
to bring rain for crops	Howard 1981:224
to protect a crop while it is growing	Swanton 1946:770
to ask for an abundant harvest	Callender 1978c:628; Swanton 1946:756, 758, 769
to celebrate a new moon and the fruits of the land at that time	Hudson 1976:365–366; Swanton 1928:550
to celebrate stages of growth of cultivated plants	Trigger 1969:96
to celebrate autumn harvest, including thanksgiving	Callender 1978c:629; Dillingham 1963:166; Hudson 1976:366–375; Swanton 1928:529, 534, 581; 1946:656, 681, 758, 770–771
to prepare a group of persons for hunting	Callender 1962:31
to celebrate a successful hunt	Driver 1961:415;
to prepare a group of persons for war[2]	Callender 1978c:628, 1978d:676, 1978e:685; Howard 1981:218; Lurie 1978:696; Ritzenthaler 1978:756; Ritzenthaler and Ritzenthaler 1970:92; Swanton 1931:162; Swanton 1946:756; 758, Trigger 1969:46, 94
to greet a successful, returning war party, celebrate their safe return, and/or distribute captives[2]	Callender 1978c:628, 1978a:642, 1978d:685
to offer thanks for success in hunting or in war, generally	Swanton 1928:580
to torture and kill a prisoner	Trigger 1969:50
to celebrate peace with an enemy town or tribe	Swanton 1946:756
for a local or regional council meeting or meeting of all men of a community	Driver 1961:415; Trigger 1969:72–78
for a sodality meeting with a public ceremonial component	Clifton 1978:734; Ritzenthaler 1978:754
to socialize, have fun, dance, and play competitive games between the sexes, communities, or other social divisions	Callender 1978c:629; Chaudhuri and Chaudhuri 2001:52; Feest and Feest 1978:777; Howard 1981:227, 263–267, 307–327; Ritzenthaler 1978:752; Swanton 1928:522–536, 556, 571, 586, 604, 606: 1931:142–144, 150, 221–223; 1946:674–682, 771, 775–778; Trigger 1969:100, 101, 106, 109
for a fair or market	Driver 1961:218
to welcome visitors subsequent to other ceremonies	Swanton 1928:585, 587
to lay out a new ceremonial grounds	Swanton 1928:544–546
to clean up and repair the ceremonial ground and buildings	Howard 1981:242; Hudson 1976:368
to erect temporary shelters for a long public cermony	Hudson 1976:367
to fast in preparation for a ceremony	Hudson 1976:369
to clean up a town/community of old and worn out items	Swanton 1928:580

[1]Multiple functions defined separately here may be combined in a single cerermonial gathering.
[2] One wonders whether Scioto Hopewell peoples might have had preparatory and celebratory feasts in their ceremonial centers for groups of persons who traveled to and returned from distant places for vision quests, initiations into adulthood, pilgrimages, gathering of powerful raw materials, and such.

Table 4.12. Numbers of Individual Burial Assemblages and Ceremonial Deposits that Represent Gatherings of Given Minimal Size Ranges, for 22 Ceremonial Centers Across Ohio[a]

Size of Gathering	Number of Individual Burial Assemblages and Ceremonial Deposits		Largest Burial Assemblages and Ceremonial Deposits	Size of Gathering
	Single[b]	*Multiple*[c]		
> 500	1	1	Hopewell Mound 25, Altar 1	514[d]
201–500	2	2	Turner, Mound 3, Central Altar	441
101–200	5	4	Mound City, Mound 8, Depository	209
51–100	2	3	Hopewell Mound 25, Sk. 260–261 together	186
26–50	6	6	Tremper, Lower Cache	172
11–25	24	21	Hopewell Mound 25, Copper Deposit	127
7–10	29	29	Hopewell Mound 17, Offering 1	113
4–6	57	65	Hopewell Mound 17, Offering 2	111
1–3	200	213	Hopewell Mound 25, Sk. 260 by itself	93
			Hopewell Mound 25, Sk. 261 by itself	93
Total	326	344	Turner, Mound 4, Central Altar	67
			Mound City, Mound 8, B2	58

[a]The ceremonial centers include: West mound, Turner, Boyle's Farm, Rutledge, Wright, Snake Den, Circleville, Rockhold, Seip, Ater, Bourneville, Hopewell, Mound City, Ginther, Shilder, Liberty, McKenzie, Tremper, Esch, Hazlett, Marietta, and North Benton.
[b]The number of gift givers represented by burial assemblages and ceremonial deposits, assuming that each multiple burial involved only a single gathering and episode of deposition.
[c]The number of gift givers represented by burial assemblages and ceremonial deposits, assuming that each multiple burial involved multiple gatherings and episodes of deposition.
[d]This estimate assumes that the number of earspools deposited in Hopewell Mound 25, Altar 1, is 500 (250 pairs). If the number of earspools in the Altar was 750–1000 (375–500 pairs), as estimated by Katharine Ruhl (personal communication, 2004; see also Carr, Goldstein, et al. 2005:488, table 13.2, footnote a), then the estimated size of gathering represented by this feature would be 643–768 persons.

The Sizes of Gatherings

The vast majority of the 458 gatherings analyzed were very small (Table 4.12), in contrast to the common mental image of large gatherings that the well-known, large earthen enclosures of the Scioto-Paint Creek area create. Over three-fourths (76.7%) of all gatherings involved zero to three gift givers, and nearly two-thirds (61%) involved one to three gift givers. The predominance of small gatherings characterizes both large earthen enclosures, like Hopewell, Seip, Liberty, and Ater, and small mound groups like McKenzie and West. Only eight burial assemblages and ceremonial deposits indicate gatherings of more than 90 gift givers, and only two suggest gatherings of more than 400 gift givers. Although one cannot know, from these estimates, the number of persons who attended ceremonies but did not offer gifts, the general picture is one of very few large gatherings that were attended by a whole local symbolic community or multiple whole, neighboring local symbolic communities. Such ceremonies would have involved several hundreds to many hundreds of people.

The sizes of the few, largest Ohio Hopewellian ceremonial gatherings estimated by the gift-giver method are on the order of a few hundred to five hundred gift givers (Table 4.12). This picture is supported by estimates made from the sizes of the largest burial populations in the Scioto-Paint Creek area (Table 4.13). Multiplying these populations by possibly one, two, three, or four ceremony attendees per deceased yields the gathering sizes shown. A maximum of four mourners per deceased person on the average appears to be a reasonable upper bound, if one considers that some deceased within these mounds were likely close relatives and had the same living relatives as their mourners. By this logic, ceremonial gatherings associated with all deceased within a large charnel house in the area would have ranged between about 200 and 700 persons – similar to the gift-giver estimate. Because not all of the dead on a charnel house floor died at once and were treated at the same time, these largest of ceremonial gatherings may have been somewhat smaller than the estimated range.

The exception to the above pattern is the 1,500+ maximum number of mourners

Table 4.13. Burial Populations and Possible Numbers of Mourners at Scioto Hopewell Earthworks and Mound Centers

Site and Mound	Burial Population	Times Number of Mourners per Deceased 1	2	3	4	Reference
Hopewell Mound 25, floor of charnel houses	98	98	196	294	392	Greber and Ruhl (1989:47–49)
Hopewell Mound 23 floor	52+	52+	104+	156+	208+	Shetrone (1926a:53–55)
Mounds 23 & 25 floors combined	150+	150+	300+	450+	600+	
Mounds 23 & 25 floors and above	154+	154+	308+	462+	616+	
All mounds at the Hopewell site	**218**+	218+	436+	654+	872+	Appendix 6.1 (data base)
Edwin Harness charnel house	176	176	352	528	704	Greber (1979a:34)
Russell Brown mounds	7+	7+	14+	21+	28+	Seeman and Soday (1980)
Edwin Harness & Russell Brown mounds	**183**+	183+	365+	549+	732+	
Seip-Pricer charnel house	110	110	220	330	440	Greber (1979a:34)
Seip-Conjoined, charnel house	43	43	86	129	172	Greber (1979a:34)
Seip-Pricer, Seip-Conjoined, & above-floor burials	171	171	342	513	684	Greber (1979a:34)
Ater Mound	**59**+	59+	118	177	236	Appendix 6.1 (data base)
Tremper Mound (co-mingled, cremated remains; count estimated by volume only)	375+?	375+?	750+?	1125+	1150+?	Mills (1916:280)
(Turner Great Burial Place)[a]	55+	55+	110	165	220	Greber (1979b:52)
(All burials at Turner)	**101**+	101+	202+	303+	404+	Greber (1979b:52)

[a]The Turner earthwork is located in the Little Miami valley.

estimated for the Tremper charnel house from its burial population (Table 4.13). This anomaly reflects the creation of alliances among local symbolic communities in the early Middle Woodland period, at the time Tremper was built, primarily through individual commoners as dyads rather than through leaders who represented their local symbolic communities. The latter strategy was used from the mid to last third of the Middle Woodland period, resulting in smaller burial populations and gatherings (see above, Changes in Alliance Strategies).

The burial of large numbers of deceased persons from multiple local symbolic communities under the roofs of single charnel houses in the Scioto valley, and the large numbers of living persons who occasionally assembled at those charnel buildings, had the purpose of creating and solidifying alliances among the communities. The logic of this strategy probably followed that of the historic Huron and Algonkian Feasts of the Dead (Chapter 3, An Example of a Sustainable Community). However, Scioto Hopewell multicommunity ceremonies were considerably smaller than the Algonkian events, which drew 1,000–1,600 individuals (Hickerson 1960), and the largest of Huron events, which involved the bones of about 1,000 deceased persons and the giving of over 1,200 presents (Trigger 1969:107). From this perspective, those Scioto Hopewellian local symbolic communities of the middle to late Middle Woodland period that placed their dead together in a big charnel house, and that were integrated by nonlocalized clans, crosscutting sodalities, and alliances, might be considered to have been a small tribe by historic standards. Indeed, the geographic expanse of the Huron tribe was close to the size of the Scioto-Paint Creek area (i.e., Ross County). The 200–700 hundred persons who are estimated to have attended the largest Scioto Hopewell gatherings corresponds to the minimum size of one–two breeding populations (Wobst 1974).

The Social Compositions of Gatherings

Ceremonial gatherings at the 22 Hopewellian mound and/or earthwork ceremonial centers that were studied can be characterized for the relative commonality of the social roles of participants. As a whole, the gatherings were overwhelmingly dominated by gift givers who were leaders or other prestigious individuals in contrast to persons of more ordinary roles (Table 4.14). This balance reflects the great number of sites and artifact assemblages in the sample that are of middle to late Middle Woodland age (e.g., Hopewell, Seip), when alliances were negotiated through leaders who were representative of their local symbolic communities, and the few sites and assemblages of early Middle Woodland age (Tremper, Mound City), when alliances were worked out largely through the relations of individual commoners as dyads. The data also show that leaders and other persons of high prestige who were marked by insignia not obviously tied to shaman-like roles, such as plain headplates, earspools, breastplates, and crescent pendants, gave gifts about twice as frequently as did persons in shaman-like roles. Thus, when considering the broad spectrum of means by which Scioto Hopewellian societies were regulated, including not just individual leaders but also sodalities, nonshamanic means were essential. In contrast, regulation by specifically individual leadership was tied strongly to shaman-like means, although not classic shamans (see above, Leadership).

Ceremonial gatherings of large size divide strongly into two kinds by their compositions: socially homogeneous gatherings that involved primarily one social role or a closely related sets of roles, and socially diverse gatherings that involved many kinds of social roles approaching the range that would be found in a local symbolic community or a sustainable community (Table 4.15). Socially homogeneous gatherings are evidenced by both large ceremonial deposits and large burial offerings. In contrast, socially diversified gatherings are reflected in only large ceremonial deposits.

Socially homogeneous gatherings were very common. Their predominating social roles included: (1) specialized, shaman-like practitioners marked by cones/hemispheres for divination, mica mirrors for divination, galena cubes possibly used in divination, quartz and obsidian project points for hunt and/or war divination, geometrics expressing cosmological concepts, or chlorite disks of unknown function; (2) prestigious sodality members marked by metal breastplates, earspools, or smoking pipes; (3) community-wide leaders symbolized by copper celts; (4) other nonshaman-like leaders marked by reel-shaped gorgets, crescent-shaped pendants, or other kinds of pendants; (5) a Bear society comprised of some Bear clan members and indicated by bear canines; (6) members of the elk, wolf, and fox clans symbolized by the power parts of their animal totems or eponyms; and (7) prestigious, personal roles indicated by masses of pearl and/or shell beads. In each such gathering, gift givers of one social role predominated, and were sometimes complemented by some gift givers in related roles and occasionally by a few persons in unrelated roles.

The systematic segregation of gift givers of these different social roles from one another in different socially homogeneous ceremonies suggests very fundamental and institutionalized differentiation of these roles in their spheres of action and of the functions of the ceremonies in which they predominated in Ohio Hopewellian societies. Focusing specifically on the roles of shaman-like practitioners, this pattern of segregation is fully expectable from crosscultural trends in the changing organization of roles of magico-religious practitioners as societal size and complexity increase (Winkelman 1989, 1990, 1992). In small-scale hunting and gathering societies and occasional horticultural societies, the shaman as a leader performs a great diversity of tasks for the

Table 4.14. Estimates of the Numbers of Gift Givers of Various Social Roles (Categorized), for 22 Ceremonial Centers in Ohio [1]

Social Category[2]	Nonshaman-like Leaders	Shaman-like Leaders	Prestigious Persons	Ordinary Persons	Prestigious Clanpersons	Ordinary Clanpersons	Total
Total Number of Gift Givers[3]	1389/1403	792/799	417/423	300/305	28/29	51/59	2977/3018
Percentage of Gift Givers	46.7/46.5%	26.6/26.5%	14.0/14.0%	10.1/10.1%	0.97/0.96%	1.71/1.95%	100/100%
Number of Gift Givers, without Two Largest Deposits[4]	589/603	656/663	404/410	281/286	19/20	39/47	1988/2029
Percentage of Gift Givers, without Two Largest Deposits	29.6/29.7%	33.0/32.7%	20.3/20.2%	14.1/14.1%	0.96/0.99%	1.96/2.32%	100/100%

[1] The 22 ceremonial centers are listed in Table 4.12 For each entry of this table, the number before the "/" is the number of gift givers of the social role indicated by a burial assemblage and/or ceremonial deposit, assuming a multiple burial to have been only a single gathering and episode of deposition. The number after the "/" is the number of gift givers of the social role indicated by a burial assemblage and/or ceremonial deposit, assuming a multiple burial to have been multiple gatherings and episodes of deposition. The same format holds for the percentages.

[2]The category, "shaman-like leaders", includes persons marked by equipment certainly or probably used in the crossculturally common shamanic tasks of war and/or hunt divination, other forms of divination, the keeping of mythology and cosmology, healing, processing corpses and/or guiding of souls to an afterlife, leading public ceremonies, working with facinating raw materials, and trance induction, as well as other unidentified activities. "Nonshaman-like leaders and persons of high prestige" include probable society-wide leaders marked by plain metallic headplates and celts, sodality members or high achievers marked by metallic breastplates and earspools, and other distinguished social roles indicated by copper and mica crescents, reel-shaped gorgets, large communal pipes, and effigy human "trophy" parts. "Prestigious clan leaders" and more "ordinary clan members" are respectively distinguished by metal or mica effigy animal power parts (e.g., jaws, teeth, talons) and by power parts of bone. "Prestigious personal roles" and "ordinary personal roles" are respectively taken to be marked by metallic items of personal adornment (e.g., necklaces, beads, buttons, hair skewer pins, bracelets) in contrast to their nonmetallic equivalents and utilitarian objects (e.g., hammerstones, atl-atl, stone celts). The definition of these social categories from their diagnostic artifact types is described in Table 4.1.

[3]The estimates includes all grave assemblages and ceremonial deposits listed in Carr, Goldstein, et al. (2005: Appendices 13.3 and 13.4).

[4]The estimates includes all grave assemblages and ceremonial deposits listed in Carr, Goldstein, et al. (2005: Appendices 13.3 and 13.4), excepting the two largest deposits: Hopewell Mound 25, Altar 1, and Turner, Mound 3, Central Altar, which are both heavily biased toward gift givers who were nonshaman-like leaders.

Table 4.15. Estimates of Numbers of Gift Givers of Various Social Roles (Categorized) Represented by Large Burial Assemblages and Ceremonial Deposits (> 15 Items), for 22 Ohio Hopewell Ceremonial Centers[a]

Provenience	Nonshaman-like Leaders	Shaman-like Leaders	Personal Roles Prestigious and Ordinary	Clan Roles Prestigious and Ordinary	Total Size of Gathering
Socially Homogeneous, Specialized Gatherings: Communal					
Communal Pipes					
Seip-Pricer, Pipe Cache					5 communities
Socially Homogeneous, Specialized Gatherings: Personal					
Individual, Platform Pipes					
Mound City, Md. 8, Central Altar & Depository Bag	0	6	**202**	0	209
Tremper, Lower Cache	3	17	**156**	5	172
*Hopewell, Shetrone's Md 17, Offering 1	5	30	**75**	0	113
Socially Homogeneous, Specialized Gatherings: Shaman-Like Leadership					
Cones/Hemispheres					
Hopewell, Shetrone's Md 17, Deposit 2	13	**90**	7	1	111
Points					
*Hopewell, Md. 25, Altar 2	7.5	**27**	12.5	2	52
Mound City, Md. 3, Altar & Crematory Basin	0	**24**	4	0	31
Geometrics					
Hopewell, Md. 25, Copper Deposit	11	**114**	2	1	127
Raw Materials					
*Hopewell, Shetrone's Md. 29, Moorehead Md. 17	not role-specific				
Mound City, Md. 7, mica crescent	0	**10**	0	0	10
*Mound City, Md. 13, B1	2	**7**	**10**	1	14
Mound City, Md. 23, B1	0	0	0	0	0
*Hopewell, Shetrone's Md. 29	not role-specific				

(*continued*)

Table 4.15. (*continued*)

Provenience	Nonshaman-like Leaders	Shaman-like Leaders	Personal Roles Prestigious and Ordinary	Clan Roles Prestigious and Ordinary	Total Size of Gathering
Mound City, Md 5, Altar	0	**1**	0	0	1
Hopewell Md. 2, Central Cache	**1**	**1**	0	0	2
Hopewell Md. 11, Crematory Basin	1	**3**	1	0	7
Hopewell Md. 1, Central Cache	0	**4**	0	0	4
Socially Homogeneous, Specialized Gatherings: Nonshaman-Like Leadership, Sodality Achievement					
Metal Breastplates, Celts, Earspools					
*Hopewell Md. 25, Sk260–261	**163**	11	0	0	186
*Hopewell Md. 25, B7	**33**	3	2	0	38
*Hopewell, Shetrone's Md. 17, Offering 1	5	30	**75**	0	113
Seip-Pricer, Ceremonial Cache	**13**	0	1	1	15
Reel-Shaped Gorgets, Crescents					
Turner, Md. 15, Cache	0	0	0	1	1
Tremper, Sandstone Grave	**9**	0	0	0	10
Pearl and Shell Beads (300 max per necklace)					
*Hopewell Md. 25, Altar 2	7.5	**27**	12.5	2	52
*Hopewell Md 25, Sk260–261	**163**	11	0	0	186
*Mound City, Md 13, Deposit 5	3	**13**	**6**	2	24
*Mound City, Md 13, B1	2	**7**	**10**	1	20
Hopewell Md. 26, Crematory Basin	**4**	0	2	0	6
Hopewell Md. 25, B6–7	**36**	0	3	0	46
Hopewell Md. 2, B3	**3**	0	0	0	5
Hopewell Md. 25, B248+249	**3**	1	0	0	13
Hopewell Md. 28, Crematory Basin	**3**	0	2	0	5
*Seip-Pricer, Burnt Offering	4	**14**	1	**7**	29
Rutledge Md. 1, B3	0	0	0	0	2
Hopewell Md. 26, Deposit	2	0	3	0	5

(*continued*)

Table 4.15. (*continued*)

Provenience	Nonshaman-like Leaders	Shaman-like Leaders	Personal Roles Prestigious and Ordinary	Clan Roles Prestigious and Ordinary	Total Size of Gathering
Socially Diversified Gatherings					
Hopewell, Md. 25, Altar 1	**463**[b]	32	12.5	3	514[b]
Turner, Md. 3, Central Altar	**337**	77	7	16	441
Socially Diversified Gatherings: Including Members of a Bear Society, Bear Clan, or Other Clan					
Bear Canines (4 max per necklace)					
Seip-Pricer, Cremation Basin 2	?				
*Seip-Pricer, Burnt Offering	4	**14**	1	**7**	29
Hopewell Md. 25, B34	**4**	0	0	**5**	14
Harness Md, Cremation	?				
Other Animal Teeth, Claws					
Hopewell Md. 23, Sk. 207	1	0	0	0	3
Mound City, Md. 8, B3	1	0	1	1	6
Mound City, Md. 8, B2	0	**49**	2	2	58
Mound City, Md. 2, B16	**9**	0	1	0	15
*Mound City, Md. 13, Deposit 5	3	**13**	6	2	24
Hopewell, Md. 25, B41A,B,C	2	1	0	0	16

[a] The number of gift givers indicated by burial assemblages and/or ceremonial deposits assumes that each multiple burial was only a single gathering and episode of deposition.
[b] This estimate assumes that the number of earspools deposited in Hopewell Mound 25, Altar 1, is 500 (250 pairs). See Table 4.10, Footnote a, and Carr, Goldstein, et al. (2005:488, table 13.2, footnote a), for a perspective on this estimate.
* An asterisk indicates a ceremonial deposit or grave assemblage with more than one kind of item in great frequency and, hence, listed more than once.

social group, such as divining, healing, managing hunting, keeping the cosmology and mythology of the people, and helping the dead to pass over. Roles are centralized in the shaman's one person. As the size and complexity of a society increases and agriculture becomes more important, as was the case for Scioto Hopewell peoples, the many roles of the shaman become segregated among multiple, more specialized magico-religious practitioners – what are called here "shaman-like practitioners" (see above, Leadership). These persons may operate independently as individuals or multiple persons in the same role may work together as a society or sodality of practitioners (see above, Sodalities and Ceremonial Societies). The segregation, in the Ohio case, of shaman-like roles among multiple, different kinds of practitioners and the segregation of these different kinds of practitioners from one another in their ceremonies fits the crosscultural pattern for societies transitioning to agricultural lifeways. In addition, each of the several kinds of homogeneous gatherings of shaman-like practitioners appears to exemplify the collective ceremonies that are held by specialized professional societies or sodalities of such practitioners and that are found across cultures. The segregation of the roles and ceremonies of the other nonshaman-like persona and social groups listed above is not an aspect of Winkelman's theory, but is consistent with Service's (1962) concept of the tribe organized through pan-tribal sodalities, with Braun and Plog's (1982) model of the origins of tribal organization, and with charted prehistoric sequences of sodality and tribal development in the American Southwest (e.g., Braun and Plog 1982) and Europe (Voss 1980, 1982).

Certain social roles are noticeably absent as core elements of the large, socially homogenous gatherings of Ohio Hopewell societies. The shaman-like healer's absence can probably be attributed to the power of this person in one-on-one or small group arenas rather than larger, public affairs. The shaman-like body processor and/or psychopomp and society-wide leaders marked by headplates, although both socially critical, were rare individuals and could not have constituted the numeric core of a large gathering. In addition, five of the nine known animal-associated clans (Feline, Raptor, Raccoon, Beaver, Nonraptorial Bird) did not predominate in any of the large, socially homogenous gatherings, even though some of these absent clans were larger or held more critical social roles than the four represented clans (see above, Clan Organization).

Large, socially diversified gatherings – the second fundamental kind of gathering in Ohio Hopewellian societies – were rare. These gatherings included persons who together spanned all or most of the roles encompassed in the separate, socially homogeneous gatherings. Both the large size and the broad spectrum of social roles that characterized socially diversified gatherings indicate that they involved multiple local symbolic communities or a whole sustainable community.

Expectedly, the gatherings that involved diverse social roles and whole sustainable communities were larger than the largest of socially homogeneous gatherings. The diversified gatherings evidenced by ceremonial deposits in Altar 1 of Hopewell Mound 25 and the Central Altar of Turner Mound 3, with 514 and 441 gift givers, respectively, were two to three times larger than the largest socially homogeneous gatherings, which were comprised primarily of persons who were members of sodalities marked by smoking pipes or breastplates and numbered 209 and 186 gift givers, respectively. The largest socially homogenous gatherings of specialized, shaman-like leaders, who were marked by copper geometrics with cosmological referents and cones/hemispheres for divination, were smaller yet, with 127 and 111 gift givers. Homogeneous gatherings of shaman-like hunt or war diviners indicated by quartz and/or obsidian points, important and rare social roles marked by crescent pendants and reel-shaped gorgets, and a Bear society and bear clan symbolized by bear canines were still smaller, with a maximum of 52 gift givers (Table 4.15).

The social compositions of small gatherings attended by three or fewer gift givers, whether at large ceremonial centers or small mound groups, fell strongly into three types: gatherings where only nonshaman-like leaders gave gifts, gatherings where only shaman-like leaders gave gifts, and those where only ordinary or prestigious individuals in their personal roles made offerings. Ceremonies that mixed two of these social categories were very rare in burial settings and only slightly more common in contexts not focused on burial. The trimodal pattern reiterates the segregation of gift givers of different kinds of social roles among different large socially homogeneous gatherings that were evidenced by large ceremonial deposits and burial offerings. The separation of shaman-like leaders from nonshaman-like leaders in both small and large ceremonies of most kinds and in both burial and nonburial ceremonial contexts indicates the strongly institutionalized differentiation of these basic categories of social roles in their spheres of action and of the functions of the ceremonies in which they were dominant.

The Social Compositions of Gatherings Related to Their Sizes

The roles of persons who attended and gave gifts at Ohio Hopewell ceremonial gatherings varied systematically with their size, and in sociologically predictable manners. The ratio of leaders of shaman-like and nonshaman-like nature to individuals in personal roles who gave gifts at gatherings systematically increased with the size of the gatherings (Figure 4.23; Carr et al. 2005:522, table 13.16). This trend undoubtedly reflects the greater need for leadership when organizing large crowds than small gatherings.[35]

The proportion of shaman-like leaders to nonshaman-like leaders who gave gifts at gatherings differed little among gatherings of various sizes, with the exception of very large gatherings of 150–300 gift givers. At most gatherings, the proportion of shaman-like leaders to nonshaman-like leaders who participated through giving gifts ranged from approximately equal to double the number of nonshaman-like leaders. At very large gatherings, nonshaman-like leaders outnumbered shaman-like leaders by a ratio of 15:1

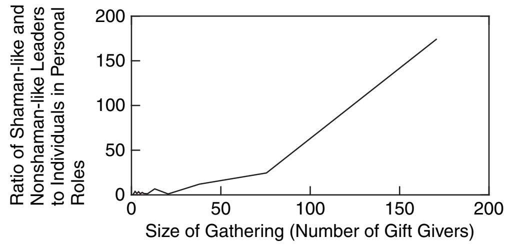

Figure 4.23. Ratio of leaders of shaman-like and nonshaman-like nature to individuals in personal roles who gave gifts at gatherings, as a function of the sizes of the gatherings.

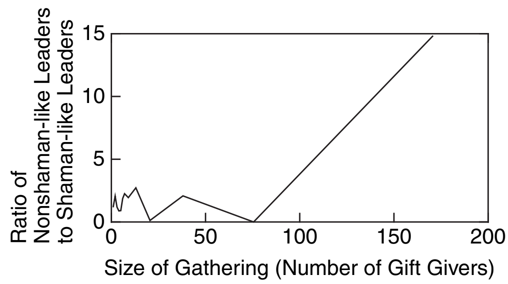

Figure 4.24. Ratio of nonshaman-like leaders to shaman-like leaders who gave gifts at gatherings, as a function of the sizes of gatherings.

(Figure 4.24; Carr et al. 2005:522, table 13.16). This pattern most likely reflects the need to control large crowds with the predictable means of institutionalized, nonshaman-like leadership in contrast to the often idiosyncratic ways of shaman-like practitioners.

The Sizes and Social Compositions of Gatherings at Sites of Different Function

In the Scioto-Paint Creek area, the ceremonial centers of Hopewell and Mound City both stand apart functionally from other large centers like Seip, Liberty, and Ater in having been burial places reserved primarily for leaders and other persons of much prestige. Tremper is unique functionally as a center where apparently most or all of the persons who comprised a sustainable community and who died during a given time interval were buried (Chapter 3, Local Symbolic Communities, Sustainable Communities). Not unexpectedly, Hopewell, Mound City, and Tremper are the only sites in the area that had very large gatherings of 51 or more gift givers (see below, Table 4.16). In contrast, the large Pricer mound in the Seip earthwork and the large Ater mound had peak gatherings of only 29 and 35 gift givers, respectively. The paucity of fancy artifacts and artifacts in general in the Edwin Harness mound in the Liberty earthwork suggests small gatherings there, as well.

These differences in the sizes of gatherings among ceremonial centers of different functions are echoed in the social compositions of gatherings there. At Hopewell, a high 80.7% to 81.3% of all gift givers were leaders of a shaman-like or nonshaman-like nature, whereas only 18.7% to 19.3% were more ordinary persons. At Seip-Pricer, where a higher the proportion of ordinary persons were buried, nearly twice the percentage of gift givers were more ordinary persons – 31.3% – with leaders having comprised only 68.7%. At Tremper, where most or all community members were buried and more ordinary persons must have greatly outnumbered their leaders, the percentage of gift givers who were more ordinary persons was considerably higher – 84.3% – with leaders having made up only 15.7%.

In contrast to these large ceremonial centers, eight small Hopewellian mounds or mound clusters in the Scioto-Paint Creek area and the nearby Circleville area all had, expectedly, very small ceremonial gatherings, with at most 7–10 gift givers (Carr et al. 2005:509, table 13.8). The social compositions of gatherings at these small sites fall into two kinds. At some mound sites (Bourneville, Rockhold, Shilder, Snake Den, West), leaders of a shaman-like and nonshaman-like nature constituted most gift givers. At other mound sites (McKenzie, Circleville), more ordinary persons comprised most or all gift givers. Only one mound site (Ginther) had gatherings with roughly equal numbers of leaders and ordinary gift givers. In all, the size and compositions of gatherings at small sites suggests their use by one to a few residential communities, with some separation of leaders from ordinary persons among mounds at burial.

Changes over Time in the Sizes and Social Compositions of Gatherings

The sizes and social compositions of gatherings within the large earthen enclosures in the Scioto-Paint Creek area changed over time in relation to shifting strategies for forming and maintaining alliances between local symbolic communities. The sites of Tremper, Mound City, Hopewell, Seip, and Ater, which form a temporal sequence, can be used to trace these changes. Tremper, Mound City, and Hopewell can be compared to each other for the characteristics of their gatherings because they are alike functionally, having been regionally premier centers (see above). Seip and Ater also order temporally, appear to have been functionally analogous, and thus are useful for comparing gatherings.

Three changes occurred over time in the characteristics of gatherings at large ceremonial centers in the Scioto-Paint Creek area. (1) The frequency of large gatherings, with size measured in numbers of gift givers, increased multifold, from the early to middle Middle Woodland period, from Tremper to Mound City to Hopewell. The average size of large gatherings also increased. Then, during the late Middle Woodland, from Seip to Ater, the frequency of mid-sized gatherings (there were no large ones) and the average size of gatherings decreased (Figures 4.25A, 4.25B, Table 4.16). (2) The proportion of leaders of shaman-like and nonshaman-like kinds who gave gifts, compared to individuals in personal roles who gave gifts, rose from the early to middle Middle Woodland period, from Tremper to Mound City to Hopewell. The proportion then decreased from the middle to late Middle Woodland, from Hopewell to Seip to Ater (Figure 4.26, Table 4.17). (3) The proportion of nonshaman-like leaders to shaman-like leaders who gave gifts increased progressively over the entire Middle Woodland period, from Tremper and Mound City to Hopewell, to Seip, to Ater (Figure 4.27, Table 4.17).

Initial increases, during the early through middle Middle Woodland period, in the sizes of gatherings and the proportions of leaders

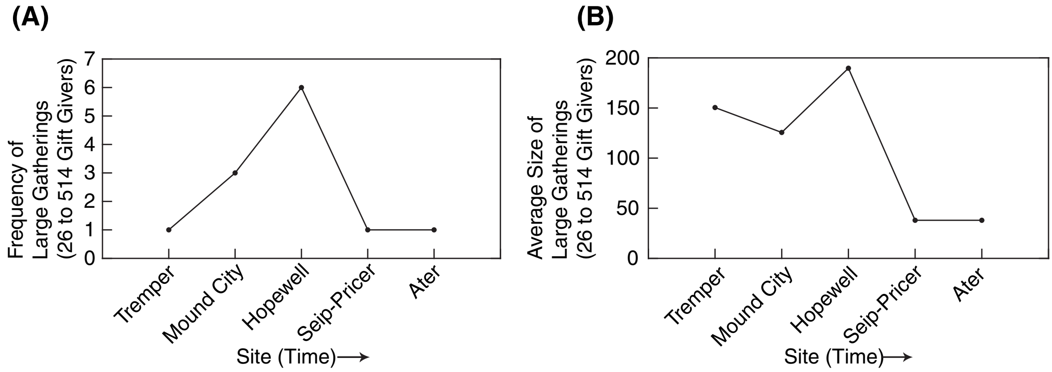

Figure 4.25. Change over time in (A) the frequencies of large gatherings and (B) the average size of large gatherings, measured in numbers of gift givers.

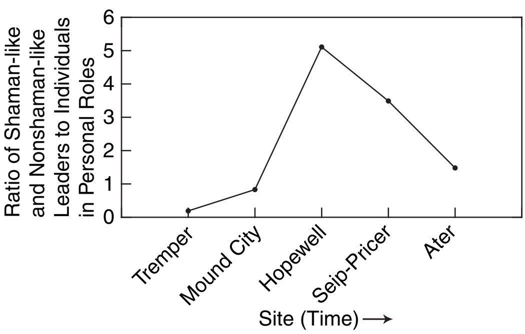

Figure 4.26. Change over time in the ratio of leaders of shaman-like and nonshaman-like kinds compared to individuals in personal roles who gave gifts at gatherings.

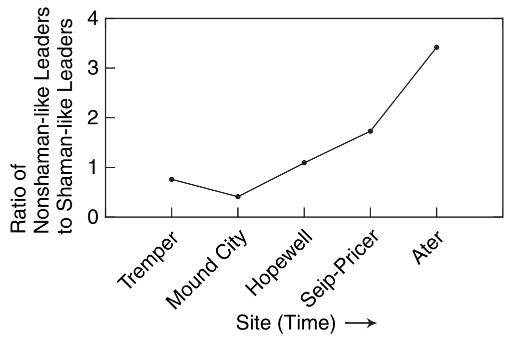

Figure 4.27. Change over time in the ratio of nonshaman-like leaders to shaman-like leaders who gave gifts at gatherings.

to ordinary individuals who were the focus of ceremony and gave gifts reflect changes in alliance strategies that occurred then. Means for making and maintaining alliances shifted from primarily economic and social relations among individual commoners as dyads in nonmortuary contexts, with buttressing in mortuary ceremonies, to negotiations that were placed in the hands of leaders who represented their local

Table 4.16. Numbers of Individual Burial Assemblages and Ceremonial Deposits that Represent Gatherings of Given Minimal Size Ranges, for Large Ceremonial Centers through Time

Sites: "Youngest" to "Oldest"	Size of Gathering[1]								
	1–3	4–6	7–10	11–25	26–50	51–100	101–200	201–500	> 500
Ater	19/20	1/1	2/2	0/0	1/1				
Seip	35/42	9/10	5/5	4/3	1/1				
Hopewell, All	59/63	25/25	10/10	9/9	1/1	0/2	4/3		1/1
Mound City	21/21	8/12	4/4	5/4	2/2	1/1	0/0	1/1	
Tremper	0/0	0/0	0/0	2/2	0/0	0/0	1/1		

[1]For each entry of this table, the number before the "/" is the number of burial assemblages and/or ceremonial deposits within the given size range of gatherings, assuming each multiple burial to have been only a single gathering and episode of deposition. The number after the "/" is the number of burial assemblages and/or ceremonial deposits within the given range of gatherings, assuming each multiple burial to have been multiple gatherings and episodes of deposition.

Table 4.17. Estimates of the Numbers of Gift Givers of Various Social Roles (Categorized) for Individual Large Ceremonial Centers through Time[1]

Ratio of Social Categories	% Nonshaman-like and Shaman-like Leaders to Personal Roles (Prestigious and Ordinary)	% Nonshaman-like Leaders to % Shaman-like Leaders
Sites, "Youngest" to "Oldest"		
Ater	57.4% to 38.9% = 1.48	44.4% to 13.0% = 3.42
	55.3% to 39.3% = 1.41	42.8% to 12.5% = 3.42
Seip	68.7% to 19.7% = 3.49	43.5% to 25.2% = 1.73
	68.7% to 20.4% = 3.37	43.9% to 24.8% = 1.77
Hopewell, All	81.3% to 15.9% = 5.11	42.4% to 38.9% = 1.09
	80.7% to 16.0% = 5.04	42.1% to 38.6% = 1.09
Mound City	44.9% to 53.8% = 0.83	13.0% to 31.9% = 0.41
	44.9% to 53.4% = 0.84	13.1% to 31.9% = 0.41
Tremper	15.7% to 81.68% = .19	6.81% to 8.90% = 0.76
	15.7% to 81.68% = .19	6.81% to 8.90% = 0.76

[1]The percentages in this table are drawn from Carr, Goldstein, et al. (2005:522, table 13.16), retaining all of their assumptions.
Note: For each ratio of social roles (column) for each site (two rows) of this table, the percentages and ratio on the top line pertain to gift givers of the social role indicated by burial assemblages and/or ceremonial deposits, assuming each multiple burial to have been only a single gathering and episode of deposition. The percentages and ratio on the bottom line pertain to gift givers of the social role indicated by burial assemblages and/or ceremonial deposits, assuming each multiple burial to have been multiple gatherings and episodes of deposition.

symbolic communities and that occurred largely at the ceremonial centers (see above, Changes in Alliance Strategies). During the early Middle Woodland, the numbers of gift givers at gatherings within earthworks were relatively small because alliance building occurred largely outside of the earthworks in economic and social forms and only secondarily within them through spiritual and religious means i.e., burying the dead from multiple local symbolic communities together with one another.[36] The proportions of leaders compared to ordinary persons who gave gifts at mortuary ceremonies within earthworks was low at this time because it was primarily the dyads of ordinary persons who were tied through economic relations, social relations, and especially clanship who came together in the earthworks and were engaged in processing the dead and placing gifts with them. The importance of individual dyads to alliance making is evident at Tremper and Mound City in their large ceremonial deposits of personal smoking pipes, and in several additional ways at Tremper (see above, Changes in Alliance Strategies).

Later, in the middle Middle Woodland period, at Hopewell Mounds 1, 17, 23, 25, 29 (Shetrone's), and perhaps 2, and others, the numbers of gift givers rose substantially because alliance building strategies shifted to ritualized cooperative and/or competitive material displays that were nested within mortuary rituals in the earthworks, themselves, in contrast to earlier social and economic alliance-forming activities that had occurred largely outside of the earthworks. The displays involved whole local symbolic communities orchestrated in relation to one another rather than dyads of individuals. Spiritual means of connecting local symbolic communities to one another as whole social units through mortuary-related rituals began to develop. These developments are seen in the charnel buildings under Mound 25, where three or more local symbolic communities buried their dead together by community on one ceremonial floor but in adjacent buildings or rooms. In contrast, at Tremper, the cremated remains of people from different local symbolic communities were intermingled with one another, without identifying communities and with emphasis on the union of individuals, clanpersons, and clans rather than communities as wholes. In the middle Middle Woodland period, the proportion of leaders compared to ordinary persons who gave gifts rose because ceremonies in the earthworks and the alliance-building activities they encompassed came to be orchestrated by leaders and focused on leaders who represented their local symbolic communities more so than on ordinary persons in dyadic relationships.

The strategies for building alliances among communities that are evident at Hopewell Mound 25, including cooperative/competitive displays and displays focused on leaders as representatives of their communities, were foreshadowed at the somewhat earlier Mound City site. There, individuals from multiple local symbolic communities gathered and buried select dead within a single earthen enclosure, signifying their alliance, but in multiple small mounds rather than on one large ceremonial floor of the kind at Hopewell Mound 25. The number of gift givers and the proportion of leaders to other individuals who gave gifts at Mound City are somewhat larger than those at Tremper and less than those at Hopewell.[37]

In the late Middle Woodland, the spiritual means for alliance formation that had begun to develop and be expressed at the Mound City and Hopewell sites, and that involved local symbolic communities burying their dead together by community within one enclosure or on one ceremonial floor but in separate buildings, became perfected. At the Seip-Pricer and Edwin Harness mounds, and probably the Porter mound, portions of multiple local symbolic communities were buried in the same charnel houses in separate rooms. Different communities were clearly delineated spatially and related to one another as whole social units within each charnel house. As this spiritual strategy for creating and maintaining alliances matured, cooperative and/or competitive displays between local symbolic communities became less necessary and gift-giving decreased in frequency and flamboyance. The proportion of leaders compared to ordinary persons who gave gifts, however, remained high because mortuary rituals for alliance building remained in the hands of leaders.

At the end of the Middle Woodland period, the overall average number of gift givers at ceremonies decreased from Seip-Pricer to Ater: from 2.1 to 1.4 gift givers per deceased (Carr, Goldstein, et al. 2005:484, 508, tables 13.1,13.7). This change reflects the breakdown of an alliance in the Scioto-Paint Creek area from a network of three local symbolic communities to a network of two (see above, Changes in the Number of Allied, Local Symbolic Communities). The decrease from Seip-Pricer to Ater in the proportion of gift givers who where shaman-like or nonshaman-like leaders compared to individuals in personal roles (Figure 4.26) suggests an uncertainty in the ability or the lesser capability of community leaders to hold together alliances through spiritual means and mortuary rituals within earthworks, and indicates some reversion to personal, dyadic means of forming and maintaining intercommunity alliances, perhaps outside of ceremonial centers. Evidence at the McGraw site for frequent trade of utilitarian and domestic ceremonial ceramics within the Scioto-Paint Creek region (Carr and Komorowski 1995) supports this inference.[38]

In the above sequence, the absolute numbers of persons who gathered for ceremonies, in contrast to the numbers of persons who gave gifts, is not certain. The number of gift givers at a ceremony reflected both the number of persons who gathered for it and the alliance strategy that was used. However, there are two pieces of evidence that the absolute sizes of gatherings – both their maximal sizes and their average sizes – increased steadily through much of the Middle Woodland period, rather than increased and then decreased over time as one might initially conclude from the above trend in numbers of gift givers. First is the progressive increase in the size of earthworks over time. The apparently first Scioto Hopewellian enclosure, Tremper, was 1.4 hectares in area. Mound City, begun slightly later, and its contemporaneous adjacent complement, Hopeton, were 5.2 hectares and 16 hectares, respectively, for a total of 21 hectares. In the middle part of the Middle Woodland period, the Hopewell subrectangular enclosure with 44 hectares was built. Later, its size was brought up to 51 hectares with the addition of a square enclosure (J. Burks, personal communication 2004; Greber 1997:220). During the late Middle Woodland period, five earthen enclosures of 31 hectares each were constructed, four of them in complementary pairs that totaled 62 hectares. These steady increases in earthwork sizes through time imply larger labor pools over time (Bernardini 2004) and probably larger ceremonial gatherings over time. At the tail end of the Middle Woodland period, the smaller charnel house and mound built at the Ater site compared to the Seip-Pricer and Edwin Harness charnel houses and mounds, and the lack of earthwork construction at Ater, imply a decrease in absolute sizes of gatherings then. The much smaller number of gift givers that assembled at Ater compared to Seip-Pricer also is a good estimate of this decrease, given that the alliance strategy used at these two sites was the same and is held constant in the comparison.

The second kind of evidence that gathering sizes increased over much of the Middle Woodland period is the change in the size and style of earspools over time. Earspools became larger and contrasted more in their profile through time (Ruhl 2005), which would have improved their visibility by persons at a distance. In turn, this suggests, among other alternatives, that the ceremonies in which earspools were worn and displayed involved increasingly larger audiences, with greater wearer-to-viewer distances over time. No downturn in earspool size is documented at the end of the Middle Woodland, when the Ater charnel house was built, but this does not mean that large gatherings continued to assemble there as they had earlier at the Seip-Pricer and Edwin Harness charnel houses. The traditional, large earspools worn in ceremonies at Seip-Pricer and Edwin Harness would have been adequate at the smaller gatherings at Ater implied by its smaller earthen construction.

Both of these kinds of evidence for the increasing absolute size of ritual gatherings over most of the Middle Woodland period are consistent with grosser, settlement distribution data (Chapter , Ecological Setting; Seeman and Branch 2006). These data show an aggregation of people into the main trenches of the Scioto and Paint Creek area from small tributary valleys there, as well as from farther north and south along the Scioto valley, at the time of transition from the Early Woodland period to the Middle Woodland period. There is a potential for the numbers of people who came into the main trenches of the Scioto and Paint Creek valleys for habitation and/or participation in rituals at earthworks to have been substantial, up to a doubling of people, but a more detailed estimate cannot yet be made (Chapter , Ecological Setting and Figure 2.13).

In sum, throughout the Middle Woodland period in the Scioto-Paint Creek area, the numbers of persons who gave gifts at ceremonial gatherings and the proportions of leaders to ordinary people who gave gifts increased and decreased. These trends mark changes in both the sizes of ceremonial gatherings and the mechanisms by which alliances among local symbolic communities were formed and maintained. The absolute sizes of ceremonial gatherings in the area probably increased steadily from the beginning of the Middle Woodland to just before its end, when smaller gatherings occurred at the Ater charnel house

A third trend over the Middle Woodland period in the region was a progressive increase in the proportion of nonshaman-like leaders and other persons of high prestige who gave gifts compared to shaman-like leaders who gave gifts. Nonshaman-like leaders and other persons of high prestige include persons buried with headplates lacking animal symbolism, metallic celts, reel-shape gorgets, crescents, cutouts lacking cosmological symbolism, “trophy” skulls, and metallic breastplates and earspools. Shaman-like leaders include persons buried with any of the many kinds of artifact classes used in shamanic tasks (Appendix 4.2). The pattern over time indicates a change in the nature of leadership in local symbolic communities: specifically, the development of institutionalized community leadership roles and behaviors and the waning of the more idiosyncratic ceremonial ways and leadership styles that characterize shaman-like practitioners (e.g., Halifax 1979; Harner 1980). This change would be expected as alliance networks in the region formalized and intensified, and as more predictable and standardized leadership behaviors became necessary for the effective communication of intentions at larger multi-community ceremonies. One aspect of this trend over the Middle Woodland was the dissembedding of two community-wide leadership roles, marked by plain headplates and conch shell cups, from other shaman-like roles and the transformation of the two roles into incipient priest-like roles (see above, The Question of Priest-chiefs). The trend for increasing proportions of nonshaman-like leaders, which was continuous over the Middle Woodland period, aligns with the conclusion that absolute gathering sizes (in distinction from numbers of gift-givers) increased steadily over that duration. At the tail end of the Middle Woodland period, at the Ater site, the trend for greater proportions of nonshamanic leaders continued.

Summary

The large open spaces of the biggest and temporally latest Scioto Hopewellian earthen enclosures, the large, loaf-shaped mounds within them, the labor implied by these material works, and the hundreds of deceased persons who were laid to rest in the mounds have each created a picture of past social and ceremonial gatherings in the Scioto-Paint Creek area. The picture is homogenized and has emphasized large gatherings of regional social scope (e.g., Bernardini 2004; DeBoer 1997; Lepper 2004). Ethnographic analogies applied to Scioto Hopewell societies have bolstered this view (e.g., DeBoer 1997; Pacheco 1996).

To the contrary, Scioto Hopewell ritual gatherings within ceremonial centers varied greatly in their sizes, social compositions, and functions, and were most commonly small, predominated by a few gift givers. People gathered at ceremonial centers for many purposes: mortuary rites of separation and liminality as well as nonmortuary ceremonies such as those for ensuring the fertility of the world, renewing community health, and initiating persons into new social statuses, but probably not regularized ancestor worship. Gatherings ranged in size from a few gift givers who constituted a household or residential community to over 400 gift givers who comprised multiple local symbolic communities. Most gatherings of moderate to large size were predominated by one social role or a closely related set of roles, whereas only the largest of gatherings involved very diverse social roles. In both instances, the participants usually came from multiple local symbolic communities. Socially homogeneous gatherings varied in whether they emphasized specialized, shaman-like practitioners of any one of several kinds; prestigious sodality members of any one of three kinds; community and local leaders of any one of four or more kinds; a Bear society comprised of some Bear clan members; the Elk, Canine, or Fox clans; or prestigious individuals in personal roles. Small gatherings were strongly differentiated into ones where only nonshaman-like leaders gave gifts, others where only shaman-like leaders gave gifts, and those where only ordinary or prestigious individuals in their personal roles gave gifts. The strong and systematic segregation of gift givers of these many different social roles from one another in different ritual gatherings, both large and small, indicates fundamental and institutionalized differentiation of the roles in their spheres of action and of the functions of the ceremonies in which the roles predominated. This general pattern for social and ceremonial role differentiation involved, in part, specifically the increasing segregation of roles of the shaman among multiple, specialized shaman-like practitioners, and the rise and diversification of sodalities in Scioto Hopewell societies – social changes that occur generally around the globe in societies making a transition to agricultural, tribal lifeways.

Gatherings varied in social composition systematically with their size. The ratio of leaders of shaman-like or nonshaman-like nature to individuals in personal roles who gave gifts increased with gathering size, reflecting the greater need for leadership in larger gatherings. The proportion of shaman-like to nonshaman-like leaders who gave gifts was roughly equal for gatherings of most sizes. However, for very large ones, nonshaman-like leaders heavily outnumbered shaman-like ones, reflecting the need for predictable, institutionalized styles of leadership, as opposed to idiosyncratic styles, to control large crowds.

Over the Scioto-Paint Creek region, gatherings differed in size and composition depending on whether a ceremonial center serviced a few residential communities or one or more local symbolic communities. Whether the center was a place of burial for primarily important persons or a broader spectrum of individuals also affected gathering sizes and compositions.

Gatherings also changed very fundamentally over the course of the Middle Woodland. The numbers of gift givers and the proportion of shaman-like and nonshaman-like leaders compared to individuals in personal roles increased from the early to middle Middle Woodland and then decreased. The proportion of nonshaman-like to shaman-like leaders rose progressively over the Middle Woodland period. These changes through time reflect a shift in how alliances were built among local symbolic communities, from primarily social and economic relationships among dyads of ordinary people and among clanspersons in nonmortuary contexts to spiritual connections forged and funneled in mortuary contexts through leaders who represented their local symbolic communities. The changes also resulted from the number of local symbolic communities that were allied and gathered together at any one time.

As a whole, gift givers at gatherings were overwhelmingly leaders or other prestigious individuals compared to persons in more ordinary roles. Leaders and prestigious individuals who were marked by insignia not clearly tied to shaman-like roles, including individuals in the breastplate and earspool sodalities, gave gifts at gatherings about twice as often as did leaders in shaman-like roles, suggesting the importance of nonshaman-like means of social regulation in Scioto Hopewellian communities. In contrast, regulation by individual leaders (excluding members of the breastplate and earspool sodalities) commonly involved shaman-like means.

All of these kinds of gatherings of people and the purposes of the ceremonies for which they assembled were critical means for interweaving geographically dispersed residential communities and local symbolic communities into a sustainable community in the Scioto-Paint Creek area. People assembled and connected sometimes as members of given residential communities, at small mound groups that held small burial populations and that lacked earthen enclosures. At enclosed sites with large burial populations, people gathered and interacted as members of specific local symbolic communities, at least by the middle portion of the Middle Woodland period. Social-spiritual alliances were created among multiple local symbolic communities through mortuary and other rites that the communities' members staged together, sometimes resulting in large and artifactually diverse ceremonial deposits. At the larger sites, people also gathered and connected as nonlocalized affiliates of a particular clan, sodality, or clan-based ceremonial society in order to perform ceremonies specific to the internal functioning of these groups (e.g., initiations, professional training, decommissioning of paraphernalia), which led to the creation of large ceremonial deposit of the paraphernalia of a specific clan, sodality, or clan-based ceremonial society. These same groups also performed rites for the benefit of others – a specific important individual or two (e.g., Burials 260 and 261, Mound 25, the Hopewell site) or many Hopewell people within multiple local symbolic communities that comprised a broad sustainable community. Both of these situations again resulted in large ceremonial deposits of the paraphernalia of one or a few specific clans, sodalities, or clan-based ceremonial societies.

Hopewell gatherings thus connected many different sets of individuals in different, crosscutting social groups, holding together and coordinating people whose homes were physically separated from one another over the land. This rich diversity of Scioto Hopewell ceremonial life produced the amazingly diverse archaeological record of ceremonial artifacts and facilities that has always been integral to archaeologists' definition of Scioto Hopewell.

CONCLUSION: ESSENTIAL THEMES OF SCIOTO HOPEWELLIAN SOCIAL ORGANIZATION

What culture-specific understandings can we distill from the spectacular art, architecture, and ceremonial paraphernalia that Scioto Hopewell people created in the course of living their lives? Smoking pipes carved into animals in all their natural detail, human bone engraved with the image of a human skull garbed in a deer and spoonbill duck headdress, shiny mica cut into sensuous curvilinear designs, ear ornaments of copper overlaid with silver, projectile points made of quartz and amethyst, huge earthworks beyond human scale and aligned to the rising and setting sun and moon, and charnel houses two-thirds the size of a football field built for deceased loved ones, persons of extraordinary power, and community neighbors. These impressive kinds of artifacts and architecture, in their aesthetics and grandeur, can lead us afield in our interpretations of Scioto Hopewell life if they are not considered within the local cultural context specific to Scioto Hopewell peoples.

Core to the lives of Scioto Hopewell people that led them to create these energetic forms were, first, their rich and evolving belief system and world view, and second, their rich interweaving of their social relations through which they expressed their beliefs. This chapter and the previous have presented the most essential elements of organization of Scioto Hopewell social relations. The next chapter touches upon some foundational Scioto Hopewell beliefs.

The cultural synergy aroused among Scioto Hopewell people who spent most of their lives alone in nature or in small family groups dispersed across heavily forested valleys was not forged by a centralized, regional-scale leadership with power in the hands of a few and through relations of political-economic domination. Neither chiefs nor chief-priests nor Big Men nor classic shaman crafted Scioto Hopewell society and culture, contrary to previous interpretations (*contra* Baby 1956; Braun 1986:118, 119, 121; Ford 1974:394, 402; Prufer 1964a:71, 73, 74; 1964b:94; Seeman 1979a:406–407; 1979b; Shetrone 1936:197; Smith 1986:43–50; Struever 1965:212–213). Rather, Scioto Hopewell social organization was almost fully decentralized and fairly flat, with multiple kinds of leaders, sodalities, ceremonial societies, and clans that were roughly equal in prestige and that complemented one another in their social, ritual, and political roles and responsibilities. Further, the complementarity and horizontal positioning of these social nodes were chartered and embedded in the spiritual beliefs of the people, which emphasized this horizontal earth-disk and horizontal social relations among the living, the deceased, and spirits across it - a point elaborated in Chapter 5. In these respects, Scioto Hopewellian societies were organized, led, and integrated much like the largely nonhierarchical, historic Central Algonkian tribes of the area were.

The rich social and spiritual connections that integrated and motivated Scioto Hopwell people and that provided the means for their group efforts and material accomplishments can be summarized abstractly in the form of fundamental organizational principles or themes. These themes are: (1) many kinds of social units that constituted many dimensions of organization and alternative ways for integrating and regulating people, (2) usually many social units of each kind, (3) complementarity of social units of a kind (e.g., clans of different names) in their roles and arenas of action, (4) rough equality of social units of a kind in their social prestige, wealth, and access to critical resources of life, (5) crosscutting memberships among social units of the same and different kinds, (6) recruitment to positions of importance from many social units of a kind, (7) segregation rather than centralization of social roles, (8) opportunism in the definition of roles and their forms of action rather than rigid institutionalizing of these, and (9) limitation of most positions of importance in their geographic domains of power.

All of these themes have been revealed empirically in this chapter and the last. In culturally specific terms, regarding the first two themes, social relations among Scioto Hopewell people were organized and given meaning and purpose through a wide variety of kinds of social units and organizational dimensions: genders, age distinctions, extended families, patrifocal clans, sodalities, clan-specific ceremonial societies, phratries at least early in the Middle Woodland, leaders, local symbolic communities, and sustainable communities. In the Scioto-Paint Creek area, there were multiple examples of each of these kinds of social units: probably three genders, at least two age distinctions seen in burial patterning[39], at least nine clans, three to five or more sodalities, one to possibly five clan-specific ceremonial societies, one or more phratries, twenty-one partially segregated leadership roles, and three or so local symbolic communities, depending on the time. This great diversity of kinds and numbers of social units offered almost infinite potential for connecting individuals, and for connecting them in diverse combinations and flexible ways, when criteria for recruitment to groups and social positions and definition of their social roles were fluidly defined, as they were.

Particular expressions of the remaining enumerated themes of Scioto Hopewell social organization that created great potential for connecting individuals and that have been discussed in this chapter are numerous. Clans and clan-specific societies were nonlocalized and spread across multiple local symbolic communities, integrating these communities. Sodalities by definition had members from multiple clans and residential communities, and perhaps local symbolic communities, bridging these communities to each other. Sodalities overlapped in their memberships, creating paths of communication between their members, and the multiple residential and perhaps local symbolic communities to which they were affiliated. Sodalities and clan-specific societies complemented one another in the social and ceremonial roles that they fulfilled, with the consequence that they depended heavily on one another to meet the social and ceremonial requisites for their well being. Certain clans were coupled within phratries, at least early in the Middle Woodland period, and had reciprocal responsibilities to each other. Leadership roles were segregated among a diversity of kinds of shaman-like and nonshaman-like specialists who complemented one another in their social roles. This complementarity created social dependencies among leaders in managing Hopewellian social relations and in fulfilling the economic, social, political, and spiritual needs of Hopewellian life. The complementarity of leaders also created these same intermediate to long-term dependencies among clans, because different leadership positions tended to be filled by different suites of clans. Complementarity and dependencies among the genders was extended somewhat beyond the realms of family life, enculturation, and subsistence to ceremonial concerns because certain different ritual leadership positions were held by different genders. However, most leadership positions were held exclusively or largely by men and did not afford gender interdependencies. Complementarity in the social realm was just one expression of a more general concern of Scioto Hopewellian world view with complementarity. Expressions of that concern include the "positive–negative play" that runs through Scioto Hopewellian art forms, the square–circle distinction that predominates in the design of Scioto Hopewellian earthen enclosures, and contrasting ceremonial deposits of obsidian and quartz items, and copper and mica items, within single sites (Carr et al. 2005:486–488, table 13.2).

Considering the above social organizational themes further, one finds that clans, clan-based ceremonial societies, and sodalities were roughly equivalent in their members' composite social prestige, wealth, and access to critical resources of life because the members of each such social group resided across multiple locations in the Scioto and/or Paint Creek valleys with a variety of natural environmental potentials. Rough equivalency among such groups in their prestige, wealth, and access to resources would have helped to maintain the balance in their mutual dependencies upon one another that were formed by their complementary social and ceremonial roles. The recruitment of each kind of leadership position from clans of approximate equivalency in prestige, wealth, and access to resources would have had a similar effect in keeping balanced the dependencies and complementarity among leadership positions. Opportunism in and weak institutionalizing of ceremonial leadership roles and their means of action gave those who filled those roles flexibility in bridging multiple social units with different needs, perspectives, and ways of doing things.

The single organizational theme that did not encourage the connecting, integrating, and regulating of individuals was the limitation of the geographic spans of power of most leadership positions to within the local symbolic community. This limitation was overcome by Scioto Hopewell people of different local symbolic communities creating close, social-spiritual alliances with one another. The alliances were based in the burial of the dead from different local symbolic communities in the same cemeteries, in the communities participating together in other kinds of ceremonies, and in the communities joining together to build their ceremonial centers for these rites. During their lifetimes, most adult Scioto Hopewell people probably helped to actually build earthen ceremonial centers within the lands of local symbolic communities other than their own, in addition to joining in ceremonies there. A labor catchment analysis and studies of the sizes of ritual gatherings bear out this conclusion. The development of alliances with these characteristics help to mark the beginning of Hopewellian social-ceremonial life in the Scioto valley (at the Tremper mound and probably the Carriage Factory/Miller mound) and their disappearance helps to mark its end (at the Ater mound) (Chapter 5). Alliances in the last third of the Middle Woodland period also may have involved an annual ceremonial calendar in which local symbolic communities joined together in earthworks in one another's lands sequentially, in different earthworks with different astronomical orientations at different seasons for ceremonies of varying purposes. Leadership roles that spanned multiple local symbolic communities emerged only at the tail end of the Middle Woodland period, evidenced by a process of role segregation that, over time, came to culminate at the Ater site. There, incipient priest-chiefs of two kinds are known from their plain copper headplates and conch shell cups and shell spoons. The power of these two social positions was compromised, however, by the complementarity of their roles with those of other kinds of leaders within local symbolic communities (see above, Table 4.3), and by the recruitment of both positions from a variety of clans and local symbolic communities over time. This recruitment pattern did not encourage the concentration of sociopolitical power in the hands of a single clan or community.

The plentiful and varied opportunities that Scioto Hopewell people had for connecting with one another, created by the nine essential themes of Scioto Hopewell social organization just described, provided them with a fertile social foundation for recruiting and organizing labor to build their expressive earthworks, and for creating and holding ceremonies of the very many kinds and purposes that their amazingly diverse material record implies. Scioto Hopewell people's capacity for social integration, augmented with their world view that emphasized horizontal social relations (Chapter 5), were also the driving engines behind their effervescent stylistic and artistic innovations, and key elements in their success at maintaining peaceful relations among themselves over a very long time – the well known *Pax Hopewelliana* (Chapter 15, Social Competition; Carr 2005a:324–327). Considering that societies so rich in social pathways for interpersonal connections are relatively unusual crossculturally, it is not surprising that the Scioto Hopewell stand out for their spectacular art, architecture, ceremonies, and social peace.

NOTES

1. The crossculturally universal shamanic theme of transformation that is found commonly in the raw materials from which Scioto Hopewell peoples made their ceremonial equipment and in the positive–negative play in their artwork is also evident in a carving of an insect pupa found in the Seip-Pricer Mound (Shetrone and Greenman 1931:427), and in a worked fossil and a worked shell that may have represented, respectively, a caterpillar and a pupa and that were found in Hopewell Mound 25 (Figure 4.1M-O; Moorehead 1922:145, 170, figures 42 and 69).
2. Katharine Spielmann pointed out to me the fact that the head in the bear-man's lap is rendered flat, when it might have been rendered in the round, like the rest of the figurine.

   The Wray figurine does not sit stable on its buttocks by itself or when seated on a hard block or laid on a flat surface. It does sit stable when placed on its back, which has two bumps on it that, along with the buttocks, allow it to remain balanced. This may have been the orientation intended for displaying the figurine and the trance posture intended to be depicted.

   When the figurine is placed on its back, the head on the lap of the bear-man rises out of his abdomen and could represent his soul in the process of leaving his body there and taking flight upward (Rick Zurel, personal communication 2000). This direction of flight, and the placement of the bear-man on his back, however, is unnecessary for soul flight, itself, to have been depicted. The figurine could have been display upright, with the bear-man's soul flying downward. Traditional shamanic practitioners commonly take soul flights down to lower realms as well as upward to higher realms (e.g., Eliade 1964:259, 270–271; Grim 1983:77–81; Harner 1980:10, 90–92; Vitebsky 1995:16–17, 70, 72–73). A downward soul flight would be more in keeping with the man's bear spirit, because the bear is associated with the Below realms in the knowledge systems of historic Eastern Woodlands Native Americans. It is also possible that the figurine was meant to be handheld (Brad Lepper, personal communication 2005), with depiction of soul flight in both directions feasible by simply changing the figurine's position.
3. A fourth artifact, which does not seem indicate soul flight but, instead, the merger of a person and a bird, is a bone sculpture of a hawk, from Altar 2 under Mound 25 of the Hopewell site (Moorehead 1922:160, 166, figure 65; see also Greber and Ruhl 1989:206, figures 6.22 and 6.23). The hawk is in a sitting position rather than in flight. On its head is engraved a simple rendition of a human head and face.

   A fifth artifact that is very ambiguous as to whether it represents soul flight is a copper breastplate with a fabric cutout in the form of either a bird or a bird-man in flight. (Carr 2000c, d, 2005e; Carr and Lydecker 1998; Carr et al. 2002). This breastplate was found in the Seip earthwork under the Pricer mound, in an undocumented provenience (Ohio Historical Society catalog no. 976/2017; Carr no. B036 side A). Hopewellian copper breastplates that have artistic compositions embossed, painted, patinated, and mosaiced on them, and that emerged as an art form from Adena tablet engraving with similar compositions (e.g., Mills 1922:534, 535; see also 536, 537), commonly depict raptors, other birds, raptor impersonators, and other animal impersonators. None of the several hundred compositions, save possibly the one under discussion, shows a bird impersonator in flight.
4. At the Mississippian site of Moundville, Alabama, copper celts were badges of office of the highest degree (Peebles and Kus 1977:441). Celts were also strongly associated with achievement in warfare in some Mississippian iconography (Phillips and Brown 1978:177, 193), in which instances celts were coupled with trophy heads, and in historic Woodland practices (Feest 1978:259; Goddard 1978:227).
5. The thirteen ceremonial deposits are as follows. At the Mound City site: Mound 3, Altar and Crematory Basin; Mound 5, Altar; Mound 7, Mica Crescent; Mound 13, Burial 1, Mica Grave. At the Hopewell site: Mound 1, Central Cache; Mound 2, Central Cache; Mound 11, Crematory Basin; Shetrone's Mound 17, Deposit 2; Mound 25, Altar 1; Mound 25, Altar 2; Mound 25, Copper Deposit; Mound 25, Skeletons 260–261; Mound 29 (Carr, Goldstein, et al. 2005:490–494, table 13.3).
6. A plain headplate and a stone celt occurred together in a burial in the west room of the charnel house under the Seip-Pricer mound and two plain headplates occurred in the north room of the charnel house under the Ater mound. Conch shell cups and spoons occurred in the north room of the charnel house under the Ater mound and conch shell cups occurred in the west, middle, and east rooms of the charnel house under the Seip-Pricer mound.
7. Of 4 persons buried with plain headplates at the Hopewell site, 3 had copper earspools and 3 had breastplates. The one person buried with a plain headplate at the Seip-Pricer mound also was buried with a pair of copper earspools and a breastplate. Of 23 persons buried with conch shell cups at the Hopewell site, 10 had copper earspools and 10 had breastplates. Of 7 persons buried with conch shell cups at the Seip-Pricer mound, 2 had copper earspools and 3 had breastplates. Of 4 persons buried with conch shell cups at the Ater mound, 1 had both earspools and breastplates.

8. The pipe depicting a dog eating a human head is one of five that were deposited above the Great Multiple Burial in the Seip-Pricer mound (Shetrone and Greenman 1931:373–374, 416–423). The deposit also included a pipe effigy of an owl and possibly a nighthawk, both birds of the night, which is commonly associated with death in Woodlands cosmology.
9. There is some archaeological evidence that places the immigration hypothesis in question. At Tremper, essentially all of the animal parts placed in the charnel house were mandibles and maxillae (Thew n.d.). In contrast, at Mound City, Hopewell, and Seip, the animal power parts were primarily teeth. The simultaneity of the shift from jaws to teeth and from power parts of a few species of animals to many may signal a change that occurred in the roles of clans in mortuary-related ceremonies rather than a change in the number of clans who resided in the area. The specifics of such an alternative scenario are unclear.
10. The Midewiwin is described by Hoffman (1888, 1891) and Radin (1945). The Dream Drum and Peyote cults are described by Gill (1982:167–171), Ritzenthaler (1978:755–756), Skinner (1915, 1920); Spindler (1978:716), and Venum (1982). Members in these societies typically could come from any sector of a tribe, although Midewiwin membership was traditionally heavily screened and, for the Winnebago, was divided among five ceremonial bands that were responsible for different parts of rituals (Quimby 1960:142). The Central Algonkian Fox, Sauk, Kickapoo, and Prairie Potawatomi had "sacred pack" organizations that were formed for the purposes of healing individuals, healing the whole community, sorcery, warfare, hunting (especially buffalo), or relating those blessed by the same spirit. Membership in these organizations was voluntary, nonhereditary, and crosscut clans and lineages (Callender 1962:31; Tax 1937:267). The Menominee similarly had a sorcery organization and emerging Thunder and Buffalo dance cult groups of persons blessed by the same spirit (Callender 1962:35; Skinner 1915). The Shawnee had a Man-Eating society and probably associations of shaman (Callender 1962:41). Dual divisions that were not based on lineage or clan were found among the Fox, Sauk, Kickapoo, Potawatomi, and possibly Shawnee, whereas the Miami, the Menominee, and probably the Illini had true moieties based on clan affiliation (Callender 1978b:615–616; 1994; Tax 1937:268). Dual divisions divided a tribe into groups that competed in games and for war honors, and that organized rituals and dances (Callender 1962:32, 1978b:616). The Siouan Winnebago had a variety of ritual societies, each open to persons who shared some common supernatural experience, the most sacred of which was the Night-spirit society (Radin 1945:68–69).

    The Iroquois had a more elaborate suite of sodalities, which focused on curing. The Cayuga of Ontario had 19 medicine societies. Eleven allowed anyone to join whereas eight required a person to have had a dream or vision of a certain form and were more secretive. Each of the 19 societies led public ceremonies in the long house for the well being of all (Driver 1969:357–358).
11. Excluded from this list of 19 artifact classes are six others that also were placed in large deposits in Scioto Hopewell sites: metallic celts, copper geometrics, community smoking pipes, pearl and shell beads, and hornstone disks. These artifact classes are not likely to have been markers of an individual's membership in a sodality, for the following reasons. Metallic celts have been shown by archaeological criteria and ethnographic analogy to most probably be symbols of leadership (Carr 2005a:282–283). The copper geometrics found in large numbers in the Copper Deposit under Mound 25 in the Hopewell earthwork are of very diverse forms and had diverse religious referents. The five large smoking pipes found together in the Pricer mound in the Seip earthwork resemble large communal pipes of historic Woodlands peoples. Pearl and shell beads are very numerous and common across burials. They appear to have been means of personal ornamentation and/or display of personal wealth. The 8,185 hornstone disks found under Mound 2 at the Hopewell earthwork are much too numerous to represent the markers of individual sodality members – even if each member possessed 10 disks. Some other social-ceremonial phenomenon appears responsible for their deposition.
12. Among Western and Eastern Puebloan societies of the American Southwest, the sodalities of which are well documented ethnographically, sodalities most commonly divided a pueblo into 2 to 14 contrasting groups, that is, groups with 7% to 50% of the adult (male and/or female) population. Among Northern and Central Algonkian tribes, sacred pack organizations, the Midewiwin society, and other societies ranged widely in size, from few to many members of a tribe, and dual divisions encompassed all of a tribe (Carr 2005a:332–333, Note 15).
13. Among Puebloan peoples, membership in sodalities other than dual divisions is conferred primarily upon adults or older youths being initiated into adulthood. Algonkian pack organizations for warfare, healing individuals, healing the whole tribe, sorcery, and shamanism, and the traditional shamanic Midewiwin society, naturally had only or primarily adult members who could perform the societies' tasks (Carr 2005a:333, Note 16). The criterion of adult status distinguishes markers of sodalities from markers of social rank groups, which include persons of all ages (Brown 1981:30; Fried 1960:466).
14. Puebloan sodality membership, with the exception of tribal-wide dual and multipartite social divisions, is most commonly restricted to males, males with the support of their wives, or males and females but with males holding positions of leadership or high achievement. This gender bias occurs despite the Puebloan matrilineal kinship ethic. Algonkian Midewiwin societies varied among tribes and over time as to whether only men or both men and some women

were allowed membership (Carr 2005a:333, Note 17). In general, crossculturally, there is a strong correlation between sodalities and men (Hoebel 1966:393). The criterion of male or largely male status, like that of adult status, differentiates markers of sodalities from markers of social rank groups, which include persons of both sexes (Brown 1981:30; Fried 1960:466). However, the sex-based distinction is not as clear-cut as the age-based one.

15. In some Puebloan tribes, ceremonial societies vary in their prestige and power. The greater prestige and power of Mide shaman over other kinds of spiritual practitioners among Algonkian tribes is analogous (Carr 2005a:334, Note 19).
16. The six criteria that identify earspools and breastplates as symbols of two sodalities are as follows. (1) Both earspools and breastplates were buried in the cemeteries of multiple local symbolic communities by the middle to late Middle Woodland period (Appendix 4.1). They were found at Seip, Rockhold, and Bourneville within a local symbolic community in main Paint Creek valley, at Hopewell and later Ater within a local symbolic community in the North Fork of Paint Creek valley, and at Liberty within a local symbolic community in an adjacent section of the Scioto valley. On an earlier time plane, earspools and breastplates were recovered from the Mound City site, which was a burial place for multiple local symbolic communities. (2) Individuals who were buried with earspools and those buried with breastplates were both accompanied by artifact markers of seven of the nine animal-associated clans identified for Scioto Hopewell societies (see above, Clan Organization, Table 4.6). This indicates that membership in the social groups marked by earspools and breastplates crosscut clan affiliation. (3) Within community and multicommunity cemeteries, the proportions of individuals who were buried with earspools and with breastplates are substantial (Appendix 4.1), and too common to have indicated community-wide leadership positions. In the late Middle Woodland, adequately large burial populations have earspools with 12 % to 24% of their individuals and breastplates with 12% to 22% of their individuals. Earlier in the Middle Woodland, at Mound City, the proportions are less, but significant: 5.7% for earspools and 4.7% for breastplates. (4) Both earspools and breastplates were buried exclusively or almost completely with adults at sites where age information is available: Hopewell, Seip, Rockhold, Liberty, and Ater (Carr 2005a:Appendix 7.2). This characteristic of earspools and breastplates implies that they were not symbols of rank, in contrast to Greber's (1976, 1979a) assumption. (5) The sex of individuals buried with earspools and breastplates was more variable than their age, as is the sex of sodality members crossculturally. Earspools were found exclusively or largely with males at Hopewell, Liberty, and Ater, but approximately equally with males and females at Seip, and with one lone female at Rockhold. Breastplates were found exclusively or largely with males at Hopewell and Liberty, but approximately equally with males and females at Seip and Liberty. (6) The sodalities marked by earspools and breastplates probably differed in social prestige, as sodalities may. The sodality marked by breastplates was probably privileged. Breastplates are larger and more visible physically than earspools, suggesting their relative social presence. Also, most breastplates took more copper to make than a pair of earspools. Further, breastplates are far less numerous, and thus more distinguished, than earspools in the Scioto-Paint Creek area. In the eight mound and earthwork centers in the Scioto drainage that are known to have contained breastplates and/or earspools, the total number of breastplates is only 218+, whereas the total number of earspools is 1,103+. Finally, in these eight sites, the total number of individuals buried with breastplates is significantly fewer than the total number of persons buried with earspools: 78 in contrast to 96, respectively. The eight sites are: Ater, Bourneville, Hopewell, Liberty, Mound City, Rockhold, Seip, and Tremper.
17. Breastplates commonly, although not always, have two holes in them and create the impression of a trapezoidal-like or rectangular-like head with two eyes two-thirds up a face. The holes are sometimes spaced appropriately for looking through them and suggest the possible use of some as masks. The plate placed on top of a person's skull, mentioned in the text, was found by W. K. Moorehead in 1888 in a mound near the Fort Ancient site (Moorehead 1890:60–61, plate 37). K. Ruhl reports that the breastplate is curated at the Gilcrease Foundation, Tulsa, Oklahoma, with a note saying that it was found "circa 1898 near Fort Ancient" – a likely transcription error. Besides the two eye holes and nose cut-out, the top of the plate was folded over, perhaps to aid in attaching the plate to softer, unpreserved elements of a headdress. The conception of the two holes of a plate as eyes or eye holes is supported by patinated artworks on plates. The artworks almost always use one or both of the holes as the eye(s) of a human or animal (Carr 2000c, 2005e).
18. The great majority of the breastplates from the Hopewell and Seip earthworks have a curvilinear trapezoidal outline that, when "inverted", with the long side of their trapezoid on top, is suggestive of a face with rounded, side-protruding ears like a bear's. In most of the breastplates, two holes are positioned so as to suggest eyes (see Note 17). Inversion is commonly used in Ohio Hopewell art to express transformation, such as the shift of a human form to an animal, so the interpretation of a bear's face and ears fits well within Ohio Hopewell artistic practice.

    One breastplate emphasizes the rounded ear-like protrusions to an extreme, forming "Mickey Mouse" ears, and is very suggestive of the upper half of a bear's head. The plate was found with Skeletons 260 and 261 in Mound 25 of the Hopewell earthwork, presumably within the great mass of breastplates and celts arranged above the two skeletons (Field Museum of Natural History catalog no.56337 and photographic negative no. A110007c; Carr no. B230). The two holes of the plate, which would have represented the eyes of the bear, are a reasonable distance apart (7.9 cm) for two eyes of a human to have peered through them. However, it is unlikely that the plate was the mask component of a headdress. The holes are small (1.1 mm in diameter) and the breastplate is unusually thick and weighty.

Following the idiom of shaping breastplates into bear head-like forms, at least five plates are patinated or made with organic collage into a bear's face looking forward, with a large, central nose. These specimens and their relevant sides are: Carr nos. B044A from Burial 2 of the Seip-Pricer mound, B078A from the Rockhold mound, B020A from the Hopewell site, B055B from the Edwin Harness Mound, and B079A from the Seip-Pricer or Seip Conjoined mound (Ohio Historical Society cat. nos. 957/26, 1020/-, 283/1002, 7/123, and 957/2025, respectively).

19. The large deposits of earspools and breastplates placed in Hopewell Mound 25, and the large numbers of earspools and breastplates found with burials in the Seip-Pricer mound, imply sodality members from multiple local symbolic communities (Table 4.8, Appendix 4.1). So, too, does the presence of earspools and breastplates each in multiple chambers dedicated to distinct local symbolic communities within the charnel house under Hopewell Mound 25 and again the charnel house under the Seip-Pricer mound (Carr 2005a:288–291, table 7.1). That earspools and breastplates each marked one formal ceremonial society that spanned several local symbolic communities, rather than multiple distinct ceremonial societies of one kind found in several local symbolic communities, is suggested by the placement of large numbers of earspools and breastplates in single deposits under Hopewell Mound 25 (Table 4.8).

20. The six criteria that can be used to identify a sodality archaeologically and that are met by platform pipes are as follows. (1) Platform pipes have been excavated from the cemeteries of multiple local symbolic communities distributed across the region during both of two different time-planes (Appendix 4.1). Early in the Middle Woodland period, pipes were buried at the site of Tremper in the southern reaches of the Scioto valley and at Mound City further north by Chillicothe. Later in the Middle Woodland period, pipes were buried at Seip in main Paint Creek valley, at Hopewell and then Ater in the North Fork of Paint Creek valley, and at Liberty in an adjacent section of the Scioto valley. Further, analyses of the diverse chemical compositions of the platform pipes found at Tremper (Weets et al. 2005; see also Emerson et al. 2002) indicate that their owners were affiliated with several different social groups – most likely different local symbolic communities – who obtained pipestone from at least four different and geographically widely separated sources (Chapter 3, A Second Example of a Sustainable Community). The interpretation that the owners of the pipes deposited at Tremper belonged to several different local symbolic communities is supported by the large numbers of persons cremated and buried at Tremper ($n = 375$) and estimates of the number of mourners (hundreds to over a thousand), which point to the gathering there of multiple local symbolic communities as a sustainable community (see text, Ritual Gatherings and Alliances). Finally, Mound City was also a gathering and burial grounds for multiple local symbolic communities. The numbers of leaders and important persons buried there are too numerous for a single, small, local symbolic community (see text, Ritual Gatherings and Alliances; Carr and Case 2005b:224). All these data suggest that the members of a social group marked by smoking pipes would have come from multiple local symbolic communities, as is true of a sodality. (2) Persons who were buried with platform pipes in the Scioto-Paint Creek area appear to have been affiliated with at least four or five of the nine animal-associated clans identified for the area, based on the clan markers found in their graves: Canine, Cat, Raccoon, Bear, and perhaps either Raptor or Elk. Thus, the membership of a social group marked by smoking pipes would have crosscut clan lines, in accord with the definition of a sodality. (3) Within the Edwin Harness mound in the Liberty earthwork, the proportion of individuals who were buried with platform pipes (5.8%, Appendix 4.1) is within reason for the proportion of sodality members within a community, and is probably too large for those persons to have been community-wide leaders. Edwin Harness was not a mound where leaders and important persons were selected in abundance for burial. At Tremper, the proportion of deceased persons whose pipes were deposited in the Lower Cache (44%), if the pipes belonged only to the deceased, again is reasonable for a sodality's proportion within a community. There were 165 pipes compared to about 375 persons buried below the Tremper mound. However, the same approach to estimating the proportion of a community constituted by a sodality cannot be applied to Mound City. Mound City was a burial grounds for primarily select leaders and important persons from a sustainable community, rather than all persons from a sustainable community. In contrast, the Tremper burial population appears to have been derived from an entire sustainable community. The greater number of pipes ($n \sim 226$) than persons (n = 106) buried at Mound City is telling of selective burial there. (4) Platform pipes were buried exclusively with adults at sites where age information is available: Hopewell, Seip, and Ater. This is the pattern one would expect for members of a sodality, but not of a rank group, which should include all ages and both sexes. (5) In the Scioto drainage, only two individuals buried with platform pipes have known sexes, both at the Hopewell site. Both were male, in agreement with expectation for a sodality and out of line for a rank group. However, the sample size is too small to use

this criterion to support or refute the idea that smoking pipes marked membership in a sodality.

21. A third but less likely, alternative interpretation would see the archaeological patterns as evidencing no formal Bear society and the responsibility of body processing falling on all adult males of the Bear clan. An analog is provided by the historic Huron, whose adult women were all responsible for processing corpses of their deceased relatives and carrying them to the location of the Feast of the Dead (Trigger 1969:108–109). However, Huron women were not involved further in funerary and psychopomp work.
22. Four of the criteria for identifying sodalities appear to hold for bear canines. (1) Bear canines were found in the cemeteries of multiple local symbolic communities during both the earlier and later portions of the Middle Woodland period (Appendix 4.1). They were found at Mound City, which was a cemetery where members from multiple communities were buried early in the Middle Woodland. Later, bear canines were buried at the Seip, Rockhold, and Bourneville sites within a local symbolic community in main Paint Creek valley, at the Hopewell site and later at Ater within a local symbolic community in the North Fork of Paint Creek valley, and at Liberty within a local symbolic community in an adjacent section of the Scioto valley. (2) Within community and multicommunity cemeteries, the proportions of individuals who were buried with bear canines are reasonable for the proportions of people in a clan or a ceremonial society, even if say half those buried with bear canines were the recipient of bear canines at death rather than members of the clan or society itself (Appendix 4.1). In adequately large burial populations, bear canines occurred with 5.0% to 13.1% of the individuals. In Mound 25 at the Hopewell site, 20.8% of all burials contained bear canines. These percentages are too high to indicate community or multicommunity leaders, and suggest a ceremonial society. (3, 4) Bear canines were found exclusively or almost entirely with adults, and only with males, at the sites of Hopewell, Seip, and Ater – the only sites where age information is available. Both the age and sex distributions of persons buried with bear canines show that canines did not symbolize a rank group.

    Bear claws likely represented membership in the same Bear clan society or clan as did bear canines, but perhaps symbolized different prestige than bear canines. Bear claws meet two of the criteria for identifying sodalities. (1) Bear claws were found in the cemeteries of multiple local symbolic communities, including ones at the Ater and Hopewell sites in the North Fork of Paint Creek valley, Seip in main Paint Creek valley, and Mound City on an earlier time plane in the Scioto valley. (2) Bear claws were found only with adults. The sex distribution of bear claws is largely unknown. However, of nine persons in eight graves who were buried with bear claws, one has been identified to sex and she was a female.
23. Cut and drilled, isolated bear canines have been found at one Early Woodland Adena mound – the Cemetery Mound in Ohio (Webb and Snow 1974:212–213 chart). No isolated bear canines were found at the Tremper site, which dates somewhat earlier than Mound City. However, the Great Cache at Tremper did contain cut and broken jaws of bears. Most of these were maxillae, and a large percentage contained the canine, along with premolars and molars. Most of the molars were drilled (Mills 1916:285; Thew n.d.). The Mound City site contained 12 real, isolated bear canines and 9+ effigy bear canines dispersed across 4 burials and 1 ceremonial deposit. The Hopewell site contained 89+ real, isolated bear canines and 4+ effigy bear canines, and probably significantly more of both of these kinds, distributed across 21 burials and 5 ceremonial deposits. Hopewell Mound 25 held 81+ real, isolated bear canines and 3+ effigy bear canines, and probably significant more of both of these forms, dispersed across 16 burials and 5 ceremonial deposits. The Seip-Pricer mound contained 53+ real, isolated bear canines and 1+ effigy bear canines distributed across 7 burials and 2 ceremonial deposits.
24. Bear canines were found within burials in seven burial clusters – A2, C, D1, E1, E3, F, and I1 – under Hopewell Mound 25. They were found with burials in the West, Middle, and East burial clusters under the Seip-Pricer Mound. At Ater, they were found within burials in the North and South burial clusters. The three large deposits of bear canines in the Scioto-Paint Creek area are listed in Table 4.8.
25. Three of the criteria for identifying sodalities can be examined for the totemic or eponym markers of the Canine, Fox, Elk, and Raccoon clans. (1) Markers of each of the four clans were excavated from cemeteries of multiple local symbolic communities (Appendix 4.1). Early in the Middle Woodland period, elk teeth were placed in deposits and burials repeatedly at Mound City, which was a cemetery for multiple local symbolic communities. Later in the Middle Woodland, wolf, fox, and raccoon teeth were each placed in burials at the sites of Hopewell, Seip, and/or Ater, which also were multicommunity cemeteries. Hopewell and Ater were located within the lands of a local symbolic community in the North Fork of Paint Creek valley, whereas Seip was located in the lands of a local symbolic community in main Paint Creek valley. (2, 3) Elk, wolf, and fox teeth are each limited almost exclusively to adults and males, which would suggest that the items symbolized clan-specific societies rather whole clans, if an adequate sample were in hand. Raccoon teeth were found with both an infant and old adults, and with a female, which would imply that raccoon teeth symbolized the whole Raccoon clan, if an adequate sample were available. However, sample sizes are small, and these more specific conclusions cannot be drawn with confidence.
26. Mica mirrors might indicate a sodality of shaman-like practitioners open largely to women. Mirrors

were found in four very large deposits, in Shetrone's Hopewell Mound 29 (Moorehead's Mound 17) and Mound City Mounds 7, 13, and 23 (Table 4.8; Carr et al. 2005:488, table 13.2). Both sites were used by multiple local symbolic communities, and the deposits there could indicate the collective ceremonies of a professional sodality of shaman-like practitioners. Most of the six criteria for identifying sodalities, described in the text, are met by mica mirrors. (1) Mirrors were found in the cemeteries of multiple local symbolic communities distributed across the Scioto-Paint Creek region: Mound City, Liberty, Shilder, Hopewell, Ater, Seip, Rockhold (Appendix 4.1). (2) Mica mirrors occur in burials that included clan markers of five of the nine of animal-associated clans identified for Scioto Hopewell societies (Wolf, Raccoon, Raptor, Elk, Bear). (4, 5) Mirrors were buried only with adults and largely with females, where age and/or sex information is available. However, (3) mirrors did not occur with a moderate to high proportion of individuals in most of the sites where they are found, in contrast to earspools and breastplates (Appendix 4.1). A shaman-like leadership position concerned with divination and found in multiple local symbolic communities might be indicated instead of a sodality. However, this alternative seems less likely, given the large number of mica mirrors, themselves, found in ceremonial deposits.

Galena cubes possibly marked a sodality of shaman-like practitioners. Galena occurred in three large deposits, in Shetrone's Hopewell Mound 29 (Moorehead's Mound 17) and in Mound City Mounds 5 and 13 (Table 4.8). Because both sites were used by multiple local symbolic communities, these deposits could be the remains of collective ceremonies of a professional sodality of shaman-like practitioners. Some of the six criteria for identifying sodalities archaeologically are met by galena cubes. (1) They were placed in the cemeteries of multiple local symbolic communities located across the Scioto-Paint Creek area: Mound City, Liberty, Hopewell, Ater, Seip, Rockhold, and Bourneville (Appendix 4.1). (2) They were associated in burials with clan markers of four of the nine animal-associated clans identified for Scioto Hopewell societies: Wolf, Raccoon, Raptor, and Bear. (4) Galena cubes were buried only with adults. At the same time, (3) galena cubes were buried with only low percentages of the individuals within each of the sites in which they were found (Appendix 4.1), and could represent a shaman-like leadership position found in multiple local symbolic communities rather than a sodality. However, the large number of galena cubes found in ceremonial deposits makes this interpretation less probable. (5) There is information on the sex of only one of the burials that contained galena; that individual was a female.

27. Obsidian bifaces have slight potential for having indicated a shaman-like sodality, but data are too sparse to assess their age and sex associations. They associate with the marker of the Elk clan in the Mound City earthwork, Mound 2, Burial 16, and possibly the marker(s) of the Wolf and/or Raccoon clan(s) in the Mound City earthwork, Mound 13, Burials 1A–D. However, linkage to the Wolf and/or Raccoon clan(s) is uncertain, because the clan markers and obsidian bifaces cannot be attributed firmly to one individual or another in this multi-individual burial. Obsidian bifaces occurred in two sites within two different local symbolic communities: Mound City and Hopewell (Appendix 4.1). However, they were found with a very low percentage of burials at both sites. Their placement in large numbers in one ceremonial deposit at Hopewell could represent the collective ceremonies of a professional society of shaman-like practitioners from multiple local symbolic communities but of unknown clan affiliation(s), or less likely a shaman-like leadership position found in multiple local symbolic communities.
28. Quartz crystal bifaces and chlorite disks each occurred in only one site, and in few or no burials respectively within that site (Appendix 4.1). Quartz crystal bifaces possibly associate with the marker(s) of the Wolf and/or Raccoon clan(s) in the Mound City earthwork, Mound 13, Burials 1A–D, but this affiliation is unclear because the clan markers and quartz bifaces cannot be attributed with certainty to one individual or another in this multi-individual burial. Metallic panpipes have been found only in the North Fork of Paint Creek valley at the Hopewell and Ater sites (Appendix 4.1). Panpipes, cones/hemispheres, and mica and copper crescents each occurred in very few burials at the sites where they were deposited (Appendix 4.1), and their age and sex associations cannot be determined. A copper crescent was found with a subadult. A panpipe possibly occurred with a marker of the Wolf clan. The clan associations of cone/hemispheres and crescents are unknown.
29. In eleven Hopewell sites in the Scioto-Paint Creek area (Ater, Bourneville, Hopeton, Hopewell, Liberty, McKenzie, Mound City, Rockhold, Seip, Tremper, West) there were 98 burials with earspools, 77 burials with breastplates, 22 burials with mica mirrors or sheets, and 9 burials with galena cubes. Earspools and breastplates were found together in 34 burials, earspools and mica mirrors or sheets in 5 burials, earspools and galena cubes in 4 burials, breastplates and mica mirrors or sheets in 5 burials, breastplates and galena cubes in 3 burials, and mica mirrors or sheets and galena cubes in 5 burials.
30. Two or three meteoric iron breastplates were among the many copper breastplates and celts placed above Burials 260–261 in Mound 25 of the Hopewell site (Greber and Ruhl 1989:93). An iron breastplate from the Circleville earthwork, north of the Scioto-Paint Creek area, has also been reported (Seeman 1977a:308).
31. Smoking pipes were placed in large ceremonial deposits at the very early Tremper earthwork and the slightly later but still early Mound City earthwork. The number of burials with both pipes and sex information

is too small to be confident that smoking pipes were used exclusively by males.

Only one earspool was recovered from Tremper, and a small percentage (5.6%) of burials at Mound City had them. Earspools became much more common later and were buried with a large percentage (22.4%) of individuals in the Hopewell earthwork and a moderate percentage (17.6%) of individuals in the Seip earthwork. Breastplates rose and peaked in popularity somewhat later than earspools. Breastplates were not found at all at Tremper and only a few were recovered from Mound City (4.7% of burials). Breastplates became common and were buried with a moderate proportion (14.1%) of individuals at the Hopewell earthwork and yet a higher proportion (21.6%) at the Seip earthwork.

This apparent trend for women to have increasingly taken on roles of importance in the sociopolitical and ritual arenas over the Middle Woodland period may not have been as pronounced as presented in the text. Women may have played an important role in one sodality early in the Middle Woodland period. Specifically, mica mirrors may have indicated a sodality that arose and became common early in the Middle Woodland period. If such a sodality existed, women appear to have been members as commonly as men, given the burial of mica mirrors with both sexes in similar proportions. This possible sodality, and its wide membership, is suggested by three large ceremonial deposits of mirrors or burials with mirrors in the Mound City earthwork.

The clan-specific ceremonial society marked by bear canines and a possible sodality marked by galena cubes formed fairly early in the Middle Woodland period. A large amount of galena was placed in the Great Cache in the Tremper earthwork, and two large ceremonial deposits of galena cubes were made in the Mound City earthwork. Bear canines were not recovered from Tremper, but occurred in a small percentage (3.8%) of the burials at the Mound City earthwork. Unfortunately, the sex distributions of the members of these two social groups, and whether women played important roles in them, are not known.

32. A mitochondrial DNA study of a small number of individuals buried in multiple burials at the Hopewell site provides no evidence of whether or not Scioto Hopewell peoples were matrilineal, contra the conclusion of Mills (2001:13). Mills held the expectation that if Scioto Hopewell peoples were matrilineal, then individuals buried together in multi-individual graves should have the same haplotype, apparently assuming that persons buried together were siblings, or mother and child or children. She found that individuals buried in each of two pairs and one triplet in Hopewell Mound 25 did have different haplotypes, and inferred that Scioto Hopewell peoples were not matrilineal. However, in the case of each pair and the triplet, the individuals buried together were very similar in age, identified as male and female in two of the groups, and of marriageable age. If these individuals were husbands and wives, to which the available evidence points, then one would expect them to have come from different groups and possibly to have had different haplotypes. Thus, the pattern of mixed haploid types found by Mills may relate to marriage rather than to principles of descent.
33. The Shawnee had senior women who took the roles of peace chief, war chief, and priest-shaman (Howard 1981:109,117). There is no record of their having been gender-variant individuals.
34. For both of the three-room charnel houses under the Seip-Pricer and Edwin Harness mounds, there is a trend for decreasing material richness from their largest burial cluster to their medium-sized burial cluster to their smallest burial cluster, i.e., from most to least deceased persons. The relative material richness of each burial cluster can be taken as an indicator of the relative general wealth of the local symbolic community that buried its dead there. Of the three communities that were part of the three-way alliance, the least wealthy appears to have been the one in the Scioto valley. The Edwin Harness mound, there, is noticeably poorer in its numbers, diversity, and qualities of fancy artifact classes than the Seip-Pricer mound in main Paint Creek valley and Hopewell Mound 25 in the North Fork of Paint Creek valley (Greber 1979b:33, 37). Thus, at each of Seip-Pricer and Edwin Harness, the smallest burial cluster, which was also poorest materially, probably represented the local symbolic community in the Scioto valley.

    At the Seip-Conjoined mound, there is also a trend for decreasing material richness from the largest burial cluster to the second largest burial cluster. By extrapolation, the smallest burial chamber with no burials would have contained the materially poorest burial cluster, had it been used. This extrapolation appears reasonable, given the patterning at the Seip-Pricer and Edwin Harness mounds. As the charnel room that would have been poorest materially, the empty chamber at Seip-Conjoined probably would have represented the local symbolic community in the Scioto valley, which was relatively poor.
35. For gatherings of 1 to 6 or 10 gift givers, the ratio of shaman-like and nonshaman-like leaders to ordinary persons is consistently low (generally 1–4). For larger gatherings with 7 or 11 to hundreds of gift givers, the ratio is larger (generally 7–32). In this latter range, the proportion of leaders to ordinary persons generally rises smoothly with gathering size.
36. The numbers of persons who gathered at one time at the Tremper site to cremate and place the dead was certainly large and implies the attendance of persons from multiple local symbolic communities. However, estimates by various methods are wide-ranging, between 191 and 1,125 (Chapter 3, A Second Example of a Sustainable Community). Gatherings on the high side of this range could have been as large as those that assembled at the Hopewell site, later in time.

What is clear and relevant here, however, is that the number of persons who gave gifts, in distinction from the number of persons who gathered, was smaller at Tremper than at later sites, including Hopewell. The difference between Tremper and later sites in the numbers of persons who gave gifts at them directly reflects the different means of forming alliances that were used at those different times. The actual numbers of people who gathered at Tremper and at later sites reflect, instead, the numbers and demographic sizes of local symbolic communities that were allied at those times. These latter two social conditions are not known currently with good enough probability for either Tremper or Hopewell to meaningfully compare the two sites. For the later sites of Seip and Ater, only the number of allied local symbolic communities that gathered together for ceremonies (3 and 2, respectively), and not the sizes of the communities, are currently known.

37. Whether the multiple individuals buried under some mounds and within some graves at the Mound City site represent persons from different local symbolic communities is unknown. For example, who were the four persons buried as cremations and laid within the subrectangular, charnel-house shaped Great Mica Grave under Mound 12? What is clear is that large numbers of persons from different communities were not buried within a single, large charnel house, those individuals having been spatially segregated by community – the pattern at Hopewell Mound 25, and later at the Pricer and Conjoined Mounds in the Seip earthwork, the Edwin Harness mound in the Liberty earthwork, and the perhaps Porter Mound 15 and its conjoined mounds in the Old Town earthwork.
38. The average number of gift givers per deceased – a measure that combines information on the sizes of gatherings and their frequencies – is as follows for each of the five sites under consideration: 193 gifts per ~375 individuals = *.51* gifts/deceased at Tremper; 531 gifts per 106 individuals = *5.01* gifts/deceased at Mound City; 580 gifts per 98 individuals = *5.92* gifts/deceased at Hopewell Mound 25 (999 gifts per 218 individuals = *4.58* gifts/deceased for all excavated mounds at the Hopewell site); 229 gifts per 110 individuals = *2.08* gifts/deceased at Seip-Pricer; and 80 gifts per 59 individuals = *1.36* gifts/deceased at Ater Mound. Data from Carr, Goldstein, et al. (2005:484, 508, tables 13.1, 13.7).

    The McGraw site was apparently used for a residence at least twice, once sometime between the first and third centuries A.D. and once in the fifth century A.D. (Carr and Haas 1996:29, 45, 48). The bulk of the ceramics from the site are probably attributable to the later occupation (Prufer et al. 1965:137).
39. Age distinctions are not discussed in this chapter, but are evident in the data presented in Chapter 12 in summary form in the text and in summary form and in detail in Appendix 12.1.

Chapter **5**

World View and the Dynamics of Change: The Beginning and the End of Scioto Hopewell Culture and Lifeways

Christopher Carr

The origin and end of Scioto Hopewell culture and lifeways have puzzled archaeologists for decades. This uncertainty exists in part because, until very recently, the details of organization and operation of Scioto Hopewellian social and ceremonial life and the outlines of Scioto Hopewellian spiritual thought have not been known. *How* Scioto Hopewellian social and ceremonial life emerged and disappeared could not be adequately addressed when it was unclear *what* they were specifically and what factors might thus have caused them. Uncertainly also exists because, in this lacuna in knowledge about the inner workings of Hopewellian life, archaeologists have been forced to look for possible causes of it that were external rather than internal to it; and no reasonably convincing external causes have been found. Migrations of people from Illinois (Prufer 1964a:58–59); regional population growth and packing with consequent social competition (Ford 1974; see also Braun 1977, 1986; Dancey 1992; Fagan 1995; Tainter 1977); subsistence intensification (Bender 1978; Saitta 1982); subsistence risk in response to population growth (Braun 1986; Ford 1974); climatic change (Griffin 1960); the invention of the bow and arrow (Ford 1974); and communicable diseases (Prufer 1964a:66) have each been suggested and challenged empirically. Finally, the puzzle of the origin and end of Scioto Hopewell social and ceremonial life remains because most archaeologists have misunderstood the pace with which they emerged and waned. The beginning and ending, it turns out, were very rapid events that occurred over a few decades rather than drawn out processes of the kinds to which popular ecological explanations are best suited and which ecologically and materially oriented archaeologists have sought.

This chapter summarizes the fine-scaled reconstructions made in Chapters 2 through 4 of the natural and symbolic environments, subsistence, settlement, and social and ritual organization of Scioto Hopewellian peoples, and integrates these reconstructions by placing them in a historical framework. Initially, this chapter was written only to summarize and organize the reconstructions presented earlier. However, in the process of doing so, insights into the origins and ending of Scioto Hopewell social and ceremonial life were unexpectedly gained – in particular, causal factors that were *internal* to the culture and lifeways of Early and Middle Woodland peoples of the Scioto drainage. These causes are presented here.

The chapter begins by inventorying the many ways in which Scioto Hopewell culture, lifeways, and demography changed over the Middle Woodland period. It proceeds to present a model of how Scioto Hopewellian social and ceremonial life originated, tracing these to fundamental changes in world view, which are described in specific. Demographic growth and horticultural intensification, as well as new forms of social life, are shown to have been a response to these conceptual changes, rather than a cause of them. Many forms of empirical evidence supporting the model are given. Earlier explanations of the origins of Scioto Hopewell social and ceremonial life, which focus on external causes, are discussed for their inadequacies. The chapter next presents a history of how Scioto Hopewell social and ceremonial life came to close. A sociopolitical cause of this ending – the breakdown of an intercommunity alliance – and the likelihood that a perceived spiritual event or problem of fundamental proportion precipitated that breakdown, are described. Previously offered explanations of the decline of Scioto Hopewell social and ceremonial life are shown to not be well supported empirically. The chapter ends by emphasizing the necessity of richly describing the lives of past people in their local context, and of situating oneself to the extent possible in their personal and social worlds, in order to understand them in their own terms rather than ours.

HOPEWELLIAN SOCIETIES IN TRANSITION

Hopewellian societies in the Scioto-Paint Creek area were societies in transition. Over the course of the Middle Woodland period, Scioto Hopewell people transformed their lives in many fundamental ways: in their subsistence base, localized population densities, social and ritual organization, political and spiritual relations through alliance, and also spiritual and philosophical thought. Specifically, the following changes over time have been documented in Chapters 2 through 4:

(1) a significant increase in reliance on Eastern Agricultural Complex domesticated and encouraged plants;
(2) increased aggregation of people into the area of confluence of the Scioto and Paint Creek valleys, with concomitant rises in local but not necessarily regional population densities;
(3) an increase in the size of ritual gatherings within ceremonial centers until the late Middle Woodland period, when they declined;
(4) an increase in the size and number of different kinds of ceremonial centers within a local symbolic community during the early Middle Woodland period;
(5) an increase, for a sustainable community, in the number of its local symbolic communities in which ceremonial centers were built and participants from all of its multiple local symbolic communities assembled;
(6) an increase in the material flamboyance of gift-giving rituals within ceremonial centers through the middle Middle Woodland period, followed by the material simplification of such rituals;
(7) increased segregation of the roles of the classic shaman among more kinds of specialized, shaman-like practitioners and the disappearance of the classic, generalized shaman;
(8) an increase in the commonality of nonshaman-like leaders relative to shaman-like leaders;
(9) a change in one or two shaman-like leadership roles into incipient priests with domains of power that came to span multiple local symbolic communities (i.e., supralocal leadership);
(10) an increase in sodalities in their number of kinds, their degrees of crosscutting

membership, and their total combined membership, with changes in their individual membership sizes and geographic expanses over time;

(11) a likely increase in the number of clans of differing animal eponyms or totems, as a result of local processes of social differentiation, the immigration of people of new clans into the area, or both;

(12) a change in the nature of ritual alliances from primarily economic and social ones negotiated among dyads of individuals outside of mortuary contexts to largely spiritual ones placed in the hands of leaders of local symbolic communities and enacted within mortuary contexts, at first bolstered considerably with large cooperative/competitive material displays and then less so; and

(13) a decrease in the number of local symbolic communities that were ritually allied at the end of the Middle Woodland , which was coincident with the end of building of earthen enclosures.

(14) In addition, a number of changes occurred in religious thought and practice, to be elaborated below.

Many of these changes directly express the active choices that Scioto Hopewell people made as they explored, played with, and worked out the implications of their culture – its social and ritual aspects and its spiritual and religious concepts and beliefs. The natural environment did provide a material and symbolic structure and foundation for social, ritual, and conceptual transformation in the Scioto-Paint Creek area, as laid out in detail in Chapter 2. However, currrent data suggest that developments in cultural complexity in the area can no longer be seen as simply passive adjustments to the interrelated triad of increasing residential sedentism, intensification of horticulture, and increases in regional population densities, which previous models have proposed (e.g., Ford 1974; Braun 1986; for a view similar to that taken here, see Wymer 1987).

Figure 5.1 schematizes many of the conditions that changed in the Scioto-Paint Creek area during the Middle Woodland and the relationships of these conditions to one another. What follows is an explanation of the various factors and relations that are mapped.

In the Beginning: A Change in World View

The model in Figure 5.1 does not begin with the intensification of farming of Eastern Agricultural Complex crops or with regional increases in population density, for several strong empirical reasons. First, abrupt intensification in the farming of starchy and oily native seeds in the Scioto-Paint Creek area, and more broadly in the midwestern and midsouthern Eastern Woodlands, seems with current data to have begun coincident with the initial development of Scioto Hopewellian ritual life, around 50 B.C., rather than in the centuries immediately prior to that development (Tables 2.4, 2.5; figures 2.19, 2.20; Smith 1992:206, figure 9.3a; Wymer and Johannessen 2002).[1] Farming Eastern Agricultural Complex plant foods appears to have been chosen as a subsistence strategy that was viable in the soil-rich Scioto and Paint Creek valleys as people came to settle the valley flood plains and terraces and to aggregate there at the beginning of the Middle Woodland period for new ritual, social, and probably religious reasons, which are evidenced at the Carriage Factory/Miller Mound, Tremper earthwork, and Mound City (see below). Also, the Scioto and Paint Creek valleys do not appear to have been settled gradually (for horticultural purposes) in the centuries just prior to the development of Hopewellian ceremonial centers there. The flood plains and terraces lack evidence of Early Woodland settlement (Prufer 1975:315–316), and most Adena mounds in the area are located at higher elevations above the valleys, where they are framed by hills. Adena mound locations also do not correlate with catchments of highly productive agricultural lands within the valleys (Seeman and Branch 2006:117).

A second reason for removing agricultural intensification as a prime mover behind the development of Scioto Hopewellian social

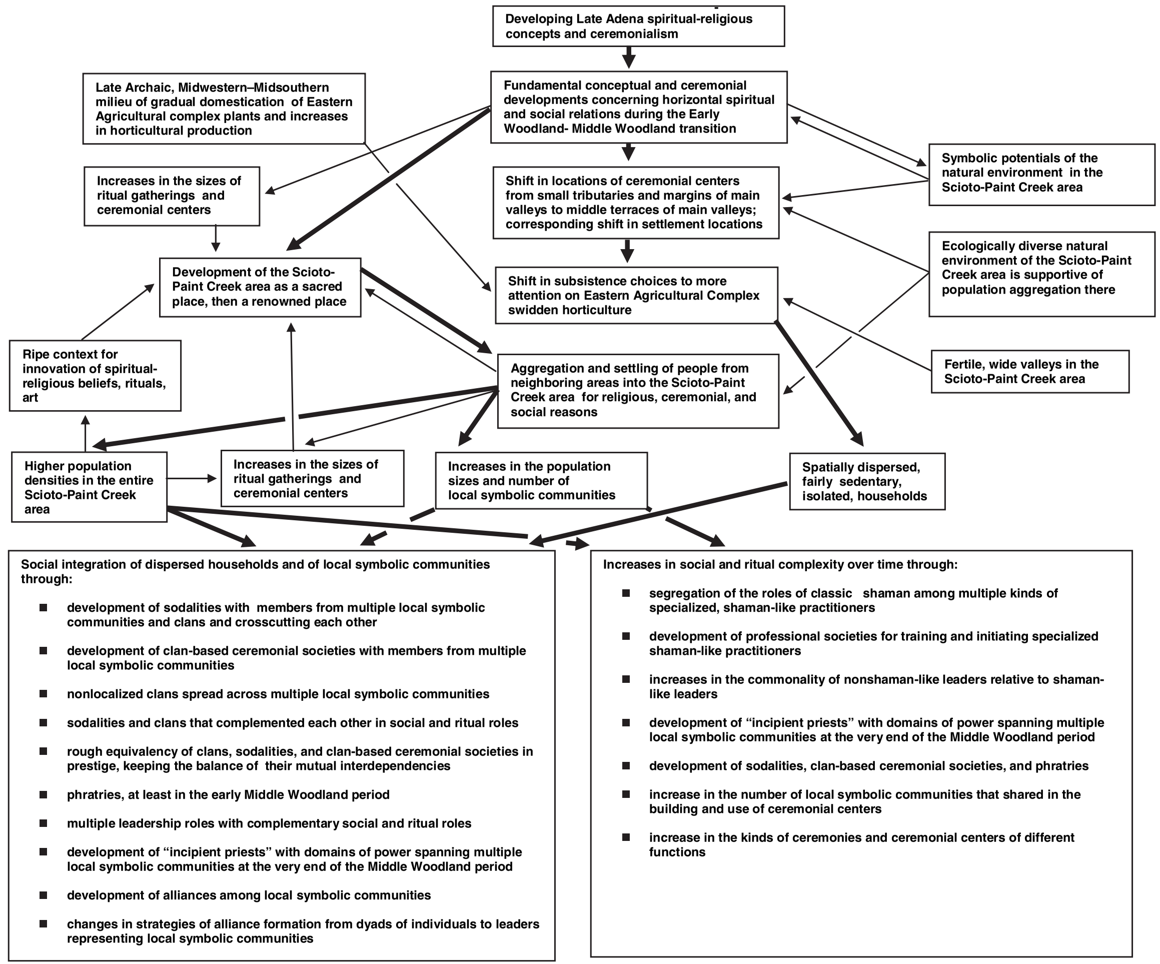

Figure 5.1. Religious, ritual, social, economic, and demographic conditions that changed in the Scioto-Paint Creek area during the Middle Woodland period and the relationships of these changes to one another and the natural and symbolic environment. Bold arrows indicate the most essential, historically causal pathways of change.

and ritual complexity is that hunted and gathered foods appear to have remained the mainstay of the diets of Scioto Hopewellian people throughout the Middle Woodland period (Chapter 2, Subsistence). Grown plant foods supplemented wild ones. This food spectrum is indicated by a variety of kinds of data from Hopewellian archaeological remains in the Scioto and Licking valleys: paleoethnobotanical and paleozoological data; the lack of efficient technologies for agricultural production and for processing seedy plant foods, which came into use after the Middle Woodland period; the paucity of facilities for storing seed harvests; representational art that focused almost completely on animals rather than plants; the important social roles and relatively high sociopolitical status of men compared to women; and a comparison of the diets of Scioto and Licking Hopewellian peoples to those of Mississippian peoples of the Woodlands (Chapter 2, Subsistence).

A significant increase in regional population density, as a concomitant of increasing residential sedentism and/or agricultural intensification, does not appear to have occurred and been critical to Hopewellian social and ritual development in the Scioto-Paint Creek area. Data on the numbers, spatial distributions, sizes, and labor expended on Hopewell mounds compared to Adena mounds in the Scioto drainage indicate that during the Middle Woodland period, regional population density did not increase measurably; however, local population densities in the Scioto-Paint Creek area did, through the concentration of people from the Scioto drainage at large into the Scioto-Paint Creek area, and through the relocation of people from upland settings, small tributary streams, and the edges of the Scioto and Paint Creek valley trenches into the terraces and bottoms of those valleys (Seeman and Branch 2006; Chapter 2, Ecological Setting). In addition, local population density within the valleys does not appear to have increased to a point where local symbolic communities were packed closely together, with concomitant changes in subsistence and political relationships. Three independent lines of evidence indicate the more ecologically relaxed situation. First, geographic analysis of the locations and areal sizes of local symbolic communities in the Scioto drainage during the last third of the Middle Woodland period indicates that they were well separated from one another rather than packed together (Chapter 3, Note 18; Chapter 15, Note 31). Distances between pairs of neighboring communities (ca. 11–20.5 river kilometers) appear to have been as great as their individual expanses (ca. 12.6–19.2 river kilometers). Second, paleoethnobotanical data from the Brown's Bottom No.1 site in the Scioto-Paint Creek area and several sites in the neighboring Licking valley show that Hopewellian peoples in the area selected those plants that were most available and most easily collected, with different kinds and amounts of species used at different habitation sites (Chapter 2, Subsistence; Chapter 15, Social Competition, and Note 32; Steinhilper and Wymer 2006; Wymer 1987, 1996). Exploitation of a wide diversity of easily and hard to gather plant species – the expectable subsistence strategy when populations are packed closely together (Ford 1974) – is not found. Third, definitive evidence of violent deaths, which accompany competition among communities as they become packed closely together in tribal societies (Service 1962:104) is fully lacking in the area. Bashed in skulls, parry fractures, and lodged projectile points are virtually absent from the Scioto Hopewell bioarchaeological record (Johnston 2002:105–113; see also Milner 1995:234–235, 1999:222). Modern osteological analyses and sensitivity to the context of burial of supposed "trophy" skulls from the Hopewell site indicate that they represent the revering of ancestors and probably a variety of other cultural practices, but seldom if ever trophy taking (Johnston 2002). The paucity of fancy artifacts and art dedicated to the symbolism of human conflict in Scioto Hopewell sites (Table 15.3) is also telling. (See Chapter 15, Social Competition, for a detailed accounting of diverse archaeological evidence that intense social competition was lacking in the area.)

In place of agriculture and population density, the model of the rise of Hopewellian social and ritual lifeways and their change through time in the Scioto-Paint Creek area begins with the foundation of spiritual-religious concepts and ceremonies laid down by Adena people there, and fundamental innovations in these arenas at the beginning of the Middle Woodland period. Specifically, much of Late Adena (Robbins Complex) spiritual-religious thought and ceremonialism was seminal to later Hopewellian thought and ritual, and continued during the Middle Woodland period, either intact or in a transformed Hopewellian guise. This continuity in concepts and practices is evidenced in the kinds of ceremonial artifacts, exotic raw materials, and mortuary practices that the Scioto Hopewell and broader Late Adena material records share: copper, mica, marine shell, galena, mica designs, hemispheres, boatstones, animal impersonator masks, platform pipes, conical mounds, rectangular log tombs, use of bark in graves, both cremation and inhumation, redeposited cremations, and supplemental skulls within graves. Markers of particular social statuses that may have had ceremonial significance also are common to the Late Adena and Hopewell archaeological records: reel-shaped gorgets, crescents of mica or copper, copper bracelets, stone earspool, cut animal jaws, worked teeth of small animals, and beads of copper, shell, and pearl (Dragoo 1963; Greber 1991; Prufer 1964a:43; Webb and Snow 1974:153–156).

However, in the last half of the last century B.C., peoples in the Scioto-Paint Creek area transformed their spiritual-religious concepts and ceremonies in a number of substantial ways. Those that are evident at this writing can be summed up by an overarching theme that permeated many aspects of developing Hopewellian life: a strengthening of attention paid to horizontal spiritual and social relations on the earth-disk – the surface of the Below realms and the Center of the Scioto Hopewell multidimensional cosmos. This cultural innovation was expressed in a number of ways:

(1) a shift in emphasis from shamanic trance in the form of vertical soul flight and ascent up the World Tree to shaman-like trance aimed at merging horizontally with personal animal spirits on the earth-disk;
(2) an elaboration of the Late Adena reinterpretation of the axis mundi from a vertical conduit among layered realms of the cosmos to also a water barrier that horizontally separated souls of the dead in cemeteries from the living on the earth-disk;
(3) a relaxing of the shape of some burial mounds from vertical, conical representations of the axis mundi to conical and loaf-shaped mounds;
(4) a change in the location of burial mound ceremonial centers from upland-valley edge settings, where they were framed by and mimicked natural hills that symbolized the axis mundi and the transition between the Below and Above realms, to the middle terraces within the Scioto and Paint Creek valleys, where they appear to have been associated with spiritual and social connections on the earth-disk and the ties of the Center to the Above and Below realms;
(5) changes in the design of earthen enclosures, including their plan view shape, from predominantly circular ones that represented the axis mundi in cross section to ones of commonly other shapes (squares, subsquares, parallelograms, octagons, ovals) that referenced the cardinal, semicardinal, solstice, equinox and/or moon maximum and minimum rise and set directions of the earth-disk; their wall profiles, which lessened emphasis on wall verticality; and the soil colors of their walls, from ones that were undifferentiated to ones that distinguished interior from exterior horizontal space on the earth-disk;
(6) a shift in the features and internal organization of burial mound cemeteries, from log burial crypts that held one to a few persons and that were separated vertically and/or horizontally from one another to single large horizontal burial floors on which were interred many persons from multiple local symbolic communities spread horizontally over the Scioto-Paint Creek area;

(7) a shift from the Adena practice of burying individuals largely separately from one another in their own burial facilities, with occasional mixing of the cremations of several individuals together, to initially, at Tremper, the mixing together of cremation remains of hundreds of individuals from multiple local symbolic communities distributed horizontally across the landscape; and

(8) the appearance of large ceremonial deposits of decommissioned artifacts, some of which represent the collective ceremonies of professional societies and sodalities of persons from multiple local symbolic communities spread horizontally over the region.

In short, the formation of Hopewellian cultural life in the Scioto-Paint Creek area centered on a new world view – one that emphasized horizontal relationships on the earth-disk with spirits, the dead, and living human beings. Both relationships of power and relationships of peaceful cooperation among beings in this realm were seminal to this world view (Carr and Case 2005a:42–44; see also Chapter 15, Social Competition).

More detailed discussion of these eight points and evidence for them, and cross-references to key information present in other chapters, are as follows.

(1) Shamanic Trance. The decreased practice of vertical soul flight and increased practice of horizontal merging with power animals, as distinct forms of shamanic trance, are evident for the Early Woodland–Middle Woodland transition in art and ceremonial paraphernalia of the time (Chapter 4, Depictions, Costumery, and Symbols of Position of Leaders). Shamanic soul flight by human-raptor impersonators who have ascended or are ascending the World Tree is liberally depicted on the Adena tablets (e.g., Figure 4.7; Carr 1997, 1998/1999, 1999a,b, 2000a,b). In contrast, only one definite representation of soul flight is known from the entire Middle Woodland period in the Scioto-Paint Creek area, and it is early: the bird-man pipe from Mound City (Figure 4.6A). In addition, the Wray figurine bear impersonator from the Newark site (Figure 4.6B) probably depict a man's soul leaving his body, although other interpretations are possible. The figurine's age is unknown.[2]

The commonality of the practice of people instead merging horizontally with their power animals, and the development of the practice very early in the Middle Woodland period and in the formation of Hopewellian thought, is indicated best by 137+ smoking platform pipes that were deposited in the Tremper mound and slightly later in Mound 8 at Mound City, and that were sculpted with animal effigies. Nearly all the animal figures face the smoker and thus interacted with the smoker. Historically in the Eastern Woodlands, analogous animal effigy pipes were used to call forth or travel to one's animal guardian-tutelary spirit and to communicate and merge with it (von Gernet and Timmins 1987:39–40; Harner 1980:73–88; Hultkrantz 1953:39–40; Grim 1983: 144; Mails 1979:50–51, 57). Animal effigy pipes are not known in the Scioto valley from archaeological sites predating the Tremper mound.

A shift from soul-flight to other forms of trance experience is a common cross-cultural pattern found where hunting and gathering is left behind for farming, societal size and complexity increase, and the roles of the classic shaman become segregated among multiple, specialized shaman-like practitioners (Winkelman 1989, 1990, 1992). In the Scioto Hopewell context, as well, the shift away from soul flight correlates with these general factors. Specific to the Scioto Hopewell case, the shift also signaled the increased attention that Scioto Hopewell people gave to their horizontal relationships on the earth-disk with various beings.

(2) The Axis Mundi. The reinterpretation of the concept of the axis mundi from a vertical conduit for traveling among layers of the cosmos to additionally a water barrier that horizontally separated ghosts of the dead from the living on the earth-disk was a creation of Adena peoples (Carr 1998/1999, 1999a, b, 2000a, b). They began building circular ditch-embankments around some ceremonial spaces,

charnel houses, and burial mounds early in the Early Woodland period (Figure 5.2A). The circles probably represented the axis mundi in cross-section and seen from above (Figure 5.2B), as the circle did historically (Mails 1978:98–100), and served to guide souls of the dead upward or downward along the axis in their journey to a Land of the Dead. For example, the circular plan of the Sun Dance grounds represents to the Lakota the axis mundi and a field of divine power that comes down it and transforms the Sun Dancer (Mails 1978:98–100). To the historic Wind River Shoshoni, the central pole of the Sun Dance lodge is the Milky Way, which is the road that the dead take to an afterlife (Hultkrantz 1987:70). Significantly, the Early or Middle Woodland ditch-embankment of the Fairground Circle of the Newark earthwork has at its center a mound that covered an altar used for cremation (Smucker 1881:226 cited in Lepper 1996:236) and that was shaped in the form of a bird's foot and/or a bird in flight with extended wings. The circle and bird symbolism could represent the flight of the deceased's soul up the axis mundi, or its flight with the help of a spiritual bird or a shaman transformed into a bird, similar to the flight of bird impersonators depicted in some Adena tablets (e.g., figure 4.7).

The concept of the axis mundi as a conduit for vertical soul travel goes back in the Ohio area at least to the terminal Late Archaic. Two independent kinds of evidence reveal this belief. First is the decorations on a possible shamanic sucking-blowing tube and on a tubular smoking pipe. A Glacial Kame slate tube from the Zimmerman site (Figure 5.2C; Carr 1999a, 1999b, 2000a, 2000b), possibly for sucking and/or blowing during shamanic healing rituals, depicts the trunk of the World Tree with nine levels of branches by which shaman could have climbed to an Above realm or nine Above realms – a common practice and a common number of Above realms in shamanic cultures (Eliade 1964:274-279)[3]. An analogous Adena tubular smoking pipe from Ohio (Figure 5.2D) has ten trident bird foot tracks engraved up it, suggesting shamanic bird impersonation and flight to one or more Above realms (Carr 1999a, b, 2000a, b). A second line of evidence is the deep, vertical shaft tombs that are common in Glacial Kame sites in northwestern Ohio and neighboring Indiana, and that extend from six to twenty feet in depth (Converse 1979:23; Cunningham 1948:34). They also possibly represented the axis mundi and vertical travel of souls upon death. Significantly, the shaft tombs were typically dug in kame hillocks which, like later Adena conical mounds, probably referenced the axis mundi (see below, Shape of Burial Mounds) and reinforced the shafts' allusion to the axis and vertical soul travel. The extraordinary labor and risks of cave-ins involved in digging these deep shafts in glacial gravels point to the strong cultural meaning and motivation behind the Glacial Kame tombs.

Adena peoples gave an extra dimension of meaning to the axis mundi in the circular ditch-embankments that they built. To the idea of vertical soul travel was added the concept of horizontal separation of souls. The ditches naturally collected water and probably acted as water barriers that separated ghosts of the dead *horizontally* from the living on the earth-disk (Figure 5.2E; Hall 1976:362). In this way, the living would have thought themselves protected

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Figure 5.2. (A) Circular ditch-embankment around a burial mound at the Biggs site (15Gp8), Kentucky. The ditch-embankment probably represented the axis mundi. View from north prior to excavation, 1939. (B) The axis mundi in cross-section and seen from above is a circle and was symbolized by the circle by historic Eastern Woodlands and Plains Native Americans. (C) Original and line drawing of a terminal Late Archaic, Glacial Kame slate tube from the Zimmerman site, Ohio, engraved with a rendition of the trunk of the World Tree, and possibly used for sucking or blowing in shamanic healing. Dots indicate nine levels of branches on the trunk. A pair of snakes zigzag their way up the two sides of the trunk. (D) Original and line drawing of an Early Woodland, Adena tubular smoking pipe from Ohio, engraved with ten trident bird foot tracks. (E) Circular ditch-embankment filled with water after a rain at the Early Woodland, Adena Wright Mound Group, Ohio. Adena water-filled ditches surrounding burial mounds probably served as a barrier against ghosts of the dead from the living. See credits.

(A)

(B)

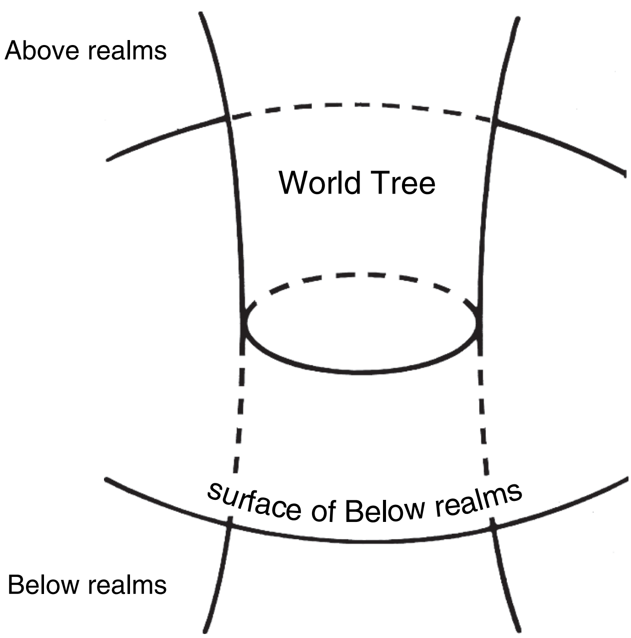

Figure 5.2. (*continued*)

(C)

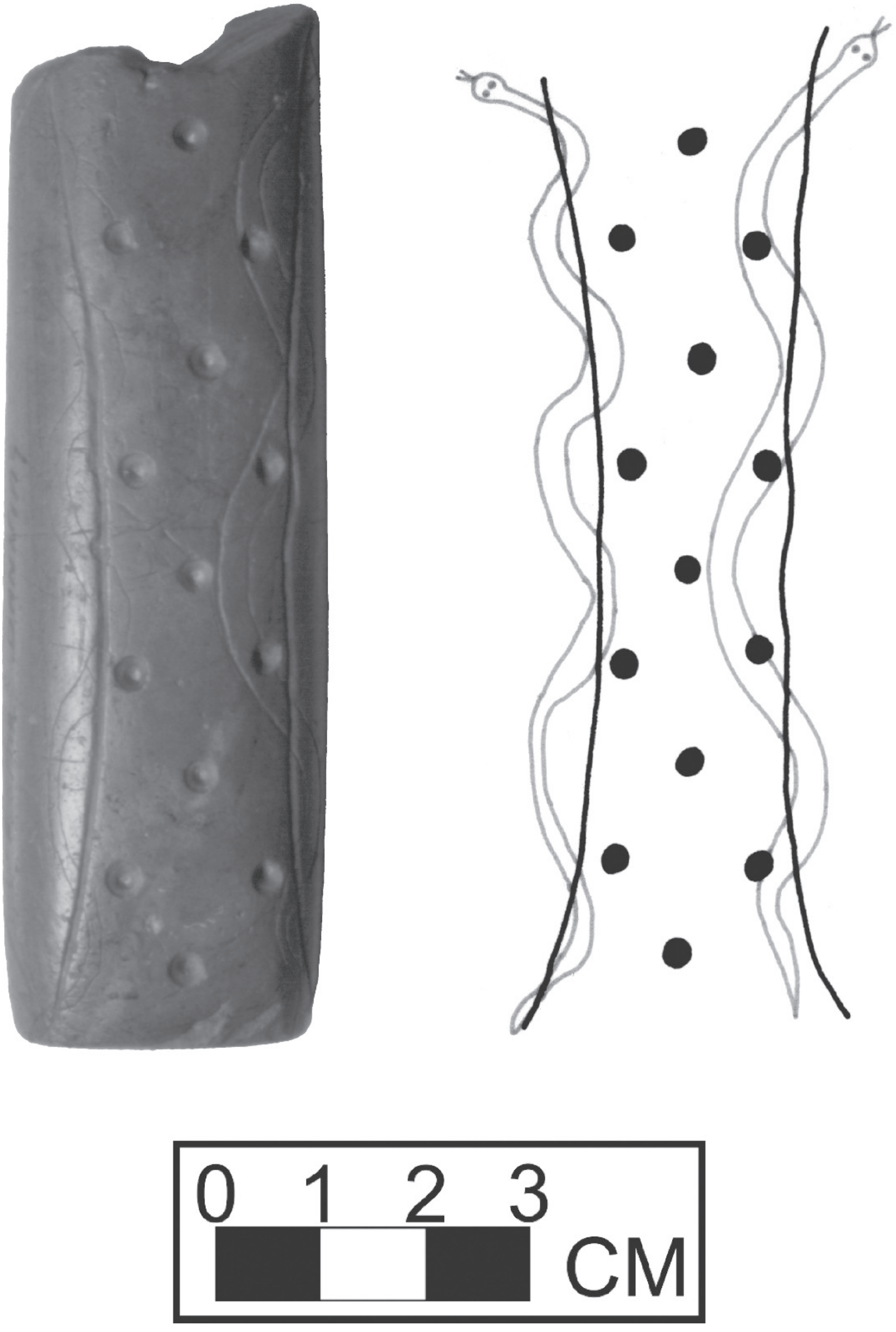

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Figure 5.2. (***continued***)

(E)

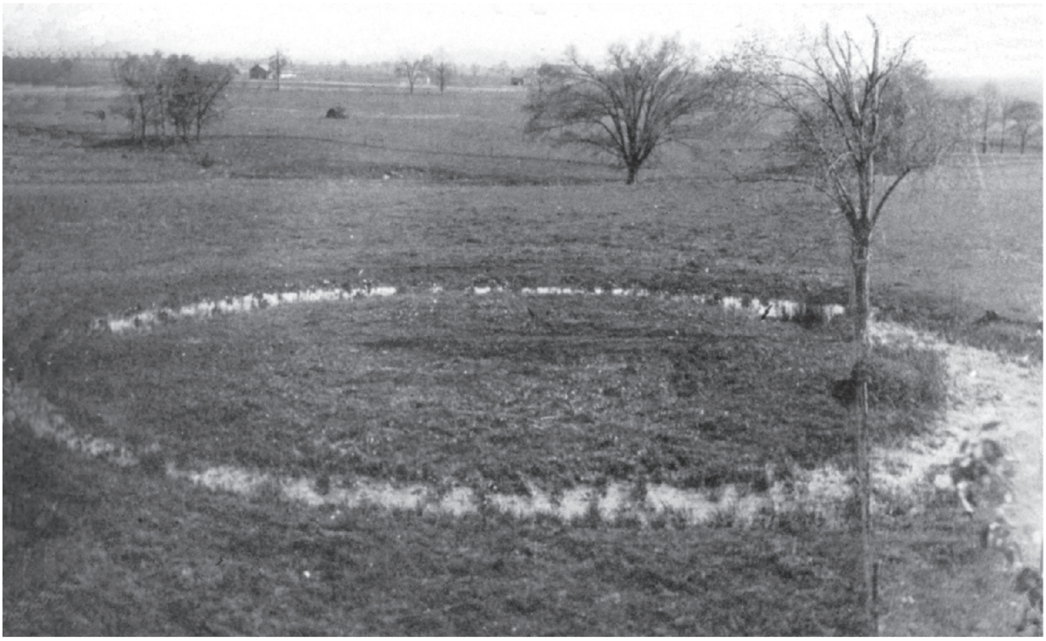


Figure 5.2. (***continued***)

from the illness, tricks, vengeance, or damage that ghosts of those buried in the mounds might cause. Historic Native Americans of the Eastern Woodland and Plains widely had a fear of ghosts, believed that water could repel a ghost, and used rivers and lakes to this advantage in locating their cemeteries (Hall 1976b:361; therein, Fletcher and La Flesche 1911:489–490, 591; Hewitt 1894:114–115; McClintock 1935).

Very early in the development of Hopewellian thought, the symbolism of the water barrier and soul guide, and its use, was elaborated considerably. Water was replaced by material symbols of water as barriers and guides, making the principle of soul repulsion and guidance easier to apply, and it was applied much more widely (Carr 1999a, b, 2000a, b). The materials that Scioto Hopewell peoples used to make the water barriers are all silvery or white in color, and reflective or transparent, like water, and some are derived from water. They include pearls, shells, mica, galena, and river-worn limestone or other light-colored cobbles. These materials were placed around graves of particularly powerful deceased persons or decommissioned artifacts, and commonly again around mounds, making for double or triple-layered water barriers. Early in the Middle Woodland, at Mound City, conch shells were used to surround a multiple cremation burial (Figure 5.3A), galena was placed in a ridge of soil around four cremations, and mica was placed below and above them, sealing them in (Figure 4.16). Hundreds of pearls were used to surround each of four adjacent burials in the Seip earthwork, one with rare copper nostril inserts (Figure 5.3B) and two burials in the Hopewell site, one with copper nostril inserts (Shetrone 1926a:63–66, figure 24). At Hopewell, a cremation and a large accompanying cache of obsidian were surrounded by a ring of light-colored rocks (Figure 5.3C), as were other burials. Approximately 34 (5.5%) of the 613 Middle Woodland graves that have been excavated in the Scioto-Paint Creek area and that are in the data base in this book were surrounded by water barriers (Figures 5.3D, E). Construction of the Seip-Pricer, Seip-Conjoined, Edwin Harness, and other mounds was begun by stripping off the

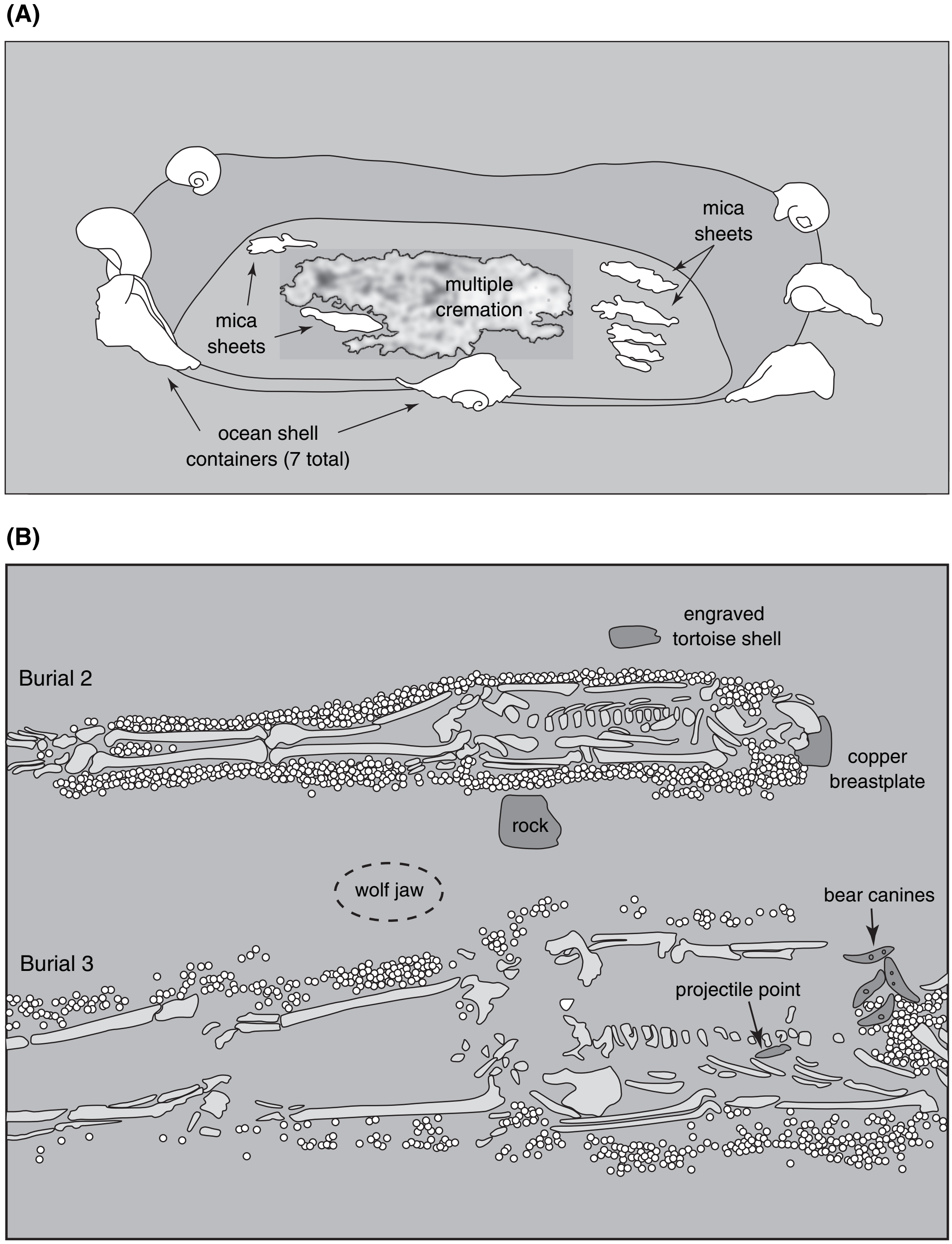
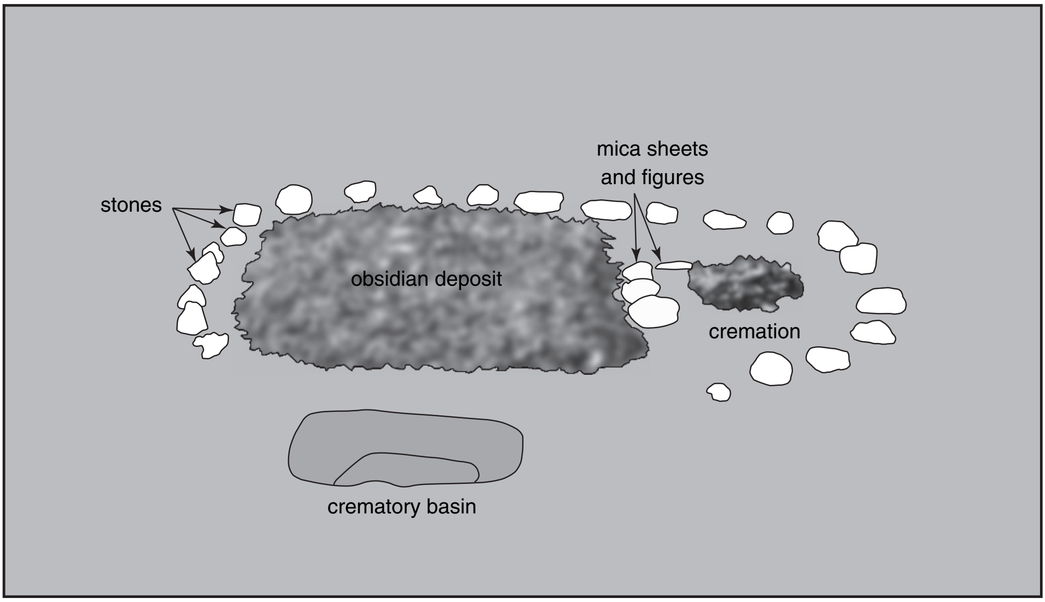


Figure 5.3. Symbolic water barriers surrounding the remains of deceased persons and decommissioned ceremonial artifacts. (A) Conch shells surrounded a multiple cremation burial at Mound City earthwork, Mound 7, Burial 13. (B) Hundreds of pearls surrounded each of four adjacent burials in the Seip earthwork, Pricer Mound, Burials 2, 3, 4, and 5. Shown here are Burial 2, which had a rare copper nostril insert, and Burial 3. (C) A cremation and a large accompanying cache of obsidian were surrounded by a ring of light-colored rocks at the Hopewell site, Mound 11, Crematory Basin, as were other burials. (D) A cremation surrounded by waterworn cobbles at the Seip earthwork, Pricer Mound, Burial 12. (E) Large mica plates placed over a cremation with a copper effigy mushroom wand, Mound City earthwork, Mound 7, Burial 9. For the original excavation photographs of these graves,

(C)



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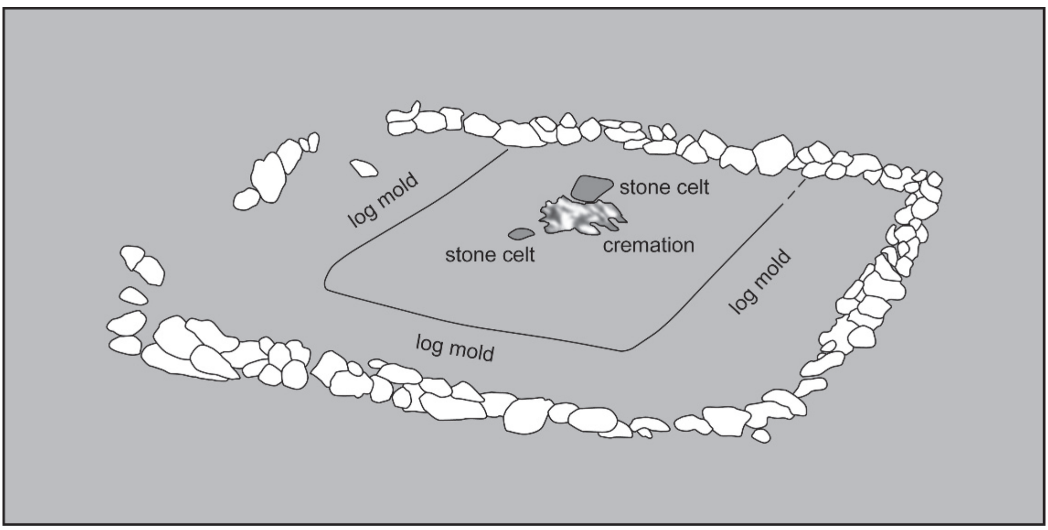

Figure 5.3. (*continued*) see: (A) Mills (1922:496, Figure 33); (B) Shetrone and Greenman (1931:375, Figure 12); (C) Shetrone (1926:41, Figure 101); (D) Shetrone and Greenman (1931:461, Figure 68); (E) Mills (1922:491, Figure 32). See credits.

sod and top soil in a circle or oval and then laying down one or more circular pavements of water-worn pebbles (Greber 1979a). Some Scioto Hopewell mounds were also covered partially or entirely by light colored stones.

If it is remembered that earthen enclosures after Tremper, especially Mound City and Hopewell, and Seip, were all places where shaman-like leaders and other persons of especial power were buried in very high relative

(E)

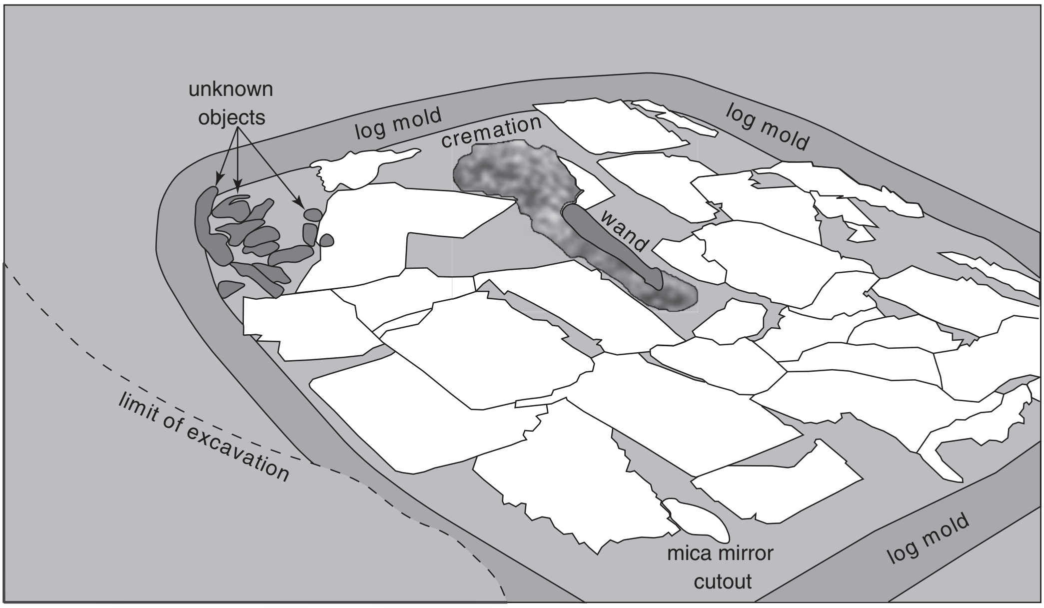

Figure 5.3. (***continued***)

frequencies (Chapter 3, An Example of a Local Symbolic Community; Carr 2005a:278–280; Prufer 1964a:74), then these ghost barriers and soul guides around graves and cemeteries make good sense. They would have been seen as protecting the living in fundamental ways from the ghosts of very powerful people and transporting the deceased to an afterlife away from the living. The multi-layered ghost barriers in Scioto Hopewell cemeteries show a strong concern for keeping ghosts from traveling horizontally across the earth-disk occupied by the living, and were an aspect of innovative Hopewellian ideas about horizontal relationships with beings on the earth-disk.

(3) Shape of Burial Mounds. The increased attention that Scioto Hopewell people paid to horizontal spiritual and social relations in the Middle World is also seen in a change in the shape of burial mounds at the Early-to-Middle Woodland transition. During the Early Woodland period, Adena people in the Scioto-Paint Creek area and more widely in the upper Ohio valley built mounds that almost uniformly were conical to subconical in shape (Webb and Snow 1974:33). It is likely that the cone shape was identified with the axis mundi, and with a vertical passage that deceased persons buried in a mound took along the axis mundi to a Land of the Dead. Crossculturally, in shamanic and shamanic-derived world views, the axis mundi is very commonly symbolized by a mountain, and this in turn by a natural hillock or a pointed tent, building, or monument (Eliade 1964: 266–269). For the Cherokee, Iroquois, and Lenape, a mountain is a means for connecting with the sky world (Mann 2003:181; Mooney 1900a:478). The Choctaw tell that they emerged from underground through a hill that was raised from flat, marshy earth by a being who descended from above (Swanton 1946:777; see also Swanton 1931:5-6). When Adena people built a mound within an earthwork, the earthwork was consistently circular, and the mound was placed at the center of the circle. In these cases, the conical shape of the mound as a symbol of the axis mundi reiterated the circular earthwork as a cross-sectional representation of the axis (see above, point 2). The placement of the mound at the center of the circle reinforced the symbolism.

This emphasis on the axis mundi and vertical passage of the dead was augmented with new concepts and concerns about horizontal social relations during the Early-to-Middle Woodland transition. Conical to subconical-shaped burial mounds continued to be built throughout the Middle Woodland period, but long, loaf-shaped burial mounds were introduced and also constructed. Each loaf-shaped mound was built over an elongated charnel house where multiple local symbolic communities, which were spread horizontally across the region, gathered together and buried their dead together within the charnel structure, and then covered it. The Tremper mound, Mounds 23 and 25 in the Hopewell earthwork, the Pricer and Conjoined mounds in the Seip earthwork, the Edwin Harness mound in the Liberty earthwork, and the Ater mound follow the pattern, and possibly the three conjoined mounds on the Porter farm in the Old Town earthwork, as well. At all but the Ater site, the mounds were built within earthen enclosures that defined a large ceremonial space for participants from the multiple communities. The horizontal layout of the burials and the chambers of the charnel building under most of these mounds was used to symbolize the spiritual alliance of the multiple local symbolic communities that assembled for joint burial activities (Chapter 3, Sustainable Communities).[4] Materially symbolizing these horizontal spiritual-social relations, which resulted in loaf-shaped mounds, took precedence over symbolizing the axis mundi and vertical journeying of the deceased, which had been expressed with conical mounds.[5]

The first known appearances of the new mound shape in the Scioto drainage were probably the Carriage Factory / Miller mound (Moorehead 1898–1899:126–132), and/or the Tremper mound (Chapter 3, A Second Example of a Sustainable Community). The horizontal charnel house under the Tremper mound is well documented (Mills 1916), and one or more charnel buildings under the Carriage Factory Mound are hinted at by minor excavation there (Moorehead 1898–1899:128, 130). Both mounds mark a radical and rapid departure, rather than a gradual shift, from the Adena tradition of conical mounds. The Carriage Factory mound is one of a cluster of twelve late Early Woodland mounds that includes the Adena mound. It was about the same size as the late Middle Woodland, loaf-shaped Seip-Pricer mound, the second largest loaf-shaped mound in Ohio (Greber 1997:9). The Tremper mound shows the greatest break from the Adena conical mound tradition of all the loaf-shaped mounds in the Scioto-Paint Creek area. Although generally loaf-shaped, the mound had lobes that followed the shape of the charnel house below it, in the general form of a four-legged mammal (Mills 1916:267; see Figure 3.11).

(4) Location of Burial Mounds. The increased emphasis that Scioto Hopewellian world view placed on horizontal spiritual and social relationships on the earth-disk complemented by vertical ones was expressed not only in an elaboration of the water barrier symbolism of the axis mundi and the introduction of loaf-shaped mounds that marked multicommunity alliances. It also was expressed through a change in the location of burial mounds (Seeman and Branch 2006). During the Early Woodland period, conical burial mounds were built in upland valley-edge settings among natural, conical-shaped hills (Figure 5.4). The hills were natural symbols, in their elevation and shape, of the axis mundi (Eliade 1964:266–269; Mann 2003:181; Mooney 1900a:478). They marked the transition between the earth-disk surface of the Below realms and the Above realms. Adena mounds appear to have been built to mimic this natural symbolism, in their conical shape and their location among the hills.

Beginning with the Tremper mound, people in the Scioto and Paint Creek drainages constructed their burial mounds primarily on the middle terraces of the valleys, and occasionally on their flood plains. The shift was symbolic of changing concerns of the times, with new focus on spiritual and social relations of the earth-disk and perhaps on balancing ties with beings in multiple directions from the Center. Previous emphasis on the axis mundi as a link between the Below and Above realms was moderated within this broader world view. Mounds and earthen enclosures symbolized affairs at the Center, on the earth-disk, in their

Figure 5.4. Conical, mound-shaped, natural hillocks are frequent at the edges of the Scioto valley. They apparently were mimicked by Early Woodland peoples who built mounds of the same conical shape in the same valley-edge locations. See credits.

terrace locations; connections to the Below realms in their locations near to the waters of the Scioto or Paint Creek; and relations with the Above realms in their orientations to several celestial phenomena (Chapter 2, Symbolic Setting). Connections with the Below realms were also expressed explicitly by earthen parallel walls that led from earthworks down to the Scioto and by earthen enclosures that were built with an open side facing the terrace edge directly above the Scioto river. The responsibility of humans at the Center of the cosmos for balancing their reciprocal relationships with beings of the Above and Below realms and in the multiple horizontal directions, and in this way maintaining the cosmos, may also have been implied in the middling placement of Hopewellian mounds and earthworks. Kinship relations and reciprocity among humans and other-than-human persons of the cosmos were cornerstones of historic Algonkian world view (Hallowell 1960; Morrison 2000, 2002), and the active role of humans in keeping the cosmos balanced may have been essential to the world view of Algonkian peoples (Morrison 2002: 55-56) and historic Cherokee and other southeastern Woodlands Native Americans (Hudson 1976:136, 148, 336, 346).

(5) Changes in Earthen Enclosure Plan View Shape, Wall Profile, and Wall Color Design. Reinforcing the changes in mound shape and location by which Scioto Hopewell peoples expressed their new world view, with its emphasis on horizontal relations, were innovations that the peoples made to the embankment walls of their earthen enclosures. Walls of new plan view shapes, profiles, and colors designs were created.

In the Scioto valley, the great majority if not all Adena earthworks were circular embankments, with accompanying internal ditches and sometimes an entrance (Webb and Snow 1974:16, 31–33; e.g., Figure 5.2A, E; see also Blazier et al. 2005:98; Clay 1987: 46–486).[6] The circular form most likely symbolized the vertical axis mundi in cross section (see above, point 2). Early in the development of Hopewellian beliefs and rituals in the Scioto valley, peoples there began to construct earthworks with linear sides or with major and minor axes: squares, subsquares, parallellograms, octagons, and ovals. Embankments at the relatively early sites of Tremper, Mound City, Dunlap, Hopeton, Anderson, Seal, High Bank, and Hopeton take these forms. The earliest shapes were an oval or subparallelogram, at the Tremper site, and a subsquare, at the Mound City site, which were natural transitions from the Adena circular earthworks. Later, true squares, a parallelogram, and an octagon were added. All of these shapes, unlike the circle, could be oriented to key horizontal directions of the cosmos of Scioto Hopewell peoples – the cardinal and semicardinal directions, solstice sun rise and set, the equinox, and moon rise and set points. In fact, all Scioto Hopewell geometric earthworks that have been surveyed rigorously for their directional placements have been found to be oriented to one or more of the named directions (Hively and Horn 1984; Romain 2004, 2005; see a summary in Carr 2005b:85–88). Further, some of the new shapes could be oriented to more than one key direction simultaneously, whereas a circle with one entrance could be oriented in only one direction.[7]

Significantly, by orienting their earthworks in which they held their rituals to these directions, Scioto Hopewell peoples were most probably trying to actively establish, express, and manifest social-spiritual relations to one or more specific spiritual beings or places that they associated with those directions and that they thought essential to their well being. In historic Woodlands and Plains Native American beliefs and ritual practices, the horizontal directions of the cosmos were places inhabited by sentient Persons of power who were responsible for various aspects of human well being (e.g., health, procreation, wisdom, success, purity, beauty, water, harvest), their messenger animals, extraordinary creatures of power (e.g., the Thunderbirds), beings essential to the Creation and other culture heros (e.g. Nanibozho), all of the dead, the dead of particular categories, the pathway to an afterlife, and/or an afterlife, itself (e.g. Bailey 1995:32–33, 58–50; Howard 1981: 167–168; Hudson 1976:132, 172, 335; Mails 1978:101–103; 1991:48, 52–54, 56, 58–60, 104–106; Trigger 1969:103–104). Historically, rituals were structured relative to particular directions in order to establish relations with those persons, beings, or places and to secure necessities for a good existence. It is likely that horizontal relations of some of these kinds were what Scioto Hopewell peoples were focused on and expressing as they developed their new world view and began building earthworks of new shapes and orienting them directionally. The appropriateness of this interpretive analogy is supported by the widespread distribution and foundational nature of directional structuring in Woodlands and Plains cosmology and ceremony, and its great time depth implied.[8]

In the Scioto valley, the shift from Adena circular earthworks that marked the vertical axis mundi to Hopewell earthworks with linear features that could be oriented to horizontal directions in This World was followed somewhat later by reinforcing changes in the symbolic profile form and coloration of the embankment walls of earthworks. Adena earthen enclosures in the Scioto valley and more widely were constructed by digging a circular ditch and throwing that local soil to the ditch's exterior to form a circular embankment (Webb and Snow 1974:29–31). The dug ditch and piled earth emphasized their verticality and symbolic reference to the axis mundi. The embankments show no differentiation in the colors of their interior and exterior soils, i.e., horizontal diversification. This emphasis on the vertical lessened at the beginning of development of Hopewellian thought and ritual: the earthen walls of the early works of Tremper and Mound City were not accompanied by a ditch that augmented their vertical dimension. At the same time, the walls of Tremper and Mound City were not differentiated horizontally in the color of soils used to build them (Greber 2006:88). Horizontal differentiation by color was added later, in the middle Middle Woodland, from what is known from the excavation of embankment walls. Specifically, at the sites of Hopeton and High Bank, earthwork walls continued to be built without ditches, but also with contrasting red and yellow soils, or grey and yellow soils, which distinguished their interior and exterior sides (Greber 2006:89–90).[9] Thus, horizontal relationships came to be emphasized through wall color and form, coordinating with the many other Scioto Hopewell material-symbolic developments that expressed horizontal spiritual and social relations on the earth-disk.

(6) Features and Internal Organization of Burial Mounds. During the Early-to-Middle Woodland transition in the Scioto drainage, the construction of mounds in a new loaf shape that did not place primary emphasis on the axis mundi was prompted by changes that Scioto Hopewell peoples made to the features and internal organization of their mounds. The new layouts focused on horizontal relationships among large social groups (Prufer 1964a:73; see also Greber 1991:19).

Adena peoples placed their dead in graves that held one or a few persons. Both log-lined crypts, which could be reopened for access to the body and reused, and simpler sealed pits were built (Clay 1998:4–5). Commonly, one or a few of these graves were dug into a ceremonial floor, mounded over, and then more graves were constructed vertically at multiple levels as a conical mound was built up incrementally (Webb and Snow 1974:37, 43; for examples, see Dragoo 1963; Norris 1985; Webb 1940). In other instances, only one or a few graves were constructed in the mound floor and the mound was finalized to a conical shape with the addition of no more burials. A mound with a vertical distribution of graves may have represented individuals who were related through descent and were interred over time (Prufer 1964a:73). Depending on the number of persons buried in the mound, they might have comprised select representatives or all persons who had lived in one or a few kin-related, dispersed residential communities in the general vicinity of the mound. Alternatively, a vertically stratified mound might indicate the periodic meeting of a somewhat wider set of dispersed residential communities to bury some of their deceased and to create and maintain alliances among them (Clay 1998). An Adena mound with a few burials in only its floor could represent ceremonies of short duration held by either one or a few kin-related residential communities to lay to rest their own dead or a broader suite of communities that combined burial and alliance making activities.

The building of the large charnel house and loaf-shaped mound at the Tremper site marked a radical and abrupt departure from Adena mortuary practices and initiated Hopewellian ones (Chapter 3, A Second Example of a Sustainable Community). At Tremper, the remains of about 375 persons were cremated in 12 crematories and then combined into four depositories, all situated horizontally on one large 200 × 100 foot floor of a charnel building. The deceased appear to have been processed together over a short duration of weeks to a few years as a part of a multiple-step mortuary rite, rather than over generations (see Chapter 3, Note 26). The number of deceased was about 10 times the number buried at the extraordinarily large Adena mound in the Scioto valley (n = 36). Those laid to rest at Tremper came from multiple local symbolic communities of a sustainable community spread over a broad geographic area, not just the one or few residential communities typically represented in Adena mounds. The ceremonial remains at Tremper indicate the gathering of a minimum of 191 gift givers and many hundreds of mourners. The site represents social and spiritual alliance making among horizontal social groups on a much grander scale than that represented by any Adena mound. This emphasis on alliance formation among large, horizontal social units continued throughout the Middle Woodland Period in the Scioto-Paint Creek area. Big charnel houses with large burial populations that came from multiple local symbolic communities and that were arranged on single ceremonial floors were constructed at the Hopewell, Seip, Liberty, Old Town, and Ater sites. In all of these sites, alliance formation symbolized in the horizontal layout of burials from multiple social groups and in the capping of the burials by a single, large, loaf-shaped mound took precedence over the symbolizing of the axis mundi and vertical social-spiritual relationships.

Note, to be fully accurate, that the change from Adena to Hopewell mounds was not from simply vertical to horizontal internal organization, as Prufer (1964a:73) and Greber (1991:19) have summarized. Rather, it was from a mix of small vertically stratified and small horizontally laid-out conical mounds of the Adena kinds to a mix of small horizontally organized conical mounds and large horizontally laid-out loaf-shaped mounds of the Hopewell kinds.

(7) Intermixing of Cremations. The new, Hopewellian world view and concern for horizontal social and spiritual relationships was expressed in a great increase in the commonality with which the deceased from multiple local symbolic communities were intimately buried with each other. During the Early Woodland period, Adena peoples buried deceased individuals largely separate from one another in their own log crypts or sealed pits. Occasionally, inhumations and/or cremations of two or three persons were buried together in a grave, and in two cases, the cremations of several individuals were deposited together in a pile on a charnel house floor or scattered together over the floor (Webb and Snow 1974:66–68, 71–72, 154).

In contrast, at the Tremper site at the beginning of the Middle Woodland period, the cremated remains of about 375 individuals were intermixed within four communal depositories. The physical act of placing the cremated remains of multiple deceased persons from multiple local symbolic communities together in one depository probably had a spiritual and social meaning similar to the historic Algonkian and Huron practices of placing and stirring the bones of multiple deceased persons from multiple communities and neighboring tribes together in a single ossuary. The body souls of the deceased, which were thought to reside in their bones, were intermingled through the mixing of their bones, expressing the creation of alliances among communities and tribes through the souls of their dead ancestors and kin. This spiritual medium of alliance formation emphasized the sacred and permanent quality of the alliances (Trigger 1969:111). In the Hopewell case, the horizontal ties of alliance of multiple local symbolic communities in this Middle World would have been firmly cemented spiritually and socially.

(8) Ceremonial Deposits of Decommissioned Artifacts. Scioto Hopewellian ceremonialism is distinct from Adena ceremonialism in having produced large deposits of decommissioned, fancy artifacts and raw materials that were placed on the floors of charnel houses along with the dead. Most large deposits contained primarily one kind of artifact. In all, 43 impressive deposits were created. Their artifacts and raw materials were of 24 kinds (Table 15.2). They include ritual paraphernalia used by persons in various shaman-like roles (e.g., mica mirrors for divination) and symbolic markers of other kinds of social roles of importance (e.g., copper earspools).

In most cases, a deposit was the remains of a collective ceremony of members of a corporate social group that must have spanned multiple local symbolic communities, given the numbers of persons implied by the artifact counts in the deposit. Five of the kinds of artifacts found in deposits specifically indicate professional sodalities or clan-based ceremonial societies (Chapter 4, Sodalities and Ceremonial Societies). These forms of horizontally cross-cutting social groups and their ceremonial remains are first evident archaeologically at the Tremper site, at the initiation of the Middle Woodland period, recur a few decades later at the Mound City site, and continue through the Middle Woodland period at the sites of Hopewell, Seip, and Liberty. Significantly, large ceremonial deposits were missing from the charnel house under the Ater mound, at the tail end of the Middle Woodland period, after the partial break up of an alliance among communities across the Scioto-Paint Creek area (Chapter 4, Changes in the Number of Allied, Local Symbolic Communities). Shaman-like symbology concerned with spiritual and/or cosmological matters characterize all of the artifact markers of these corporate groups (e.g., Ruhl 2005:704–705), suggesting that the new horizontal connections that arose among local symbolic communities at the beginning of the Middle Woodland and proliferated over its duration were spiritual in nature and tied to a new world view.

In sum, many independent lines of archaeological evidence point to a fundamental change in the world view of people who lived in the Scioto-Paint Creek area during the Early-to-Middle Woodland transition. The new world view emphasized horizontal relationships among spirits, the dead, and living persons on the earth-disk over vertical relationships among beings of the Above and Below realms, which had preoccupied earlier Adena thought, ceremony, and material culture. It appears that Scioto Hopewell world view developed largely in place from Adena thought. However, the degree to which it was enriched and encouraged by the beliefs and ceremonies of Illinois Hopewell peoples remains to be investigated.[10]

Consequences of the Changes in World View

The changes in concepts and ceremonies that crystallized quickly in the Scioto valley during the Early-to-Middle Woodland transition had profound ecological and social effects on Scioto Hopewell people in the decades and centuries thereafter (Figure 5.1). The new focus on horizontal relationships among spirits, the dead, and living human beings on the earth-disk socially allowed and symbolically encouraged people of the Scioto-Paint Creek area to move their settlements and ceremonial grounds from the small tributaries of the Scioto and Paint Creek, and from valley-edge locations along these two major streams, to their middle terraces and flood plains. Incipient sodalities and ceremonial societies with memberships that crosscut residence and thereby provided new means of social integration and regulation, as well as nonlocalized clans that may have already existed during the Early Woodland period, made it feasible for people to aggregate and live more closely together in the main river valleys. The hill country with its natural symbolic references to the vertical axis mundi, which had been primary in Early Woodland thought, was depopulated over decades in favor of the broad, horizontal terraces and flood plains of the Scioto and Paint Creek valleys with their natural symbolic reference to the earth-disk and perhaps to balancing the Above and Below realms (Chapter 2, Symbolic Setting).

Supporting this conceptually, ceremonially, and socially stimulated change in residential settlement location was the relative richness and diversity of the natural environment of the Scioto and Paint Creek valleys in fish, mussels, turtles, flocks of migrating ducks and geese, acorns, deer, turkey, and maple syrup, with upland hickory nuts within close walking distances. Equally important, the friable and fertile silt-loam soils of the middle terraces of the valleys offered the potential to increase production of Eastern Agricultural Complex crops. This subsistence option was chosen and native horticulture increased exponentially in the early Middle Woodland Period between about 50 B.C. and A.D. 10 (Chapter 2, Subsistence Change over Time), without social packing as a driving force behind it. That social packing was not a key factor in subsistence change is made clear by the three independent lines of archaeological evidence presented above (see above, In the Beginning: A Change in World View).

As spiritual thought and ceremony developed in form in the Scioto-Paint Creek area, and as ceremonial gatherings increased in size with the settlement of local people in the valley trenches and with the formation of intercommunity sodalities and other corporate groups, the area likely gained the reputation in neighboring portions of the Scioto drainage as being an especially sacred place of power. The striking change in relief and in the play of light and darkness at the interface of the Till Plains and the Appalachian Plateau made for a dramatic theater for ceremonies there and would have encouraged this perception (Chapter 2, Natural and Experiential Setting).

The evolving reputation of the area had both immediate and long-term consequences. Early in the Middle Woodland, it led to the concentration of people who lived up and down the Scioto drainage into the area immediately around the Scioto-Paint Creek confluence, for habitation and/or for participation in rituals there. The increase in local population numbers and densities that resulted from both new inhabitants and new ritual participants could have been substantial – up to a doubling – but is difficult to estimate even roughly (Chapter 2, Ecological Setting; Chapter 4, Changes over Time in the Sizes and Social Compositions of Gatherings; Seeman and Branch 2006).[11] Later in the Middle Woodland, after more ceremonial centers had been built in the area and as its reputation spread interregionally, people from distant places traveled on occasion to the centers, possibly in search of esoteric knowledge and power, to buy and learn ceremonial rites, to make pilgrimages, and/or to be healed (Carr 2005d: 585–586, 589–591, 609, table 16.2; see also Ruby and Shriner 2005).

Increases in local population numbers and densities in the Scioto-Paint Creek area early in the Middle Woodland had four effects (Figure 5.1). First, more persons and greater densities of persons provided a rich, interactive and creative context for further innovations and elaborations in spiritual-religious beliefs and rituals, which are evident archaeologically in the spectacular material culture of Scioto Hopewell peoples. These novelties and refinements over the decades and centuries continued to augment the reputation of the place and the draw of people to it.

Second, increasing local population numbers and densities supported the perpetuation of existing cultural means for integrating the small, spatially dispersed, and now fairly sedentary households in the area, and encouraged the development of new means of integration. These means included: nonlocalized clans, which grew in number over time and complemented one another in the social and ritual roles they filled; sodalities and other ceremonial societies, which increased in number of kinds, their degrees of crosscutting membership, and their total combined membership, and which also complemented one another in social and ritual roles; phratries, at least in the early Middle Woodland period; and new strategies for building and securing alliances among local symbolic communities. The last involved a shift from the economic and social efforts of many dyads of individual commoners that bridged communities, to the efforts of leaders who represented whole communities or segments of them and orchestrated cooperative and/or competitive flamboyant material displays nested within mortuary rituals, to the perfection of spiritual means of alliance formation in which several local symbolic communities buried their dead together by community within one charnel house (Chapter 4, Clan Organization; Sodalities and Ceremonial Societies; Changes in Alliance Strategies). Most of these developments resulted directly in changes in the social compositions and sizes of ceremonial gatherings through time, which are seen archaeologically in the kinds and numbers of artifacts that were placed in graves and ceremonial deposits during these gatherings, and in the arrangement of graves and deposits on charnel house floors (Chapter 4, Changes over Time in the Sizes and Social Compositions of Gatherings).

Third, the greater numbers and densities of people in the Scioto-Paint Creek area resulted in increases in ritual and social differentiation, regulation, and complexity over time. The many roles of the classic shaman became segregated among multiple, new kinds of specialized, shaman-like practitioners, which allowed more people to be effectively served. Some kinds of shaman-like practitioners formed professional societies that met for collective rites and probably to trained their initiates. The commonality of nonshaman-like leaders with institutionalized roles and predictable leadership styles increased relative to shaman-like leaders with more idiosyncratic leadership styles – a change that allowed larger gatherings of persons to be effectively orchestrated and controlled. More kinds of ceremonial centers that varied in their orientations and features were built, implying the performance of a greater diversity of kinds of ceremonies. Ceremonial centers that were used by multiple local symbolic communities came to be built within the lands of not just one such community but several. Near the end of the Middle Woodland period, two leadership roles that had domains of power spanning multiple symbolic communities and that might be called incipient priests appear to have emerged. These were marked by plain copper headplates and by conch shell dippers with shell spoons. (See Chapter 4, The Nature and Organization of Leadership Roles; The Question of Priest-Chiefs; Changes over Time in the Sizes and Social Compositions of Gatherings; Chapter 3, Local Symbolic Communities; Sustainable Communities.)

Fourth, increases in local population numbers and densities in the Scioto-Paint Creek area, with concomitant increases in the maximum size of the ceremonial gatherings held within earthen enclosures and in available labor, led to steady increases in the sizes of the enclosures over the Middle Woodland period. Increases in the sizes and visibility of earspools, and in the proportion of nonshamanic leaders compared to shamanic leaders, also reflect the larger gathering sizes. This trend in gathering sizes reversed at the tail end of the Middle Woodland period, after the break-up of the tripartite alliance; at the Ater site, no enclosure was built (Chapter 4, Changes over Time in the Sizes and Social Compositions of Gatherings).

In contrast to the steady increases in ritual elaboration, in the sizes of ceremonial gatherings, in the expanse of the geographic catchments from which ceremonial participants were drawn, and in social complexity that occurred in the Scioto-Paint Creek area over the Middle Woodland period – each with their implications for local population density also having increased – one finds that intensification in the use of Eastern Agricultural Complex foods was restricted to a narrow window between about 50 B.C. and A.D. 10, early in the period. Thereafter, during the remainder of the Middle Woodland and into the early Late Woodland, the use of Eastern Agricultural Complex seeds leveled off (Table 2.5). There is no evidence that ceremonial intensification, and the larger feasts (Seeman 1979b) that they may have been entailed, led to agricultural intensification, which may have been the case in some other small-scale societies around the world (Bender 1978, 1985; Spielmann 2002:197). Natural food resources in the Scioto-Paint Creek area appear to have been rich enough and diverse enough to have buffered Hopewell peoples there from their having to have increased their agricultural efforts and work loads as their population density increased. Archaeological evidence against social packing in the area throughout the Middle Woodland period supports this conclusion (see above, In the Beginning: A Change in World View).

The Responses in Relation to Anthropological Theory

A few of the above, specific responses to increases in the numbers and densities of people in the Scioto-Paint Creek area follow crosscultural patterns that have been modeled in anthropological theories. The segregation of the roles of the classic shaman among varied, specialized shaman-like practitioners as societal size and complexity increased, and the rise of professional sodalities that were not clan-based in this demographic and social context, occurred across the globe and are documented by Winkelman (1989, 1990, 1992). The formation of leadership positions that had domains of power across multiple communities and that were spiritual-religious in nature, as population numbers and densities rose, has been described for several societies and modeled by Netting (1972) and Peebles and Kus (1977). The dependence of artistic creativity and diversity upon societal size has been discussed by Roe (1995) and serves as a basis for understanding creativity in cultural thought and ritual generally. The individual-level decision making processes that lead to social differentiation as population increases have been modeled by Johnson (1982) and Blau (1970), but this framework is very generalized and does not address the specific cultural forms of responses enumerated here.

The Responses in Relation to the Interregional Hopewellian Record

The new world view that people in the Scioto drainage developed at the Early-to-Middle

Woodland transition, with greater emphasis on horizontal connections among spirits, the dead, and the living on the earth disk, probably had several effects at an interregional scale. First, it probably served as an impetus for the increased commonality with which people in the Scioto valley took power quests and pilgrimages to very distant places in nature and peoples, from which were brought back large quantities of exotic materials, artifacts, and ideas (Carr 2005d:582–585). The great surge of mica, galena, and quartz into the Scioto valley early in the Middle Woodland period, which were deposited at the site of Mound City (Carr, Goldstein, et al. 2005: 486–488, table 13.2), evidence these travels. Second, the travels that the new world view spawned probably led in part to its spread, more and less, to a number of societies across the Eastern Woodlands (e.g., Ruhl 2005; Turff and Carr 2005). The dissemination of these ideas encouraged the Pax Hopewelliana – a condition of peaceful ritual interaction and safe travel among members of some Woodland societies. Finally, the new opportunities for safe interaction and travel, along with the motivations that the new world view gave for connecting with other persons and places on the earth-disk, probably led to the many additional kinds and instances of horizontal, interregional interaction that, together with power quests and pilgrimages, define the Hopewell Interaction Sphere: travel to distant centers of learning, "buying and selling" of religious prerogatives from distant practitioners, the travels of medicine men, long-distance exchange among elites, intermarriage, and spirit adoption (Carr 2005d:581–604, 608, especially table 16.2).

In the End

Hopewellian social and ritual life in the Scioto-Paint Creek area – including the construction of noncircular earthen enclosures, burial of the dead in big charnel houses, the large ceremonial gatherings, the production of fancy ceremonial paraphernalia and markers of social roles, and the placement of these in graves and ceremonial deposits – ended as they had begun: abruptly. However, rather than a crystallization of spiritual-religious concepts, which had led to the initiation of Hopewellian ways, a unique historical event precipitated the end of these.

The Middle Woodland-to-Early Late Woodland transition had three identifiable periods, with different aspects of the lifeways of people in the Scioto drainage having changed at different times. Over a short period of years to a few decades in length, somewhere in the range of approximately A.D. 320–350 radiocarbon time, the three-way alliance among local symbolic communities in the main Paint Creek valley, the North Fork of Paint Creek valley, and adjacent portions of the Scioto valley partially broke up (Chapter 4, Changes in the Number of Allied, Local Symbolic Communities). The building of charnel houses waned, with only the charnel house at Ater having been constructed in this period. The construction of earthen enclosures ceased entirely. Mortuary-related ceremonies within the Ater charnel house involved a partial return to personal, dyadic means of forming alliances and some decrease in reliance on community leaders for orchestrating alliances, as indicated by gift-giving patterns (Chapter 4, Changes over Time in the Sizes and Social Compositions of Gatherings). From about A.D. 350 until A.D. 500, some small mound building in the vicinity of at least the Liberty earthen enclosure continued (Seeman and Soday 1980), and crafting and/or other small-scale ceremonial activities occurred within the Seip earthen enclosure (Baby and Langois 1977, 1979). Earthen layers may have occasionally been added to some burial mounds during this time range and for the next few centuries (Greber 2003:108–109, Figure 6.8). During this period of very reduced ceremonial activity, people in the Scioto valley continued to live in small, dispersed residential communities and to practice horticulture, hunting, and gathering as they had before (e.g., Prufer et al. 1965). More emphasis on dyadic relationships among members of different, and sometimes distant residential communities may be indicated by the stylistic diversity and distant sources of ceramics recovered from the McGraw site (Carr and Komorowski 1995; Prufer et al. 1965). Beginning around A.D. 500, people in the

Scioto valley aggregated into a small number of villages (Zencor-Scioto Trails, Waterplant, Harness-28, Ety) of 1 to 3 hectare size, which were built on bluffs above the Scioto valley and surrounded by ditch-embankments (Dancey 1988, 1992; Seeman and Dancey 2000:595–597, figures 22.8, 22.9) that may have been built as water barriers. Radiocarbon estimates of these three time periods are summarized by Carr and Haas (1996:30–31; see also Greber 1983:89–92).

Previous attempts to explain the "end of Hopewell" have focused on: (1) subsistence intensification, which might have led to either local self-sufficiency and reduced needs for supralocal interaction (Bender 1978; Saitta 1982) or to greater local subsistence risk and further institutionalizing of supralocal ties (Braun 1986; Ford 1974); (2) climatic cooling and a shorter growing season (Griffin 1960); and (3) demographic growth and social competition (Dancey 1992; Tainter 1977). All of these explanations, save Dancey's, have been very broadly aimed – at Hopewell over the Eastern Woodlands at large or at northern Hopewellian traditions modeled specifically with Illinois Hopewell data. The explanations are not built on empirical evidence from Hopewell archaeological records specifically in the Scioto and neighboring drainages, and are not supported for the Scioto area by that evidence.

Horticulture and wild plant collecting appear to have changed little in the greater Scioto area from around A.D. 200–A.D. 700 radiocarbon time. In this time range in the greater Scioto area, Middle Woodland paleoethnobotanical records are very similar to Early Late Woodland ones in their seeds per liter of archaeological deposits analyzed and in their percentages of starchy Eastern Agricultural Complex seeds to wild fruits (Wymer 1987, 1992, 1996, 1997). The continuity of dispersed, small residential community life from before the waning of Hopewellian social and ritual practices in the Scioto valley through their waning until A.D. 500 supports the paleoethnobotanical picture of subsistence continuity. Significant changes in plant utilization are not evident until Scioto peoples aggregated into villages, and these changes were largely in increases in the quantity of nuts and diversity of nut species used, and secondarily in the range of taxa of wild seeds, fruits, and berries used (Wymer 1992:65, 67). The changes reflect the impact of nucleated, high human density habitation on immediately local environments (Wymer 1996:42). The record of subsistence continuity during the Middle Woodland to Early Late Woodland transition does not support the idea of subsistence change as a cause of the end of Hopewellian social and ceremonial life.

A possible cool period in the climatic history of the northern Mississippi drainage and Great Lakes areas between A.D. 200 and A.D. 700 has four difficulties as a cause of the end of Hopewellian social and ritual life. The regime began more than a century earlier than the end of construction of large charnel houses and earthen enclosures in the Scioto-Paint Creek area. Also, the regime was drawn out, whereas social and ritual change in the area were abrupt, over the course of a few years or decades. Further, food producing and gathering practices in midwestern-riverine environments were buffered from the effects of changes in climate by topographic variation (Asch et al. 1972:22). Differences in elevation and landform provided alternative yet close locations that could be exploited to an advantage with changes in climate and weather, including frost and its affect on growing season length. Finally, what climatic cooling that might have occurred in the area, beginning around A.D. 200, is not evident in changes in subsistence practices during the Middle Woodland to Early Late Woodland transition – its claimed effect (Griffin 1960; see also Dancey 1992:26–27).

Demographic explanations of the demise of Hopewellian ceremonialism have posed that increases in population density and packing together of communities caused social competition and conflict over unevenly accessible natural resources, which led to raiding and/or predation on stored resources as social solutions (Dancey 1992:27; Tainter 1977; see also more general arguments by Prufer 1964a: 66–70; 1964b:100, 102). Greater competition over mates (Brown 1981) might be seen as having played a role, as well. It is clear that increases in local population density did occur over the course of the Middle Woodland period in the Scioto-Paint Creek area. They are evident from progressive increases over time in the sizes of earthen enclosures and the numbers of people that they were capable of holding during ceremonies; from continuous increases in the size and visibility of earspools, which allowed them to be seen at greater wearer-to-viewer distances, implying ceremonies with increasingly larger audiences; and from progressive increases in the degree of institutionalized, nonshaman-like community leadership roles in order to orchestrate more people more effectively at ceremonial gatherings (Chapter 4, Changes over Time in the Sizes and Social Compositions of Gatherings). At the same time, the population increases in the area did not reach a significant level where local symbolic communities were packed closely together, where the accessibility of necessary and unevenly located subsistence resources was critically reduced, and where raiding and predation on the stored food of others occurred. Local symbolic communities even in the last third of the Middle Woodland period (Seip-Baum, Old Town-Hopewell, Liberty-Works East) were widely spaced from each other. Local residential communities had sufficient space that they were able to use a narrow and select range of food resources from their immediate surroundings. Also, there is no evidence for violent deaths throughout the Middle Woodland period (see above, In the Beginning: A Change in World View; and Chapter 15, Social Competition). Finally, competition over mates would be expected to have decreased rather than increased as local population density increased and a wider selection of potential mates became available at close distances.

The possibility that communicable diseases led to an end of Scioto Hopewellian social and ceremonial ways has only been mentioned previously (Prufer 1964a:66). It is possible that communicable diseases were encouraged by the larger aggregations of people in the Scioto-Paint Creek area at the end of the Middle Woodland period, and caused decreases in population to levels that no longer allowed grand assemblies and ceremonies. This proposal has not been borne out by osteological analyses of late Middle Woodland burial populations (Konigsberg 1985; Johnston 2002; Ohio Historical Society n.d.). However, many communicable diseases leave no osteological traces.

Archaeological evidence from the Scioto-Paint Creek area suggests, instead, that the end of Hopewellian ceremonial and social life there resulted from a unique event, which probably was social-spiritual in nature and not tied to gradual changes in subsistence, climate, or population levels over the last half of the Middle Woodland period. Specifically, at the end of the Middle Woodland period, shortly after the decommissioning and mounding of the Seip-Pricer charnel house around A.D. 320 radiocarbon time, the tripartite alliance among local symbolic communities in the main Paint Creek valley, the North Fork of Paint Creek valley, and adjacent portions of the Scioto valley partially fell apart, leaving only two allied communities (Chapter 4, Changes in the Number of Allied, Local Symbolic Communities). This must have been a very meaningful schism, because it violated the spiritual pact that the three communities had formed by burying their dead together within the Seip-Pricer charnel house. After the decommissioning of the Seip-Pricer charnel structure, the three communities appear to have built the Seip-Conjoined charnel house with the intent of again burying their dead together, each community's deceased in its own burial chamber, as had been the layout in the Seip-Pricer charnel house. However, one chamber in the Seip-Conjoined charnel building went unused by one of the three local symbolic communities, and the building was mounded over after it had been used by only two of the communities. A few years to decades later, at the Ater site, only a two chambered charnel house was built, which was filled with burials from the two local symbolic communities that had remained spiritual-social allies. Ater appears to have been the last large charnel house built in the Scioto-Paint Creek area, and no earthen enclosure was built around it, in contrast to what had been the tradition throughout the Middle Woodland period, from its very beginning. The two local symbolic communities that buried their dead together in the Ater charnel house may have ended their alliance, as well, a short time after the charnel house was decommissioned and covered under a mound.

It is unknown what specifically caused the partial break up of the spiritual-social alliance among the three local symbolic communities. However, evidential constraints do suggest some possibilities and not others. Difficulties for people in the Scioto-Paint Creek area logically could have arisen from either social or spiritual-religious difficulties in their alliance, or from both. Social difficulties appear less likely because archaeological evidence, of several kinds, does not indicate an increase over time in either uncontrolled or controlled social competition. First, artifacts that potentially might indicate interpersonal violence in the Scioto Hopewell record do not show any increase over time (Table 5.1). Artistic images of human body parts and of bodies missing parts, which might indicate war trophies and captives, and effigies of artifacts that could be used to inflict wounds, have been recovered from only the Mound City and Hopewell sites, in the early and middle Middle Woodland period (Figures 4.1C, 4.9 D–H, 5.5A–C). "Trophy" skulls, if most were indeed war trophies (see Johnston 2002 to the contrary), do not increase in frequency in later Scioto Hopewell sites (Table 5.2). Further, all of these kinds of artifacts have interpretations other than warfare and violence (Table 5.1). Second, possible indicators of competitive displays among social groups, including fancy and large ceremonial artifacts for ritual display and the destroying and ritual depositing of these in large numbers, do not increase over the course of the Middle Woodland and peak at its end. Rather, these material remains are most frequent in the middle Middle Woodland, at the Hopewell site, and decline thereafter. Competitive and/or cooperative material displays appear to have been a stage through which local symbolic communities went as they developed increasingly stronger ways of creating alliances among one another: first through primarily economic and social relations among individual commoners as dyads in nonmortuary contexts outside of earthworks, then through ritualized cooperative and/or competitive material displays nested in mortuary ceremonies within earthworks and orchestrated by leaders who represented their local symbolic communities, and finally through perfected spiritual means by which local symbolic communities buried their dead together on the same ceremonial floor within a single charnel building.

An empirically better supported possible cause of dissolution of the tripartite alliance is some kind of spiritual-religious event or problem of critical proportion that Scioto Hopewell people perceived. A perceived spiritual-religious event or problem would make sense of not only the break up of the tripartite alliance, but also the abandonment, simultaneously, of a very broad array of Scioto Hopewell cultural practices and social units that were spiritual-religious in their cultural foundation and interrelated. These abandoned practices and units include: construction of earthworks for ceremonies of many kinds that referenced the Above and Below realms; construction of charnel houses for rites that moved souls of the dead on to another world; long-distance power questing and pilgrimage to especially sacred places in nature for fancy, shiny raw materials with shaman-like cosmological meanings; a diversity of specialized shaman-like social roles that were involved in hunt divination or sending or pulling power intrusions, other divination, healing, guiding souls to the land of the dead, leading public ceremonies, and keeping cosmological knowledge; a ceremonial society of Bear clan members who served in corpse processing, psychopomp work, and/or doctoring; a sodality marked by smoking pipes and involved in trance communication with spirit helpers; a sodality marked by copper breastplates that were suitable for divination; a sodality marked by earspools that symbolically referenced the circular cosmos and its transformation in light and darkness; and two possible professional societies for shaman-like persons who divined with galena and mica mirrors. Most of the fabric

Table 5.1. Art Works, Other Artifacts, and Human Remains Possibly Indicating Interpersonal Violence in Scioto Hopewelllian Socieites, and Alternative Interpretations

Artifact	Site, Mound, and Burial	Reference	Possible Interpretations
Human Body Parts and Art Works Depicting Them			
Effigy finger, cannel coal	Hopewell, Md. 25, Sk 278[a]	Moorehead (1922:111, 142, figure 38)	war trophy, disfigure and dishonor the antisocial (Bird 1971:101; Burkett 1997:274; Vizenor 1981:80); ceremonial
Human digit with two perforations[b]	Hopewell, Md. 25, cache	Shetrone (field notes, July 16, 1924)	war trophy, disfigure and dishonor the antisocial, personal memorial; ceremonial
Effigy hands of children, pair, copper	Mound City, Md. 13, B 4	Mills (1922:452, 552–553, figure 77)	war trophies, disfigure and dishonor the antisocial; ceremonial
Effigy hand, gracile, mica	Hopewell, Md. 25, B47, Sk. 2	Shetrone (1926a:95–97, figure 35)	war trophy, disfigure and dishonor the antisocial; healing hand of a healer
Effigy ear, copper	Hopewell, Md. 25, Altar 1	Moorehead (1922:113, 142–143, figure 39) Greber and Ruhl (1989:123–124, figure 4.45)	war trophy, disfigure and dishonor the antisocial; prestige (Burkett 1997:274)[c]
Effigy human torso, headless, legless, hands (tied?) behind back, copper	Mound City, Md. 13, B 11	Mills (1922:455, 552, figure 76)	war captive, executed; ceremonial sacrificial victim
Effigy human body, headless, used as a headplate, copper	Mound City, Md. 7, B 12	Mills (1922:494–496, 542, figure 67)	war captive, executed; ceremonial sacrificial victim
Effigy human body, headless, missing lower legs and hands, mica, smaller of two	Hopewell, Md. 25, B 34	Shetrone (1926a:87–89, 209, figure 146)	war captive, executed; ceremonial sacrificial victim
Effigy human body, headless, missing lower arms, mica, larger of two	Hopewell, Md. 25, B 34	Shetrone (1926a:87–89, 209, figure 146)	war captive, executed; ceremonial sacrificial victim
"Trophy" skulls and jaws	53+	Johnston (2002) and Seeman (1988:570–571) inventory them	ancestor worship; few if any were war trophies (Johnston 2002)
Effigy "trophy" jaw, copper	Mound City, unknown provenience		ancestor worship; less likely war trophy
Implements and Artistic Depictions of Implements Useful for Inflicting Wounds			
Mace, stone	Hopewell site	Ohio Historical Society 283/-	weapon
Effigy atlatl, mica	Hopewell, Md. 25, Altar 1	Moorehead (1922:113, 142–143, figure 39), Hall (1977:503, figure 1c)	war or hunt divination

(*continued*)

Table 5.1. (*continued*)

Artifact	Site, Mound, and Burial	Reference	Possible Interpretations
Effigy atlatl, mica	Hopewell, Md. 25, Altar 1	Moorehead (1922:113, 142–143, figure 39) Hall (1977:503, figure 1d)	war or hunt divination
Effigy atlatl, copper, three	Hopewell, Md. 25, deposit of copper designs	Moorehead (1922:plate 124) Hall (1977:503:b)	war or hunt divination
Projectile points, quartz and translucent	many hundreds	Case and Carr (n.d.) inventory them; Carr et al., Chapter 13: table 13.2	war or hunt divination, sending or pulling out power intrusions
Projectile points, obsidian	many hundreds	Case and Carr (n.d.) inventory them; Carr et al., Chapter 13: table 13.2	war or hunt divination, sending or pulling out power intrusions
Effigy projectile points, copper, mica	8+: at Hopewell, Liberty, Ater, and Turner sites	Case and Carr (n.d.) inventory them	war or hunt divination, sending or pulling out power intrusions

[a] Md. mound; Sk. Skeleton; B burial.
[b] This finger bone shows no polish that might indicate it was curated and worn as a pendant. Observation by Cheryl Johnston (Personal Communication 2005).
[c] See also the analogous leather effigy ear from the Mt. Vernon site, Indiana (Burkett 1997).

of Scioto Hopewellian spiritual, ceremonial, and symbolic life was affected by the difficulty that Scioto Hopewell people encountered at the end of the Middle Woodland. For this reason, the end was likely caused by some critical, perceived spiritual event or problem – one concerned with a fundamental aspect of Scioto Hopewellian world view. Possibilities include a disease that spread quickly through Scioto Hopewell peoples, a prophesy that did not materialize, an unexpected astronomical event, or any of a wide range of other events that could have undermined spiritual-religious beliefs and leadership, sodalities, and alliance structures based on them.[12]

CONCLUSION

The origin, core nature, and ending of Hopewellian cultural lifeways has been understood during the past fifty years largely from the perspective of a very general, ecological model pertinent to the Eastern Woodlands as a whole. Hopewellian lifeways have been seen as one of a series of cultural responses to long-term processes that involved post-Pleistocene climatic and biotic changes to the landscape, increasing sedentism from the Middle Archaic onward, consequent regional population growth and packing, and the intensification of horticulture (Ford 1974; see also Braun 1977, 1986; Fagan 1995:375–378, 387–390, 399–400, 408–409, 416; and some aspects of Caldwell 1958). Much of this interpretive framework derives from settlement and subsistence studies in the Illinois valley (Asch et al. 1972; Phillips and Brown 1983; Styles 1981), making the model's relevance to the Scioto-Paint Creek area of Ohio open to question. In fact, natural environmental data and Woodland paleoethnobotanical and demographic data from the Scioto drainage, or more broadly the upper Ohio drainage, have been known for some time to correspond only partly in their patterns with those of comparable data from Illinois (Ruby et al. 2005:127–132; Seeman 1979a:402–407; Seeman and Branch 2006; Wymer 1987:260–262).

By focusing in this and previous chapters on the local scale of the Scioto-Paint Creek area, and by integrating detailed reconstructions of the natural and symbolic environments,

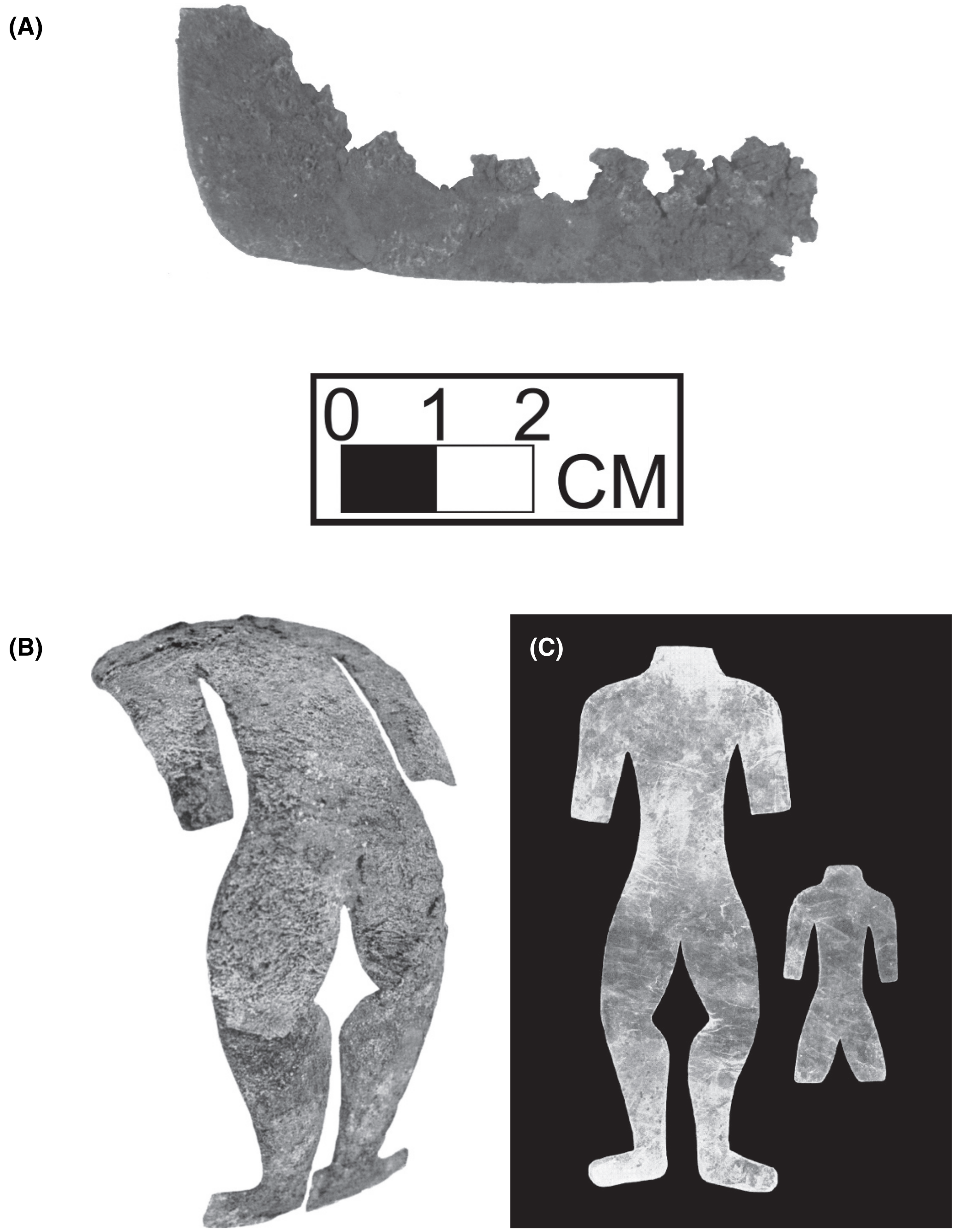

Figure 5.5. Some Scioto Hopewell artistic representations of human body parts and of bodies missing parts, which might indicate war trophies and captives but also have other interpretations (Table 5.1). (A) Copper effigy "trophy" jaw. From the Mound City earthwork, internal provenience unknown. (B) Copper effigy human body, headless, made into a headplate. From the Mound City earthwork, Mound 7, Burial 12. (C) Two mica effigy human bodies, headless, one also missing its hands and lower legs (*right*), the other missing its lower arms (*left*). From Hopewell Mound 25, Burial 34. See credits.

Table 5.2. Frequencies and Percentages of Trophy Skulls in Large Ceremonial Centers Through Time

Ceremonial Center	Burial Population Size	Number of Trophy Skulls	Percentage of Trophy Skulls
Later in Time			
↑ Ater	60	4	6.66%
Harness	183	7	3.82%
Seip	171	4	2.34%
Hopewell	218	19	8.71%
↓ Mound City	105+	1	0.95%
Earlier in Time			

subsistence, settlement, social and ritual organization, and beliefs of the Hopewellian peoples who lived there, a new view of the nature and history of Scioto Hopewellian culture and lifeways emerges. Hopewellian culture and lifeways in the Scioto-Paint Creek area began there with changes in world view pertinent to both the social and spiritual order. These changes led to, rather than were a response to, population aggregation and horticultural intensification in the Scioto and Paint Creek valleys. Specifically, at the end of the Early Woodland period, in the last half of the last century B.C., peoples of the Scioto drainage augmented their Adena ideas about social-spiritual relationships between beings of the Above and Below realms of their cosmos with new concerns over the horizontal relationships of local social groups with spirits, the dead, and each other on the earth-disk – the surface of the Below realms and the Center of the Scioto Hopewell multidimensional cosmos. Changes in settlement location, intensification of horticulture, and population aggregation in the Scioto-Paint Creek area ensued.

The changes that occurred in world view are reflected in many of the material features by which Scioto Hopewell culture is defined archaeologically and distinguished from Adena culture: ceremonial centers situated on the middle terraces of the Scioto and Paint Creek valleys; loaf-shaped mounds; large charnel houses; mound burials laid out largely on a single floor rather than distributed vertically over many mound strata; sometimes large burial populations; pearl, shell, mica, and water-worn stone ghost barriers around some burials and mounds; platform smoking pipes with effigies of personal power animals facing the smoker; breastplates, earspools, and drilled-and-cut bear canines that marked sodalities and a clan-based ceremonial society; and necklaces of animal teeth, claw, or talons that marked clans.

That Scioto Hopewell culture and lifeways began with changes in world view should not be surprising to Woodland archaeologists. Hopewell has long been envisioned as some kind of religion, religious cult, or religious-symbolic-social system (Caldwell 1955; Prufer 1964b; Seeman 1995:123, 125, 138). Moreover, the abrupt development of Scioto Hopewellian ceremonial and social practices from Adena ones over the course of a few generations is a telling indicator that the origins of these practices lay in changes in cultural concepts rather than slower processes such as demographic growth, increases in the productivity of plants undergoing domestication, or subsistence choice relative to levels of population packing or food resource productivity.

Pan-Eastern Woodlands explanations of the ending of Hopewellian ceremonial and social life, like its origins, do not accord well with archaeological data from the Scioto drainage. The invention of the bow and arrow was too late in time (Ford 1974:402; Hall 1980; Morse and Morse 1983; Muller 1986; Seeman 1992b) to be relevant to the end of Scioto Hopewellian lifeways. Moreover, signs of violence and death by bow and arrow are missing from the Scioto Hopewell record (Tables 5.1, 5.2). Social-ritual competition appears to have decreased rather than increased in the Scioto drainage as the end of the Middle Woodland period was approached (Chapter 4, Changes over Time in the Sizes and Social Compositions of Gatherings). Similarly, the timing and extended duration of climatic cooling in the broad northern Mississippi drainage and Great Lakes areas (Griffin 1960) do not correspond with the timing and abruptness of the end of Hopewellian ceremonial and social life in the Scioto valley. The abruptness with which Scioto Hopewellian social and ceremonial practices came to an end hints strongly that its cause lay in the social realm and/or cultural concepts, rather than drawn out ecological processes involving subsistence, demography, and/or climate.

Focusing on the more local scale of specifically the Scioto-Paint Creek area and its sociocultural history, rather than the Eastern Woodlands at large, reveals instead that some form of perceived spiritual-religious event or problem of major importance to Hopewellian peoples, or less likely some kind of social issue, caused the breakup of an area-wide alliance among communities. Because the alliance among Scioto Hopewellian communities was founded on spiritual beliefs and expressed through forms of ritual, ceremonial paraphernalia, and art that gave Scioto Hopewellian life much of its particular character, the break up of the alliance led to the quick waning of much of that cultural form of life. The immediate rise, substance, and fall of Scioto Hopewellian life were, most essentially, spiritual-religious and social in nature.

POSTSCRIPT TO PART II

Developing a rapport with and coming to understand Scioto Hopewell people in their own, unique terms, like coming to know any human being authentically, requires situating oneself, to the extent possible, in their personal and social worlds. Necessarily, this process involves richly describing the roles, practices, beliefs, and social and natural contexts through which Scioto Hopewell people created and lived their lives – the archaeological approach called "thick prehistory" (Carr and Case, Chapter 1; 2005a:21). Both personalizing the past with people in active, on-the-ground sociocultural roles, and contextualizing their ideas and practices within their local social, cultural, natural, and historical miliex, are essential to this approach. Practically, this process of coming to know past people requires using and exploring the interrelated implications of multiple, cross-checking lines of data of diverse material kinds, of varying scales, and pertinent to different domains of culture and nature. This approach and its practice I have tried to realize in Chapters 2–5. By immersing us in the details of the cultural lives, environment, and history of Scioto Hopewell people and the many facets of their material record, the range of alternative, possible understandings of them has been empirically and logically constrained to a few. A way of exploring the archaeological record of Scioto Hopewell people is offered that raises the hope that their material voices may now be speaking more loudly than ours, today, and can be heard above our own presuppositions, personalities, privileged theoretical paradigms, favored ethnographic analogies, and Western points of view. Developing an authentic awareness of another requires setting aside a considerable part of oneself and attentively listening.

This exercise in listening has revealed many previously unknown yet fundamental aspects of Scioto Hopewell life, and a number of unexpected ones. The lengths of swidden horticultural cycles and cycles of movement of residential communities, durations of residential site occupation, and the lengths of site reoccupation cycles, with their implications for social networks and human impact on the natural environment, have been estimated. Clans, sodalities, ceremonial societies, communities of several kinds and scales, alliances, leaders of a variety of kinds, and genders have come to be identified for the first time. Men have been found to have dominated public social life, but not to the exclusion of women, who did fill certain important leadership roles and were not depreciated. Scioto Hopewell social organization has been shown, in contrast to general professional impressions of it, to have been largely flat and decentralized – integrated and regulated by clans that often spanned locales, sodalities, and ceremonial societies with cross-cutting memberships, intercommunity alliances, and diverse and complementary kinds of leaders that each were recruited from multiple clans. Leadership spanning multiple local symbolic communities developed only at the end of the Middle Woodland period, and never supplanted other, complementary leadership roles. Sodalities arose at the beginning of the Middle Woodland, not at the end of it. Scioto Hopewellian social and ritual life changed in fundamental ways over time; it was not static. It became more institutionalized and less shamanic in character. Local symbolic communities changed their strategies for building alliances among themselves several times over the Middle Woodland period. Finally, neither the initial crystallization nor the demise of Scioto Hopewellian ceremonialism, material symbolism, and social organization were tied immediately to changes in the natural environment, climate, regional population density, or the productivity of Eastern Agricultural Complex domesticates and cultivars. Social and ritual life that was characteristically Scioto Hopewellian began with fundamental changes in the spiritual-religious concepts and ceremonies that Late Archaic and Adena peoples in the area had developed over a millennium, and the creation of a new world view that emphasized horizontal relationships among spirits, the dead, and living human beings on the earth-disk, complemented by vertical relationships with beings of the Above and Below realms. The end of Scioto Hopewellian social and ritual life, which involved the break up of a spiritual-social alliance among three local symbolic communities, was likely precipitated by some critical, perceived spiritual event or problem that pertained to a fundamental aspect of Scioto Hopewellian world view. The nature and history of Scioto Hopewell life, and their immediate causes, were fundamentally spiritual-religious and social. By situating ourselves in the midst of the lives of Scioto Hopewell people, through richly describing the details of their lives in their local context, an understanding of them that is authentic to them is beginning to emerge.

NOTES

1. In fact, Wymer's most recent assessment (Wymer and Abrams 2003:189) of the timing of abrupt intensification in the growing of Eastern Agricultural Complex seeds in the upper Ohio valley, generally, would place it at approximately A.D. 100, *after* the initial development of Scioto Hopewell ritual life.
2. For additional, ambiguous artifacts that may depict humans in soul flight or practicing simply soul merger with the soul of a bird, see Chapter 4, Depictions, Costumery, and Symbols of Position of Leaders; also Note 3 in the chapter.
3. The Zimmerman tube also has, on both sides of the depicted trunk, long sinuous snakes with forked tongues. Crossculturally, the snake is a very common symbol of the axis mundi, its forked tongue possibly taking the place of the bifurcating branches of the World Tree. The metaphor of the snake as the axis mundi is a part of contemporary Creek religious symbology (Daniel Penton, personal communication 1996).
4. A partial exception to this pattern is the Tremper charnel house. There, separate chambers may have indicated different residential communities, segments of local symbolic communities, or other social units, and separate cremation depositories appear to have indicated distinct clans.
5. Symboling of the axis mundi and vertical journeying of the deceased with a conical mound appears to have been incorporated in an intermediary stage of building each of the Seip-Pricer, Seip-Conjoined, and perhaps the Edwin Harness and Old Town-Conjoined mounds. In the cases of the Seip-Pricer and Seip-Conjoined mounds, individual (conical?) submounds were built over each of the clusters of burials that each represented a local symbolic community. The Pricer submounds were then capped to create a single, loaf-shaped mound. The Conjoined submounds were not capped, apparently because the alliance among the local symbolic communities that began to build the charnel house and bury their dead together there appears to have dissolved (Chapter 4, Changes in the Number of Allied, Local Symbolic Communities). In the case of the Edwin Harness mound, a (conical?) submound was built over one of the burial clusters, and it is unclear whether the other two burial clusters were also covered by submounds (Greber 1979b:28). However, three stone circles were constructed at a higher level of the mound, apparently over the three burial clusters. The three (conical?) conjoined mounds at the Old Town earthwork likely covered three separate clusters of burials that represented three local symbolic communities, but only one of the mounds was excavated (Moorehead 1892:133–143).
6. In Kentucky, West Virginia, and southwestern Ohio, a few much larger, irregularly shaped enclosures were probably built by peoples with Adena beliefs (Clay 1987:48, 51, figure 6; Webb and Snow 1974:29–30), but these are absent in the Scioto valley.
7. Squier and Davis (1848:47–48) concluded from their observations that entrances to Adena circular earthworks most often faced east, although this was "by no means . . . a fixed rule." No systematic study of variation in the orientations of entrances of Adena circular earthworks has yet been made.

8. Elsewhere, I have shown through the analysis of Scioto Hopewell art, and layouts of ceremonial deposits and burials, that Scioto Hopewell peoples did not differentiate the meanings of directions nearly as strongly as historic Woodlands and Plains Native Americans did, and that the very elaborate, historic-period directional systems developed sometime after the Middle Woodland period (Carr 1998, 2000a, b).
9. The specific colors of the soils selected and their interior or exterior placement in the walls varies among walls at Hopeton and between the walls at Hopeton and High Bank (Greber 2006:89–90). At Hopeton, three trenches across separate segments of the earthworks' walls showed that the walls were build of red soils on their exteriors and yellow soils on their interiors. A fourth trench through a different segment exposed that the wall was built of red soils on its interior (the reverse of the other three segments) and grey soils on its exterior (different from the other three segments). At High Bank, the west embankment was found to have been formed by red soils on its exterior and yellow soils on its interior. (At Newark, in a different river valley, dark brown soils were used to build the exterior of the Great Circle and yellow soils the interior). The different color symbolism used within and among sites suggests different work groups with different ideas in mind, the building of the different walls in the course of different ceremonies having different purposes and referents, different labor forces which made selecting distant or deep soils more or less feasible, differences in the availability of specifically colored soils in given locales, and/or other circumstantial factors. Nevertheless, in all these cases, earthwork walls were differentiated horizontally in their color symbolism, in line with the many ways in which Scioto Hopewell peoples materially emphasized their concern about horizontal relations on the earth-disk.
10. The new world view that emphasized horizontal relationships among spirits, the dead, and living persons and that ushered in Hopewellian social and ritual lifeways in the Scioto valley was well rooted in Adena culture of the area. However, Havana Hopewellian peoples in the central and lower Illinois valley may have added to its conceptual elaboration and ritual manifestations in the Scioto area. Of the eight conceptual, material, and social expressions of the new world view discussed in the text above, three are absent or almost completely so from the Illinois record, four occurred or probably occurred in both regions but their ages in the Illinois sequence are unknown, and one occurred earlier in Illinois than in the Scioto valley.

    Specifically, the Illinois valley archaeological record lacks: Adena-like circular, ditch-and-embankment earthworks, which in the Scioto valley functioned as horizontal water barriers to ghosts; charnel houses where many people from multiple local symbolic communities were laid out horizontally on a floor (see also Brown [1979] for this contrast); and large ceremonial deposits of artifacts and/or raw materials on mound floors in all but two cases. Peoples of both the Scioto valley and Illinois valley made animal effigy platform smoking pipes, loaf-shaped burial mounds, and geometric earthworks that by their orientation referenced key directions of the earth-disk. Illinois Hopewell peoples probably intermixed the cremations of many individuals from multiple local symbol symbolic communities, as did Scioto Hopewell peoples. Comparisons of the first dates of occurrence of effigy smoking pipes, loaf-shaped mounds, geometric earthworks, and intermixed cremations in the two areas is not possible, however, because these forms are not well dated in Illinois. The Illinois record does have precedence over the Scioto valley record in the appearance of a flood plain cemetery.

    In the following paragraphs, each of the eight conceptual, material, and social expressions of the new world view in the Scioto Hopewell area are considered for their precedence in the Scioto or Havana regions, following the order of ideas in the main text. The dates mentioned are on the uncalibrated radiocarbon time scale.

    Shamanic Trance and Effigy Platform Pipes. Whether the practice of merging horizontally with a personal power animal spirit was a local innovation of Scioto Hopewell peoples or was borrowed from others is not know. Crucial to reconstructing this history is whether effigy platform pipes, which indicate horizontal merging with power animals, were made first in the Scioto area or in the Illinois valley. At present, the earliest known effigy platform pipes in both Illinois and Ohio date somewhere between about 50 B.C. and A.D. 1, at the Hannah mound and Tremper mound, respectively. Hannah can be dated to this time range because Hannah lacks Hopewell series wares, which in the central Illinois valley first appeared about A.D. 1 (Griffin 1970; Munson 1986:293). Morse and Morse (1965:145) placed Hannah at about 50 B.C. Tremper can be placed within the 50 B.C.–A.D. 1 range by a combination of considerations: two radiocarbon dates from the site, 100 B.C. +/− 100 (Prufer 1968:153), and 40 B.C. +/− 70 (Emerson et al. 2005:195); the lack of Hopewell ware at Tremper; the close stylistic continuity of the pipes at Tremper with those in Mound 8 at Mound City, suggesting only one to a very few generations of separation between Tremper and the later Mound City site; and a suite of radiocarbon dates from Mound City and the integrated Hopeton earthwork (Maslowski et al. 1995:29–31; Ruby et al. 2005:161), which point to the beginning of the Mound City group at approximately A.D. 1.

    Platform pipes (without effigies) probably developed first in the Scioto Hopewell area rather than Illinois. A smoke-stack style pipe with a strongly curved platform was found at the base of the Adena Toephner mound in Franklin Co, Ohio (Norris 1985). A suite of radiocarbon assays date the beginning of the mound to no later than 250 B.C. The dates seem sound, because they order correctly stratigraphically between the bottom and top halves of the mound, and because they were derive by three different labs, and by both traditional Beta-count and contemporary AMS methods (Carr and Haas 1996:24–25). The smoke-stack style bowl and other attributes of the Toephner pipe are shared in common with the smoke-stack pipes in the small cache at Tremper (Seeman 1977b:53), and suggest a continuous tradition of platform pipe manufacture in the Scioto drainage – one with more time depth than the platform pipe tradition in Illinois.

Effigy tubular pipes that have animal figures facing the smoker and that formally could have been precursors to effigy platform pipes have been found in three late Adena, "Robbins" complex burial mounds in Ohio and West Virginia. A wolf effigy tubular pipe was unearthed from the Englewood Mound near Dayton, Ohio. A tubular pipe carved into a duck and another made into an unidentified aquatic bird were found in the Sayler Park mound near Cincinnati, Ohio. A shoveler duck effigy tubular pipe was excavated from the Welcome mound in Marshall county, West Virginia (Dragoo 1963:216–117, figure 17; Setzler 1960; see also Hays 1995:90). Whether these mounds predated, were contemporaneous with, or followed the earliest of Scioto Hopewell charnel houses at Tremper and Mound City and their effigy platform pipes is unknown.

The strikingly similar styles of Scioto and Illinois platform pipes, and instances of the same animals having been depicted in similar ways on pipes in the two areas (Penney 1989:183–187), need not be explained by people of one Hopewell tradition having learned to manufacture pipes or having gotten pipes from the other. Instead, it is possible that the tradition arose through both Scioto and Havana Hopewell peoples having made long-distance ritual journeys to the Sterling pipestone source in the Rock River, Illinois, and having manufactured pipes together there, either occasionally or regularly, reinforcing the coherence and direction of the tradition. Sterling pipestone is the source of all tested Illinois Hopewell pipes (Hughes et al. 1998) and the majority of pipes from the Tremper Large Cache. The lack of pipe manufacturing debris in Hopewell habitation and ceremonial sites in both the Illinois valley and Scioto valley (Farnsworth et al. 2004:189), and the occurrence of such debris in a small Middle Woodland habitation-workshop site in the vicinity of the Sterling source, neighboring Middle Woodland habitation sites, and a midden area on the periphery of the nearby Albany Mound Group (Farnsworth et al. 2004:186–187, 189) point to the possibility of the manufacture of the pipes by peoples from both regions in sites in the Sterling area.

It is likely that long distance journeys to the Sterling source were begun by peoples in one area and then joined in by peoples from the other upon hearing of the source and seeing the elegant and expressive pipes that could be made from Sterling pipestone. However, who made the first journey to the source is perhaps less significant than the location(s) (e.g., near the Sterling source) and social-ritual context(s) (e.g., Havana and Scioto peoples together) within which manufacturing techniques and artistic styles were learned and developed and the concept of merging horizontally with a personal power animal spirit crystalized.

Water Barriers to Ghosts and Circular Ditch-Embankments. In the Scioto valley, circular, ditch-and-embankment earthworks that created water barriers to ghosts and concerned horizontal relationships extend back at least to the third century B.C. radiocarbon time, when an example is found in the Dominion Land Company site (Carr and Haas 1996; Hays 1995). The Illinois record entirely lacks such circular, ditch-and-embankment earthworks during the Early Woodland period (e.g., Webb and Snow 1974: 132–133, map 1). The only ditch-bounded Woodland period cemetery in the Illinois valley is the Hopewellian Ogden Fettie earthwork and mound complex (Munson 1967; Shetrone 1936:323; Shields 1979:13, 87-94). The ditch is "square with bulging sides" or "pentagonal", and apparently is not accompanied by an embankment (Munson 1967: 391–392). The ditch may have been man-made in its entirety or constructed in part by taking advantage of an old meander scar (A. Harn, personal communication 2007). In either case, it held standing water – even recently around one-third to one-half of its circumference after a heavy rain (Munson 1967:392). The ditch does not appear, on current evidence, to have been associated with an earthen embankment (Shields 1979:93), unlike Early and Middle Woodland ditch-embankment works in Ohio. Neither the ditch nor the mounds or middens within it have been dated radiometrically (A. Harn, personal communication 2007).

Directionally-oriented Geometric Earthworks. In the Scioto valley, geometric earthworks that were oriented to key directions (cardinal, semicardinal, solstice, equinox, or lunar) and that emphasize horizontal relationships date as far back as at least sometime in the first century A.D. The subsquare embankment of the Mound City site, which was oriented to the summer solstice sunset and winter solstice sunrise (Romain 2005), was likely built around mounds of the site about this time. The subdiamond-shaped Tremper embankment, which dates earlier, probably in the 50 B.C. – A.D. 1 range (Chapter 15, Chronology), was intentionally oriented, falling within a degree or two of the similarly shaped Dunlap embankment, but the specific celestial or other directional referents of these two sites have not been studied (Carr 2005b:87).

Only two geometric earthen enclosures were constructed by Hopewellian peoples in the Illinois valley: the Ogden-Fettie subsquare or pentagon ditch with its approximately 37 mounds inside it, in the central Illinois valley (see above; Farnsworth 2004:24; Munson 1967), and the Golden Eagle oval embankment with its 2 to 6 mounds, at the mouth of the Illinois valley (Farnsworth 2004:24; McAdams 1887). Neither enclosure has been studied for its orientation. Published aerial photographs of the Ogden-Fettie ditch (Munson 1967) suggest that one of its primary diagonals was oriented close to north-south, whereas as an unpublished topographic map (Shields 1979:92) does not. Neither enclosure has been dated. However, enclosure size and shape are time-sensitive in the Scioto valley, and the 5.2 hectares within the Ogden-Fettie ditch is the same area as within the Mound City embankment; if the ditch around Ogden-Fettie was approximately a subsquare, then the two sites are also similar in shape. These similarities may suggest that enclosure construction at the two sites was approximately co-eval. The mounds and occupational area within the enclosure of Ogden-Fettie, in distinction from the enclosure itself, date to sometime between 200 B.C. and 50 B.C. The date of earliest mound-building at Mound City is unknown.

Loaf-shaped Burial Mounds and Their Internal Structure. The first elongated or "loaf-shaped" burial mounds that were constructed in the Scioto valley were the Tremper mound, dating between 50 B.C. and A.D. 1., and the Carriage Factory mound, about this time or perhaps somewhat earlier. In the Illinois valley, Hopewellian mounds that have been described as "loaf shaped" occurred in a restricted set of flood plain ceremonial centers. From north to south, the centers are: Beardstown, Baehr, Hilderbrand, Naples-Abbott, Naples-Castle, Naples-Russell, Mound House, Kamp, and Merrigan (Farnsworth 2001, 2004; Struever and Houart 1972:61). Some of the mounds had a shape that was more multi-lobed than loaf-form, but all were relatively large and not circular and conical, in contrast to conical Adena mounds in the Scioto drainage and conical Hopewell mounds on the bluffs and in the flood plain of the Illinois valley. The dates of construction of most of the Illinois loaf-shaped mounds are unknown because the mounds and sites were destroyed prior to the rise of professional archaeology and radiocarbon dating. An early surface of Mound 1 at the Mound House site dated to A.D. 10 +/− 70, uncalibrated (Buikstra et al. 1998:91, Table 6.1). Dates for burials and the central burial crypt in Mound 9 at the Kamp site, which was not one of the loaf-shaped mounds at the site, fall between A.D. 10 and A.D. 140, uncalibrated (King et al. n.d.). Both Mound House and Kamp are located in the lower half of the lower Illinois valley and probably were begun later than other flood plain sites with loaf-shaped mounds further north (Charles 1992, 1995).

Although some large Hopewell mounds in the Illinois valley and the Scioto drainage share in their oblong shape, and in this regard emphasize horizontal relations over the vertical axis mundi expressed in a conical mound, the similarity ends there. The internal structures of Scioto Hopewell loaf-shaped mounds show much more commitment to the symboling of horizontal social and spiritual relationships, and more consistency in this symboling, than do the internal structures of Havana loaf-shaped mounds. The Scioto Hopewell loaf-shaped mounds of Tremper, Hopewell Mound 25, Hopewell Mound 23, Seip-Pricer, Seip-Conjoined, Edwin Harness, Ater, probably Porter-Conjoined, and possibly the Carriage Factory mound, each covered a large charnel house or multiple charnel houses where the dead from multiple local symbolic communities were laid out on expansive floors, arranged by community in most instances and possibly by clan at Tremper. Horizontal group identity was symbolized by horizontal spatial distinctions. Each charnel building or suite of buildings contained a large number of deceased, totaling between 60 and about 375 persons and roughly balanced among the communities represented. The floor throughout each charnel house or suite of houses was horizontally unified with a uniform prepared floor of sand, clay, and/or muck, each charnel house or suite of them was burned down or deconstructed as a unit, and most of the buildings or sets of buildings were capped by one to several unifying layers of soil. Together, these design, construction, and deconstruction aspects of the mounds expressed horizontal relationships of social differentiation as well as alliance among communities or cooperation among clans.

In contrast, in the Illinois valley, to the extent known, loaf-shaped mounds as a lot were diverse in their internal structures and inconsistent in whether they emphasized vertical or horizontal social and spiritual relationships. None of the known mounds had large numbers of individuals laid out on an expansive ceremonial floor within a charnel house. I now summarize what has been reported about the internal structure of these mounds.

The Naples-Russell Mound 9, a large, elongated, bilobate mound (Farnsworth 2001; 2004:137; personal communication 2007; Henderson 1884:692), was vertically focused in its overall design. It consisted of two tall conical mounds with a central log tomb in the saddle between them, eventually capped by unifying strata. Burials in each of the conical mounds were distributed from the surface down to at least 12–15' below it, at which point investigation ceased (Farnsworth, personal communication 2007) – a vertical positioning of bodies that emphasized vertical social relations over horizontal ones, and temporal relations over geographic ones, as did some Ohio Adena mounds (see text). The composite layout of the two burial mounds and central tomb in between mimics the layout of smaller conical Havana Hopewell mounds, with their burial-filled ramps surrounding a central tomb (Buikstra 1976:41–45; Struever 1960) and with their design symbolizing and/or allowing the enactment of the vertical journey of the deceased along the axis mundi to an afterlife (Buikstra and Charles 1999:214, figure 9.6).

The loaf-shaped Baehr Mounds 1 and 2 also were organized largely vertically, although Mound 1 had nascent, extended ceremonial "floors" or "crematories" of a kind. Mound 1 (Farnsworth 2004:175,185–186, 540–543; Griffin 1941:172–175; Snyder 1895a:79; 1898:16–17) was begun by laying down a 20 × 30 feet oval-shaped bed of clay in a two-feet deep, saucer-shaped depression in the natural, sandy soil, creating a container. After intense firing and becoming filled with ashes and many fragments of charred human bones, the crematory was covered with 6,107 chert disks in lots of 6–20 (Farnsworth 2004:175; Snyder 1895a:79) with sand between lots (representing different persons or social units?) to a thickness of a foot or more. The disks were covered by a ten inch clay layer, which was used as a second crematory to reduce either a few or many bodies (reports are contradictory). The stratified pyre was then enclosed in a crypt of large logs, reminiscent of the log tombs in smaller, conical Havana mounds, and capped with clay. The first-episode cremations, chert disks, and second-episode cremations were not differentiated horizontally, unlike Scioto Hopewell ceremonial floors.

Baehr Mound 2 (Farnsworth 2004:177, 179–183,186–187, 543–545; Griffin 1941:175–177; Snyder 1895a:81, 1895b:109–113;1898:17–18) was organized largely vertically. The natural soil was burned and covered with yellow sand. On this ceremonial floor were laid 8 La Moine chert nodules in pairs on an east-west line. These were covered by four layers of additional La Moine chert disks, each separated by a layer of yellow sand. The disks and sand layers extended over a fairly small area of 8 × 14 feet. In all, 5,300 disks were deposited, with the flints at the edges placed upright, encircling the deposit. Around these many layers was built a log crypt, which in turn was covered with logs and flat stones, then sand, then several inches of clay. On top of layered platform were placed the skeletons of a middle-aged person and a person of unspecified edge, who were accompanied by many goods and raw materials.

The only two known loaf-shaped mounds in the Illinois valley with layouts that emphasized horizontal relationships among individuals are the Beardstown and Naples-Castle mounds. The Beardstown mound (Farnsworth 2004:56, 108, 120–121,168–169; Snyder 1877:438; 1883:569–570; 1893:182–183) was the largest mound built by Hopewellian peoples in Illinois. At the base of the mound, horizontally distributed, was a linear suite of abutting stone box graves, 3 feet wide and 25 feet long in composite. On either side of the tombs were traces of fires with ashes, charcoal, calcined bones, small galena cubes, broken flints, and pottery.

The Naples Castle mound (Baker et al. 1941: 33–34; Farnsworth 2004:355–356) had at its base three burned clay basins with burned bones. The basins, separated a few feet from one another, were 16 × 5 feet, 8 × 5 feet, and 4 × 3 feet in size, within a floor area no more than 28 × 11 feet. Cremation may have occurred in situ in the second largest of the basins, while the other two may have held cremated remains processed in the second basin or brought in from elsewhere and deposited. The second largest basin had considerable charcoal, while the other two had little or none. The mound recalls Scioto Hopewell mounds with crematories and depositories, but lacked an integrating, wide prepared floor and a charnel building, as far as is known from scanty reporting.

The ages of the horizontally laid out Beardstown and Naples-Castle mound floors relative to the early and horizontally much more strongly structured Tremper mound floor are not known.

Intermixing of Cremations. The new Hopewellian world view concerned with horizontal social and spiritual relationships was expressed very vividly at its beginning in the Scioto drainage at the Tremper site. There, some 375 individuals of multiple local symbolic communities were cremated in various rooms of the one charnel house. The cremated remains of most of these individuals were then amassed into one large depository, expressing the horizontal unification of their communities on equal standing. Also amassed into one large deposit, placed in an adjacent room of the charnel house by itself, were more than 500 ritual objects that had been used by members of the several communities.

In the Illinois valley, there are two recorded instances of cremations of many Hopewell people having been deposited together: at the Naples-Castle mound (Baker et al. 1941:33–34; Farnsworth 2004:355–356) and at Baehr Mound 1 (Farnsworth 2004:175,185–186, 540–543; Griffin 1941: 172–175; Snyder 1895a:79; 1898:16–17). Neither case approaches the scale of the cremation ceremonies at the Tremper site. However, it is more probable than not that the co-mingled individuals buried under the Naples-Castle mound came from multiple local symbolic communities and expressed the communities' horizontal integration, as at Tremper. At Naples-Castle, in each of two clay-basin depositories and one clay-basin apparent crematory, the cremated remains of unknown numbers of individuals were laid to rest together. The number of individuals placed in the largest, 16 × 5 foot depository may have been few, as it was apparently filled primarily with loose earth and ash, and secondarily with fragments of burned bone. The 8 × 5 foot crematory and 4 × 3 foot depository may have each held the remains of quite a few individuals, given that they were apparently filled with mainly burned bones, with much accompanying charcoal in the crematory and little in the depository. The unknown, total volume of cremation remains and number of individuals involved does not, in itself, clearly evidence the ceremonial gathering of multiple local symbolic communities to express their horizontal relationships. However, on the basis of the labor required to build the Naples-Castle mound, relative to other mounds likely built by multiple communities, it is more likely than not that Naples-Castle was constructed by multiple communities. In specific, the large Naples-Castle mound, 300 × 150 feet long and wide, and 4 feet high, is very similar in volume to the three conjoined

Porter mounds in the Old Town earthwork in the Scioto drainage, where three local symbolic communities very likely gathered to bury their dead. The Naples-Castle mound is about three times the volume of the Ater mound, and about two-thirds the size of the Seip-Conjoined mound, where in each case two local symbolic communities gathered for burial rites (Carr 2005a). It is conceivable, then, that the Naples-Castle mound was constructed by multiple local symbolic communities and that its cremations were of individuals from those communities. The three separate deposits of cremations that were placed in crematory or depository containers on the floor of the Naples-Castle mound could reflect the number of communities who gathered there for ceremony.

The second Illinois case of cremated remains of multiple individuals having been co-mingled is Baehr Mound 1. There, in a 20 feet wide, 30 feet long, and 2 feet deep prepared clay basin was found "a bed of ashes containing innumerable fragments of charred human remains" (Farnsworth 2004:185–186; Snyder 1898:16–17) or "many fragments of charred human bones" (Farnsworth 2004:168; Snyder 1893:182). After the remains were covered by thousands of chert disks and a layer of clay, "many human bodies or skeletons" (Farnsworth 2004:169; Snyder 1893:183) or "a few more human bodies (Farnsworth 2004:186; Snyder 1898:17) were cremated on top of the clay. As in the case of the Naples-Castle mound, the unknown number of cremated individuals cannot be used to infer that multiple local symbolic communities gathered together to lay their dead to rest. However, the volume of Baehr Mound 1, at 180 × 100 feet long and wide and 13 feet high, and the labor required to built it, suggest the hands of multiple communities. Baehr Mound 1 was a little bigger in volume than the Naples-Castle mound. It was slightly larger than the three conjoined Porter mounds in the Old Town earthwork, three-fourths the volume of the Seip-Conjoined mound, and three and a half times the size of the Ater mound, which were constructed by three, two, and two local symbolic communities, respectively (Carr 2005a).

Whether the multiple-community gathering at the Tremper site in the Scioto valley served as an inspiration for the possible multicommunity gathering at Naples-Castle and Baehr Mound 1, or whether the Illinois Hopewell ceremonies were earlier, is unknown. The dates of use of the Naples-Castle and Baehr ceremonial floors relative to that of the Tremper ceremonial floor are unknown.

Ceremonial Deposits of Artifacts. Large ceremonial deposits comprised of artifacts and/or raw materials were consistent and common elements of Scioto Hopewell charnel houses through time, from the charnel building at the early Tremper mound to that at the late Seip-Conjoined mound. Most of the deposits were produced by members of multiple local symbolic communities, given the numbers of persons implied by the artifact counts in each deposit. Most of the deposits indicate horizontal relationships among communities, or members of a ceremonial society or clan that spanned multiple communities (Chapter 4, Sodalities and Ceremonial Societies; Ritual Gatherings and Alliances).

In Illinois, only two or possibly three large deposits of artifacts under Middle Woodland mounds are known. These are the 6,107 chert disks found under Baehr Mound 1, the 5,300 La Moine chert disks found below Baehr Mound 2, as described above, and about 1,000 chert disks found under a mound of unknown age near the Mississippi river in Union County, far southern Illinois (Farnsworth 2004:168; Snyder 1893:182). Two other large deposits of chert disks have been discovered in isolated cache pits dug about five feet into the Illinois flood plain and not marked by mounds: 1,530 Cobden/Dongola chert disks deposited up stream from the Beardstown mound by 300 yards, and 3,500 chert disks in the village of Frederick, Schuyler County (Farnsworth 2004:107, 167–168; Snyder 1877:437;1893:181–182). The Beardstown deposit and that under Baehr Mound 2 were both layered. The Beardstown deposit had five courses, each separated by clay. The Baehr Mound 2 deposit had four courses each separated by yellow sand. The formal similarity of the two deposits suggests an equivalence or similarity between mounded and nonmound deposits of disks in their symbolic meaning and in the purpose of their ceremonial burial. The great number of disks deposited in each of the five instances probably indicates the workings of multiple local symbolic communities and their ceremonial expressions of cooperation and integration, as did the large deposits of various kinds in Ohio Hopewell mounds (Chapter 4, Ritual Gatherings and Alliances).

The deposits of chert disks in Illinois have an analog in the 8,185 "hornstone" disks recovered from the base of Mound 2 of the Hopewell site in Ohio (Moorehead 1922:96; Squier and Davis 1848:158). The Hopewell Mound 2 disks were placed in two courses, with sand in between courses (Dorsey 1891:Mound 2; *contra* Squier and Davis 1848:158), like the layered disks under Baehr Mound 2 and in the pit near the Beardstown mound. Within each course in Hopewell Mound 2, the disks were deposited in lots of 12–15 with sand between each lot (Dorsey 1891:Mound 2), like the lots of 6–20 disks with sand around each lot in Baehr Mound 1 (Farnsworth 2004:175; Snyder 1895a:79). Further, within lots, the Hopewell Mound 2 disks were placed on edge, nearly vertically, side against side (Dorsey 1891a:Mound 2; Squier and Davis 1848:158), like the arrangement of disks in the Frederick village deposit and somewhat like the disks under Baehr Mouund 2. Disks in the Frederick village were laid on edge, side against side, in long rows, forming a single layer (Farnsworth 2004:107; Snyder 1877:437); those at the edge of the deposit in Baehr Mound 2 were placed with their edges upright, surrounding the deposit (Farnsworth 2004:179, 543; Griffin 1941:175;

Snyder 1895b:109). Disks in the Beardstown deposit were arranged in an orderly fashion, but horizontally, overlapping one another like slate tiles on a roof with their pointed ends facing up stream (Farnsworth 2004:108; Snyder 1877:438). The close formal arrangements and rarity of the deposits of chert disks in both Ohio and Illinois indicate the sharing of ceremonies among Hopewell peoples in these two areas within a restricted time window. However, the ages of the deposits, and whether the Illinois or Ohio ceremonies were earlier, are unknown.

(Note: The chert disks in the five large deposits in Illinois have more than one form and were made from more than one kind of chert (Morrow 1991). The Beardstown deposit was comprised of flat disks made of nonlocal, blue-grey Cobden/Dongola chert from far southern Illinois, Union county. The Baehr Mound 2 deposit contained crude bifaces made of local, dark, steel-grey La Moine chert. The Baehr Mound 1 deposit possibly consisted of disk cores of the "Cobden technique" kind (Montet-White 1968:27–28) made from a blue-grey chert lighter in color than the typical Cobden/Dongola specimen. The Union County mound cache and the Frederick village cache have not been studied for their specific forms and materials. In the older literature that originally report these five Illinois caches, the word "disk" is used to describe their form and the word "hornstone" to identify their material, which implies a southern Indiana source. However, this is not the source for at least the Baehr Mounds 1 and 2 disks and the Beardstown disks. There are a number of different blue-grey to grey chert sources in Illinois, Indiana, Kentucky, and Tennessee (Morrow 1991) from which the materials of unidentified type could have been derived.)

Location of Burial Mounds. In the Scioto valley, the shift in the location of burial mounds from upland, valley-edges to middle terraces, which expressed a new focus on horizontal social and spiritual relations in addition to the vertical axis mundi and vertical soul travel, occurred between approximately 50 B.C. and A.D. 1. Mound City was the first earthwork in the area to have been built on a lower terrace. In the lower Illinois valley, the first documented flood plain cemetery dates much earlier, to the Middle Archaic period, around 4000 B.C. (Hassen and Farnsworth 1987; see also Buikstra and Charles 1999:208–209; Charles 1995:84). How this selected cemetery setting was tied to the world view of Middle Archaic peoples, and whether that world view had continuity with later Havana Hopewell world view, is unknown. Also unknown is whether any Hopewellian flood plain mound centers in the Illinois valley predated Mound City in the Scioto valley (see above, Loaf-shaped Burial Mounds and Their Internal Structure)

The Mann Phase and Scioto Hopewell World View. It is very unlikely that aspects of the new world view in the Scioto valley derived from peoples in the Mann phase in Indiana. The Mann Phase has been dated by radiocarbon and artifact stylistic and technological criteria to have begun late, around A.D. 100 (Ruby 1997:303–308, 604), well after Scioto Hopewell thought had crystallized in its new direction. Available dates from the Mann site, itself, are yet later, ranging between A.D. 270 and A.D. 510 (Ruby 1997:305). The Mann site has two elongated, loaf shaped burial mounds, at least one of which was comprised of two or more conjoined mounds (Kellar 1979:101), similar to the late Scioto valley loaf-shaped mounds of Seip-Pricer, Seip-Conjoined, Edwin Harness, and Ater, the charnel houses of which date between A.D. 300 and A.D. 350. The loaf-shaped, Mann phase GE mound is estimated by multiple artifact raw material and stylistic attributes to have been used for burial sometime between A.D. 100 and 300 (Seeman 1992c), although three radiocarbon assays of samples from uncontrolled proveniences, one from deer collagen, date to the 100 B.C.–A.D. 1 range (Beard 1997).

11. The particulars of the history of movement and concentration of people into the Scioto-Paint Creek area over the Middle Woodland period are not known like they are for the Illinois river valley (Buikstra and Charles 1999:213–214; Charles 1992; 1995: 87–89). Whatever the specifics, it is important to distinguish the demographic history of settlement of the Scioto-Paint Creek area from its history of use as a ritual landscape, i.e., what locales within the area were used or not, and when, to build and celebrate within large, enclosed ceremonial centers. See Chapter 15, Geographic Expansion of the Scioto Hopewell Cultural Tradition over Time, for a history of shifts in the locations of earthen enclosures in the Scioto drainage over time.
12. People in the Scioto valley aggregated during the early Late Woodland within villages surrounded on topographically unprotected sides by ditch-embankments that might have been built for military protection (Seeman and Dancey 2000:595–596) or as ghost barriers, and that reflect the unease of people about their social and/or spiritual landscape. The villages of Scioto Trails, Water Plant, Harness-28, and Ety follow this layout in the Scioto drainage, and the villages of Swinehart, Thomas, Krebbs, Rix Mills, Childers, and Edwards in tributaries to the Ohio farther afield (Burks 2004:241–242: Carskadden and Morton 1996:324–326; Seeman and Dancey 2000:597). However, these developments are too late to bear specifically on the issue of the demise of Scioto Hopewellian social, ceremonial, symbolic, and spiritual life (see also Seeman in Seeman and Dancey 2000:595). In the Scioto valley, the villages of Waterplant and Scioto Trails are well radiocarbon dated to between AD 630 and 680 (calibrated), with Scioto Trails having remained occupied thereafter for some time (Carr and Haas 1996:51). The well dated early Late Woodland component of Childers in the Ohio valley similarly dates between A.D. 610 and 690 (calibrated) (Maslowski et al. 1995). In contrast, the ending of

the tripartite alliance in the Scioto-Paint Creek area dates to after the decommissioning and burial of the charnel house under the Seip-Pricer mound and before the decommissioning and burial of the charnel house under the Seip-Conjoined mound, probably in the A.D. 425–440 range (calibrated). Thus, the construction of villages surrounded by ditch-embankments in the Scioto valley began almost 200 years after the collapse of Scioto Hopewell social, ceremonial, symbolic, and spiritual ways.

The history of settlement change and cultural transition between the end of Hopewell ceremonial life and the construction of ditch-embankment protected villages in the Scioto valley is known only in sketch. The continuation of a dispersed hamlet settlement system, the addition of small burial mounds at the Liberty earthworks, and small scale ceremonial activity not associated with burial at Seip are documented and dated to after the fall of the tripartite alliance (Carr and Haas 1996:30–31; Seeman and Soday 1980). The transition in settlement to aggregated village life is better known in the neighboring Muskingum valley. There, a sequence of change in settlement form that is directional and that ends in a ditch-embankment protected village has been recorded: (1) hamlets on the flood plain or low terraces and bearing "classic" Hopewell artifacts; (2) hamlets on the flood plain or low terraces and predominated by early Late Woodland artifacts; (3) unfortified nucleated villages on the flood plain or low terraces and having early Late Woodland ceramics and lithics; (4) nucleated villages fortified by a wooden stockade and built on the indefensible flood plain or low terraces; and (5) nucleated villages fortified with an earthen embankment and ditch and built on defensible terraces with high bluffs (Carskadden and Morton 1996: 319–326, 333). The long and progressive nature of change from dispersed hamlet to ditch-embankment protected villages, and the temporal irrelevance of the latter to causes of the end of Hopewellian spiritual, ceremonial, and symbolic life, are clear.

Part III

Inventory and Documentation

Part III

Inventory and Documentation

Christopher Carr and D. Troy Case

The anthropological discipline of coming to know a people from their own perspective requires substantial listening to what they have to say through their words, actions, and/or material creations. Understanding of others is built through gathering and thinking critically about large amounts of information on how they live out their lives in varying cultural and historical contexts that create different opportunities, challenges, and choices. From their choices of words, actions, and material creations, and patterns and exceptions to these, one can gain insight into the peoples' values, motives, and traditions. This endeavor is no less true of acquainting oneself with a past people than with ones living today.

Part III of this book provides the empirical basis for listening to and coming to know, to a considerable extent, Ohio Hopewellian peoples of some two thousand years ago. Here, we systematize and present for use by other researchers the massive, unpublished and published mortuary-archaeological and physical anthropological information and other supporting data that have made possible the fullness of our cultural reconstructions of Scioto Hopewell life and Ohio Hopewellian life generally in Part II of this book and in *Gathering Hopewell* (Carr and Case 2005c). Our aim here is to remove an extraordinarily heavy data organizational overhead that previously has constrained archaeologists from making in-depth empirical inquiries into the social and political life, rituals, and religious concepts of Ohio Hopewell peoples. And in so doing, we encourage further detailed studies and deeper understandings of these remarkable peoples.

The documentation of the material remains of Ohio Hopewellian peoples and their lives that we present in Part III takes several forms. At the core of our work, we offer a bioarchaeological electronic data base on the remains of 1052+ Hopewell individuals, their tombs, and their grave goods buried in 126 earthen mound cemeteries in 52 ceremonial centers spread across Ohio. The grave goods buried with these people include 125 coded classes of artifacts, largely ceremonial but also utilitarian. Also documented are the ages and sexes of many of the buried individuals. The grave associations, tomb forms, ages, and sexes of the individuals together speak loudly about their social, political, ceremonial, and religious roles in public life: as shaman-like and nonshamanic community-wide leaders of several kinds, clan leaders and members, members of three to five ceremonial sodalities, members of clan-based ceremonial societies, hunt diviners, healers, mortuary specialists, and cosmologists. Scioto Hopewell peoples, in particular, were quite vocal in their material expressions of the social identities of their deceased. More subtly, the grave goods and tomb forms also reveal the gender classification system of Ohio Hopewell peoples (Field et al. 2005).

Complementing this documentation of Ohio Hopewellian mortuary records is an inventory of 77 special deposits, of approximately 15,000 artifacts in total, that were decommissioned at the ends of mortuary and other rites within the ceremonial centers. These deposits reveal the sizes, social compositions, and to an extent the functions of the rites. They also provide considerable insight into how communities were organized internally and how communities related to one another socially, politically, and ceremonially (Carr, Goldstein et al. 2005).

At a broader scale, the internal layouts of 50 mound cemeteries and 10 ceremonial centers are recorded in 84 digitized maps. The layouts provide spatial contexts for culturally interpreting the information on tombs, grave goods, personal demographics, and ceremonial deposits. The layouts express both intracommunity and intercommunity organization, as well as suggest certain spiritual-religious beliefs of the people.

The mortuary and ceremonial remains reported in this part of the book are placed here in a yet broader geographical and historical context through the presentation of 53 Ohio county maps that show the locations of 3,691 Hopewell and earlier Adena mound and earthen-enclosure ceremonial centers. The Adena and Hopewell centers can be distinguished from each other to a fair degree, giving researchers the opportunity to study population distributions and relative densities, settlement location choices, subsistence catchments, community organization, and changes in these over time. The maps are from W.C. Mills' now very hard to obtain *Archaeological Atlas of Ohio* (1914). They are invaluable because they record mound and earthwork locations prior to the destruction of many of them, and because their accuracy is good; the mapped locations of the sites correlate well with modern site survey information for sites that still exist.

To help the researcher reconstruct the details of the cultural lives of Ohio Hopewell peoples, Part III also systematizes dispersed ethnohistorical accounts of the ceremonial functions, religious and symbolic meanings, and social role associations of many kinds of paraphernalia and raw materials that were used in ceremonies by historic Native Americans of the Woodlands, Prairies, Great Plains, and Subarctic. The paraphernalia are equivalent or similar in form to those used earlier by Ohio Hopewell peoples, and provide a basis for interpreting their mortuary artifactual records. The artifact functions, religious meanings, and role associations that are documented were crucial to our making the detailed cultural reconstruction of Scioto Hopewell life given in Part II of the book, and will be equally useful to other Woodland archaeologists and bioarchaeologists who extend our work on Ohio Hopewell life. In all, more than 1000 verbatim ethnohistoric descriptions of the nature of 51 kinds of ceremonial paraphernalia and raw materials are reproduced here, along with their bibliographic citations. The descriptions were found through a complete search of publications on nine Woodland, Prairie, Plains, and Subarctic tribes in the electronic Human Relations Area Files, supplemented by additional comprehensive ethnohistoric sourcebooks not in the e-HRAF. A few examples of the many kinds of paraphernalia and raw materials that are surveyed here include: conch shell cups, shark teeth, mirrors, stone hemispheres, whistles, gem projectile points, copper, galena, mica, and meteoric iron.

Part III gives several additional kinds of empirical support to researchers who wish to use the above data bases to reconstruct and understand the culture and lifeways of Ohio Hopewell peoples. We summarize a number of basic, foundational forms of mortuary patterning that will prepare researchers for making sociological analyses and interpretations. Some of these pattern summaries are standardly made in contemporary approaches to archaeological mortuary analysis. Other pattern summaries are innovative but equally essential to interpretation. Specifically, we summarize the distributions of each documented tomb form and artifact class among individuals of different age and sex classes, and among burials in contrast to ceremonial deposits that lack human remains. The distribution of each artifact class's counts per burial is also presented. These empirical patterns are reported for each site individually, because patterns differ from site to site. Also tabulated are patterns of association and dissociation among most kinds of ceremonial artifactual and raw material paraphernalia across burials in multiple ceremonial centers in Ohio and across burials within some individual centers.

Distributional and associational studies of these kinds are useful in a number of ways. They can be and have been used to identify and confirm the social and ritual functions of the artifact classes, to determine whether or not the artifacts buried with a person tend to be those that she or he owned and used during life and thus whether they identify the person's social roles during life, and to define the basic social roles and bundles of roles that constituted a past society's operations. The studies are also effective for gaining insight into modes of recruitment into social categories, the division of labor, social hierarchy or equability, whether an artifact class tended to be owned and used individually or collectively, the collective rites of ceremonial societies, and notions of the power and personhood of artifact classes that may vary among them, to name a few cultural matters. The logic of how patterns of distribution and association of artifact classes and tomb forms can be used to infer these cultural matters is explained in the chapters of Part III that present the patterns.

Our efforts to systematize and document for other researchers the mortuary and bioarchaeological records of Ohio Hopewell peoples include not only reporting this information in a contemporary organizational framework, but also evaluating the information's integrity to the extent possible. In Part III, we report the methods used by various researchers to estimate the ages and sexes of the Ohio Hopewell human remains listed in the bioarchaeological electronic data base, and the relative accuracy of those methods. We then assess the consistency of particular researchers with each other in their age and sex estimations for the human remains considering all skeletal series (i.e., sites) that they examined and also considering individual skeletal series. Analogous evaluations are made of the integrity of the artifactual, tomb form, body treatment, and grave orientation data in the electronic data base. We compare information on these aspects of the bioarchaeological records for four large sites between the electronic data base and unpublished data bases assembled by N. Greber (1976) and Timothy Lloyd (personal communication). The comparisons show the reproducability and accuracy of all the data bases for their assembly of published and unpublished bioarchaeological information on the four sites.

Chapter ***6***

Documenting the Ohio Hopewell Mortuary Record: The Bioarchaeological Data Base

D. Troy Case and Christopher Carr

This chapter introduces the reader to the data base of Ohio Hopewell burials and associated grave goods that have served as the foundation for reconstructing the social and ceremonial organization of Scioto Hopewell peoples and other Ohio Hopewell groups, as presented in Part II of this book and in *Gathering Hopewell*: *Society, Ritual, and Ritual Interaction* (Carr and Case, 2005c). The data base, called HOPEBIOARCH, describes the tomb characteristics, artifact inclusions, artifact positions relative to the body, and age and sex estimates for 936 burials representing 1483+ individuals from 112 mounds and burial areas in 50 excavated Ohio Hopewell sites. It also describes the contents of 77 ceremonial deposits from 47 mounds or areas in 19 sites. The total numbers of sites and mounds with burials and/or ceremonial deposits are 52 and 126, respectively. A ceremonial deposit is defined here as a collection of several artifacts, of the same type or different types, that appears to have been intentionally placed together and buried without accompanying human remains. A ceremonial deposit can also be a single artifact found in a specially prepared area (e.g., a crematory basin, the horseshoe-shaped feature at the North Benton site). Accumulations or deposits containing only faunal or other organic elements, fragments of a single artifact type that appear to be utilitarian (e.g. plain pottery), or both were not included in the database (see Chapter 8). The data base includes burials and ceremonial deposits from all excavated Hopewell burial mound sites in Ohio that have been inventoried by Seeman (1979a:262, Table 2) and Fischer (1974: 359–362, Appendix A4), that can be shown to fall within the Hopewell tradition by modern criteria, and for which intrasite provenience information on burials is available. Several additional small Hopewell sites are also included in the database to round out the inventory of graves from identifiably Hopewell sites in Ohio. These smaller sites are: Dayrs' Farm mound, Finney mound, Fortney mound, Glen Helen mound, Lee mound, Manring mounds, Martin mound, Pence mound, Perry Township mound, Shumard's Farm mound, Snake Den mound group, Stone mound, and Yant mound. We believe these represent all published and unpublished Ohio Hopewell cemeteries that have been excavated and for which written documentation exists in museums, historical societies, and universities.

The purpose of this chapter is to describe the structure of the HOPEBIOARCH data base generally, the rationale behind this structure, the mechanics of its creation, the kinds of information sources used, and the locations of both descriptive and complementary information within this book.

THE DATE BASE AND ITS DOCUMENTATION

The HOPEBIOARCH data base, itself, is on the accompanying CD. It is presented in four different formats (Appendices 6.1A–D). Two are EXCEL files. One contains the data base in its full form, with provenience, demographic, grave good, tomb form, and grave good positioning information. The second EXCEL file omits the bulky information on grave good positioning and thereby makes quick scanning of the matrix for all other information much easier. The remaining two versions of the HOPEBIOARCH data base have the same contents as the first two, but are tab-delimited files.

Most aspects of the data base are described in Chapters 7–10. These chapters define its variables, cases, and contents, and provide information that will assist researchers in designing future studies that make use of these data. The archaeological sites covered in the HOPEBIOARCH data base are described in Chapter 7. Information is provided about site location, including the nearest township, the major and minor drainages in which the site is found, and the location's physiographic characteristics. Distances from various towns are for those towns that existed and were reported at the time of excavation. Details of site size and form are also provided, including the presence or absence of earthworks and the numbers of mounds or burial areas identified. These data can be used to help organize the various sites into groups by geographic and cultural region, and by size and function to a degree. Other information provided in Chapter 7 helps to define the quantity and quality of data available for each site. Included are estimates of the extent of excavation of burial areas, and the quality of reporting of details such as the ages and sexes of skeletons, the stratigraphic and horizontal locations of burials at the site, and artifact locations relative to each skeleton. In addition, a bibliography is presented that lists published and unpublished archaeological sources of information on each site and on the ages and sexes of individuals buried at each site. Chapter 7 also introduces Appendix 7.2, which contains 101 maps that show the internal spatial layouts of 64 mound floors and 14 ceremonial enclosures or mound groups. This appendix is included on the CD. The maps, combined with information from the data base, can be used to explore the spatial distributions of mortuary traits across charnel house and mound floors.

An overview of the 545 variables found in the data base and their corresponding variable states is given in Chapter 8. These variables are divided into three types: 177 primary variables that describe particular artifacts, grave attributes, provenience identifiers, and etc., 74 numeric variables associated with some of these primary variables, and 294 position variables that indicate the location of artifacts within graves and relative to the skeleton or cremation. Definitions of each primary variable and burial state code are provided, along with general descriptions of the numeric and position variables. Figures in Chapters 1–4 that depict one or more examples of artifact types are cited in Chapter 8 to help clarify the artifact definitions. The artifact classification system used in the data base distinguishes items primarily by their formal and material qualities. It also attempts to capture the social and ceremonial functions of the artifacts. Thus, for example, copper and mica cutouts are treated as separate variables, while the various forms of these cutouts are richly described in a variety of different variable states. Most of the variables in the data base are mutually exclusive of one another. However, in a few cases, certain variables that overlap with each other were created for specific analytical purposes. Such cases of redundancy are clearly identified in the variable descriptions so that other researchers may recode the data, if necessary, to suit their own analytic purposes.

One suite of variables in the HOPEBIOARCH data base that is absolutely essential for sociological reconstructions is the estimated ages and sexes of individuals and the reliability of these estimates. Age and sex data were gathered on Ohio Hopewell skeletons over the course of 120 years by different researchers with greater or lesser experience and using a variety of different methods. The reliability of the age and sex information available for human remains from several of the Hopewell sites in the data base is addressed in Chapters 9 and 10. Chapter 9 assesses the data available as of 1998 for the Ater, Esch, Harness, Hopewell, Rockhold, Seip, and Turner sites, and draws conclusions about which assessments can be used in social analyses with relative confidence, and which should be treated with caution. Several appendices to Chapter 9 are located on the CD and list the specific age and sex assessments available from all known sources. These data are also coded within the data base itself as several different variables. Chapter 10 describes very recent age and sex assessments that have been made for skeletons from specifically the Hopewell site and that use a wide array of osteological and dental techniques and two multivariate approaches. These new approaches have added to the number of skeletons from the Hopewell site with reliable age and sex information, and have refined many of the previous assessments. Two important appendices from this chapter, Appendices 10.3 and 10.4, are found on the CD and provide a provenience by provenience account of the information available on each of the skeletons encountered by Warren Moorehead and Henry Shetrone during their excavations of the Hopewell site. The appendices weave together information from site reports, field notes, and the skeletal collections themselves. The appendices describe which skeletons were collected, whether the bones exhibit cutmarks and copper staining, and include detailed descriptions of culturally modified human remains from the site. The specific bones curated for a particular skeleton are also sometimes recorded, especially for burials from which only a few bones were collected.

CONSTRUCTING THE DATA BASE

The data base was assembled by the authors in a number of overlapping stages over a period totaling approximately eight years. We were assisted in this task by a number of graduate students without whose help the data base might not have been completed. We began our work of documenting Ohio Hopewell burials with the larger sites of Hopewell, Seip, and Turner. These sites were targeted because their reports were published and available, and contain detailed descriptions of individual burials and ceremonial deposits. Our approach at this initial stage was to read through the site reports, gather together all relevant information about each burial described in various portions of a report, and then to write a bulleted summary of the nature and contents of each grave and ceremonial deposit using the original terms that the excavators and authors had used for the artifacts and tomb forms. We did not boil down their descriptions into a priori descriptive classes. These detailed summaries of graves and ceremonial deposits came to be called *provenience sheets*. They are reproduced in Appendix 6.2. In addition, the three sites were selected because they were known to encompass much of the spectrum of artifact classes found in Ohio Hopewell mortuary sites generally (Seeman 1979a). Our first pass through these site reports helped us to define the types of variables that should be present in the data base, the kinds of information consistently reported by excavators versus that which was idiosyncratic, and what additional information and forms of documentation would be necessary if the data base were to be useful for conducting intrasite and intersite mortuary analyses.

Once we had secured an understanding of the diverse kinds of information commonly recorded for an Ohio Hopewell mortuary site, we expanded our coverage to include burials and ceremonial deposits from other Ohio Hopewell sites that were published. We also noted additional sites that Seeman (1979a) and Fischer (1974) listed but that had only unpublished reports available, and only in museums or historical societies. The second stage of our data collection efforts involved grant-funded research trips to examine unpublished field notes, site maps, accession records, field photographs, and some of the artifacts from published and unpublished Ohio Hopewell sites. Sources of these data include the Ohio Historical Society in Columbus, the Field Museum of Natural History in Chicago, The Peabody Museum of Archaeology and Ethnology at Harvard University, Hopewell Culture National Historical Park in Chillicothe, Ohio, as well as a number of smaller public and private collections (Chapter 7). The examined records contributed many new proveniences for sites that are documented only in part in published site reports, filled out information on burials and ceremonial deposits described only to a degree in the reports, and added many new, unpublished sites to the project.

The examined records highlighted many inconsistencies among the data sources. For example, field notes written by the excavators sometimes disagreed with their own site reports about the specifics of certain burials. Inconsistencies such as these were assessed and a decision was made on a case by case basis as to which information source to trust. We tended to give the greatest weight to the field notes and maps when discrepancies involved numbers of individuals in a grave and positions of artifacts in a grave. We were more likely to follow the site reports for descriptions of the specific nature of artifacts and their numbers, under the assumption that the artifacts might have received closer scrutiny at museums or by other experts prior to publication. Museum accession records were also used to assist with clarifying the types and numbers of artifacts present in particular graves. However, information from the accession records about artifact numbers was treated conservatively because it was not always clear, for example, whether broken specimens were counted by the number of total objects represented or the number of pieces present. When inconsistencies arose between accession records and site reports or field notes, decisions about which information to use were again made on a case by case basis, sometimes taking into account what we knew about the tendencies of the site excavators and reporters. Our guiding principle was to maximize the specificity of the data available while minimizing the probability that a particular artifact or burial characteristic would be included in the description of a burial by mistake. Our bias was to not include information if our best assessment was simply that the artifact or characteristic was "possibly present" or "probably present".

The third stage of our building the HOPEBIOARCH data base involved defining its variables from the descriptions that excavators and site reporters had provided and that we had summarized in the provenience sheets. These definitions were then used to develop the data base structure and to code information into the data base. This stage was begun after the provenience sheets for the first few sites were created from published site reports, but before additional, unpublished information from museums had been reconciled with them. The provenience sheets and data base were updated several times as new sources of archival information were tapped.

Our aim was to create a data base that would contain all of the data available for each burial at a site, while being structured in a way that would facilitate social analyses within and between different Ohio Hopewell sites. Therefore, the 177 primary variables in HOPEBIOARCH are ordered by analytical categories useful in sociological mortuary studies. The biological categories concerned with ages, sexes, and numbers of individuals in a grave are found near the front of the data base, followed by variables that consider burial characteristics such as tomb form and grave dimensions. Artifact classes appear next, organized into broad suites of classes, primarily by the social roles in which they were inferred to have been used (Chapter 11) and secondarily by form and raw material: the paraphernalia of shaman-like practitioners, other ceremonial equipment, the paraphernalia and role markers of non-shamanic leaders and other important people, clan markers, items of wealth and personal decoration, utilitarian objects, and fancy raw materials. Each artifact class is accompanied by three variables that together describe for a burial the position of artifacts of that class relative to the corpse or cremation, where information on artifact position is available. Most of the variables are descriptive of artifact classes or burial characteristics, but a few are interpretive. For example, the variable "water barriers" describes any set of artifacts or natural materials that were placed around a grave apparently to act as a water barrier to ghosts, much like the water barriers that were constructed around some Adena mounds (Hall 1976b; see also Carr 1998, 1999a, 2000b). Materials that might signify a water barrier are those that come from water or have a color or shine that might represent water, such as mica, shells, pearls, limestone, and light colored rocks (e.g. Figures 5.3A–E). Quite a few examples of graves surrounded by such materials are known from Ohio Hopewell sites, making the water barrier a significant interpretive variable for mortuary studies.

The original version of HOPEBIOARCH, upon which many of the analyses in *Gathering Hopewell* (Carr and Case, 2005c) were based, was completed in 2001. This version of the data base included information on 854 individuals from 33 Ohio Hopewell sites, as well as 65 ceremonial deposits from 14 sites. The data base has since been expanded to include a total of 1052 individuals and an estimated 431 commingled human remains from 50 sites, as well as 77 deposits from 19 sites. These sites encompass, as far as we know, all Hopewell mortuary sites in Ohio for which written information on internal provenience is available.

A few new variables have also been added to this most recent version of the data base. Most critical, revisions have been made to the age and sex assessments of some burials from the Hopewell site (see Chapters 9, 10). These estimates were not available at the time that studies were being made for the book *Gathering Hopewell*. The particular modifications made to the age and sex data can be found in Table 9.2.

PROVENIENCE SHEETS

Appendix 6.2 contains the provenience sheets for all burials coded in the data base. Each sheet is a bulleted list of the characteristics of a burial or ceremonial deposit of artifacts, and was compiled from one or more sources of information. Each sheet served as a transitional step in coding the burials and deposits into the data base. A sheet specifies the type of provenience (burial or deposit), the primary source of information on the provenience, and its form and size (e.g., tomb form). For burials, this information is followed by a brief summary of the human remains, including an indication of burial type (inhumation vs. cremation), number of individuals represented, and other relevant details about body position, estimated stature, head orientation, etc., when these were recorded in documents. For both burials and deposits, a list of the types of artifacts recovered and their numbers follows. Each artifact type is described in as much detail as was necessary to create an appropriate code for its inclusion in the data base. Typical descriptions include the material from which the item was made, some indication of its absolute or relative size, and its location in the grave relative to grave features or the human remains. In cases where the excavator specifically mentioned that no artifacts were recovered, this is also noted. For many proveniences, excavators did not explicitly say whether or not artifacts were recovered, so the provenience sheet may simply list a skeleton without any indication of whether artifacts were associated with it. For a small number of proveniences, photographs of them during their excavations provided some additional information on tombs, artifacts, and spatial layouts. Such information, when present, is indicated under the heading "Photo", below the description of artifacts.

The provenience sheets found in Appendix 6.2 complement the data base in several useful ways. First, they allow researchers interested in particular proveniences to access the information about a burial or ceremonial deposit in uncoded form. This makes the appendix valuable as a quick reference when reading about particular sites or burials, and as a means of assessing whether the coding scheme that we developed for particular variables is appropriate to a specific study. Second, the provenience sheets contain a limited amount of information that is not included among the data base variables or codes, such as information about atypical burial characteristics, measurements of certain artifacts, associations between certain artifacts and pieces of fabric or other organic materials, and species names for particular ocean shells. Third, the provenience sheets are presented as separate files for each site, making information for a particular site easily searchable using the "Find" function within MS Word. Researchers wishing to relocate a burial or deposit that contained a specific artifact or material, such as the cremation with the large obsidian deposit at the Hopewell site, or the burials from Hopewell and Seip that contained copper nostril inserts, can locate such proveniences in a matter of seconds. Additionally, researchers interested in studying specific materials, such as copper, mica, galena, or pipestone, can search the provenience sheets for each mention of these materials to better understand their distribution within a certain site, across different sites, or as the medium of particular artifact forms. For researchers who are interested in searching for all examples of a given artifact class in all sites in Ohio and in studying the details of its various contexts of deposition, all provenience sheet files can be combined into one long serial list of proveniences. This global file can then be efficiently searched for all instances of the artifact and its contexts.

There are some caveats to consider, however, when using the provenience sheets. The provenience sheets were not initially designed with publication in mind. They were intended as a tool to assist us in coding of the data base. Most of the provenience sheets contain information drawn from the primary data source, such as a site report or field notes, for a particular provenience. They may or may not contain additional information drawn from field notes, accession records, direct observation of certain artifacts, or publications by other authors who noted errors or inconsistencies in the primary sources. In retrospect, it would have been ideal to have kept track of all additions to, and the occasional subtractions from, each provenience sheet beyond its primary data source, as well as the particular sources of any new information. However, this was not done systematically. Sometimes when updating the data base with information from the supplemental sources listed above, we added new information to the provenience sheets with a note indicating the source, and sometimes we added the information without a source. For many sites, when presented with new information from supplemental sources, we simply bypassed the old provenience sheets and made additions or changes directly to the data base. In general, the later a site was coded for inclusion in the data base, the more likely it is that the provenience sheets contain exactly the same information as the data base. Thus, the greatest discrepancies are most likely to be found between provenience sheets and the data base for the sites of Hopewell, Seip, and Turner. When differences are found between a provenience sheet and the data base, we place greatest confidence in the data base. Despite these departures of the provenience sheets from the data base, the great bulk of information in the data base is replicated in the provenience sheets. They remain a very useful tool for overviewing particular burials and for locating ones with certain characteristics—something that we found repeatedly by direct experience and that convinced us that they should be published.

ERROR CHECKS

A number of error checks have been made on the HOPEBIOARCH data base. Both of the primary steps in data entry–the transferring of information from site reports and records to the text-format provenience sheets, and the translation of the provenience sheets into the coded data base of variables—have been checked.

Three rounds of checking were systematic. First, coded entries in HOPEBIOARCH for the

Seip-Pricer mound, the Ater mound, the Burial Place in the Great Enclosure of Turner, and Mound 25 in the Hopewell site were checked against analogous entries for these sites in data bases created by N'omi Greber (1976) and Timothy Lloyd (n.d.). These comparisons span the kinds, numbers, and materials of grave goods, as well as bodily variables and tomb form attributes for individuals. The comparisons are reported in detail in Chapter 14. They indicate the very good to excellent coverage of written records and their translation into the coded HOPEBIOARCH data base, and very good to excellent inter-observer consistency in coverage and translation. Thus, the "precision" or "replicability" of the HOPEBIOARCH data base is known to be high for these four sites.

In addition, the entirety of the data base was checked twice for the translation of the text-format provenience sheets into the coded data base of variables. One check was made when the data base was nearly finished in 1999, with the exclusion of a number of sites from primarily southwestern Ohio. Beau Goldstein compared each provenience sheet to the data base and flagged suspected errors—data believed to be missing, extra, or mistranslated in the data base. Goldstein and Case then met to resolve these discrepancies. Commonly, primary and secondary sources were revisited in order to determine whether a change in the data base was warranted. Occasionally, the discrepancies were attributable to differences between Goldstein and Case in how they thought a textual entry in the provenience sheets should be coded into the variables of the data base.

Another systematic check of the data base against the provenience sheets was conducted in Fall 2006, after all proveniences from all sites had been coded into the data base. Ashley Evans, a graduate student in bioarchaeology at Arizona State University, compared the text entries in the provenience sheets for the entire data base against the coded entries in the data base itself and flagged potential errors. These potential errors were then evaluated against primary sources and, as necessary, corrected by Case.

A total, systematic check of the textual information in the provenience sheets against the primary sources was not made, other than indirectly through the comparison of our coded data base to ones devised by Greber and Lloyd for select sites (see above). A total check between original sources and the provenience sheets would have been an impractically huge job—literally years of effort. However, checks on a sample of provenience sheets were made in the course of checking their consistency with the data base, which sometimes required going back to primary references, as described above.

Checks of some provenience sheets against primary sources were also made in the following manner while the data base was being built. Information on the provenience sheets was first recorded from published site reports. As field notes, accession records, and field and artifact photographs were gathered and their information was added to the provenience sheets, discrepancies between the published information as written down on the provenience sheets and the additional, unpublished sources were checked by going back to the published site reports. Sometimes the two sources actually disagreed, whereas at other times an error had been made by us in writing the provenience sheets. These comparisons helped to clarify especially the numbers of artifacts of particular types present in a burial and sometimes the forms and types of artifacts, themselves. We generally found that the error rate in transferring information from the site reports to the provenience sheets was gratifyingly low.

Considering all of these several kinds of error checks, we conclude that the data base should quite accurately reflect the contents of the various data sources available to us. The main source of any errors found in the data base will probably turn out to have been caused by occasional misinterpretation of the primary information sources rather than input errors. Misinterpretation would be the most likely source of error because much of the coded information was taken from written descriptions of artifacts and tombs rather than illustrations or direct observations of them.

CONCLUSION

The HOPEBIOARCH data base brings together an unprecedented quantity of information on Hopewell burials from nearly all excavated and documented mortuary sites in Ohio. Together with the provenience sheets and maps included with the book, this data base offers great potential for future research into the lifeways of Ohio Hopewell people. It is our hope that easy access to this information will encourage researchers to delve more deeply into the Hopewell archaeological record in order to better understand the varied social and ceremonial ways and world views of Hopewell peoples across Ohio.

Chapter 7

Ceremonial Site Locations, Descriptions, and Bibliography

D. Troy Case and Christopher Carr

This chapter familiarizes the reader with each of the 52 Ohio Hopewellian mound and earthen enclosure ceremonial sites coded in the HOPEBIOARCH data base. The geographic locations of the sites, overviews of their contents, maps of their layouts, general assessments of the quality of available information on the sites, and bibliographic and curatorial information are presented. The chapter is complemented by the next, Chapter 8, which defines the variables that are used in the HOPEBIOARCH data base to describe the burials and ceremonial deposits within the 52 sites. Together, the two chapters familiarize the reader with the data base—its observations and variables, rows and columns.

This chapter has six sections. The first provides an overview of the geographic locations of the 52 sites across Ohio, by map and in tabular form by drainage. The numbers of mounds and individuals excavated within each site are also presented in tables. The second section describes each site in the HOPEBIOARCH data base in greater detail: its location, the content, size and shape of its mound(s) and earthen enclosure, if present, and its excavation history, as well as the institutions where extant remains and records are now curated, and the adequacy of reporting about the site and its burials. The third part presents maps of the internal spatial layouts of each site for which maps exist. The fourth section offers a bibliography of published and unpublished sources of this information, for both those Ohio Hopewell sites that are in the HOPEBIOARCH data base and those that are not for lack of internal provenience information. The fifth section is a bibliography of published and unpublished sources of information on the ages and sexes of human remains included in the HOPEBIOARCH data base. The last portion of the chapter places the sites in the context of the culture-historical, ritual landscapes of which they were part. County maps of the locations of Early and Middle Woodland burial mounds and earthworks within the southern two-thirds of Ohio are reproduced from W. C. Mills' long out-of-print *Archeological Atlas of Ohio*, published in 1914. The maps provide a global view of the areas of greater and lesser occupation by Adena and Hopewell peoples across the state.

GEOGRAPHIC LOCATIONS OF THE SITES IN THE HOPEBIOARCH DATA BASE

The geographic location of each of the 52 sites in the HOPEBIOARCH data base within the state of Ohio is shown in Figure 7.1. Latitude and longitude coordinates of the sites are given in Appendix 7.1. Table 7.1 provides a quick breakdown of the sites into groups by drainage and drainage section. Most of these geographic groups exhibit archaeological distinctions that are culturally significant, except perhaps the division between sites in the central and southern Scioto valley. Table 7.2 summarizes mound/cemetery counts, body counts, and grave counts for each site. The table shows the number of mounds that probably existed at each site by the end of its use, the number of mounds or cemetery areas with sufficient information from excavations to have been included in the data base, the number of deceased persons from each site who are reported in the data base, and the number of independent graves from each site that are documented in the data base. The number

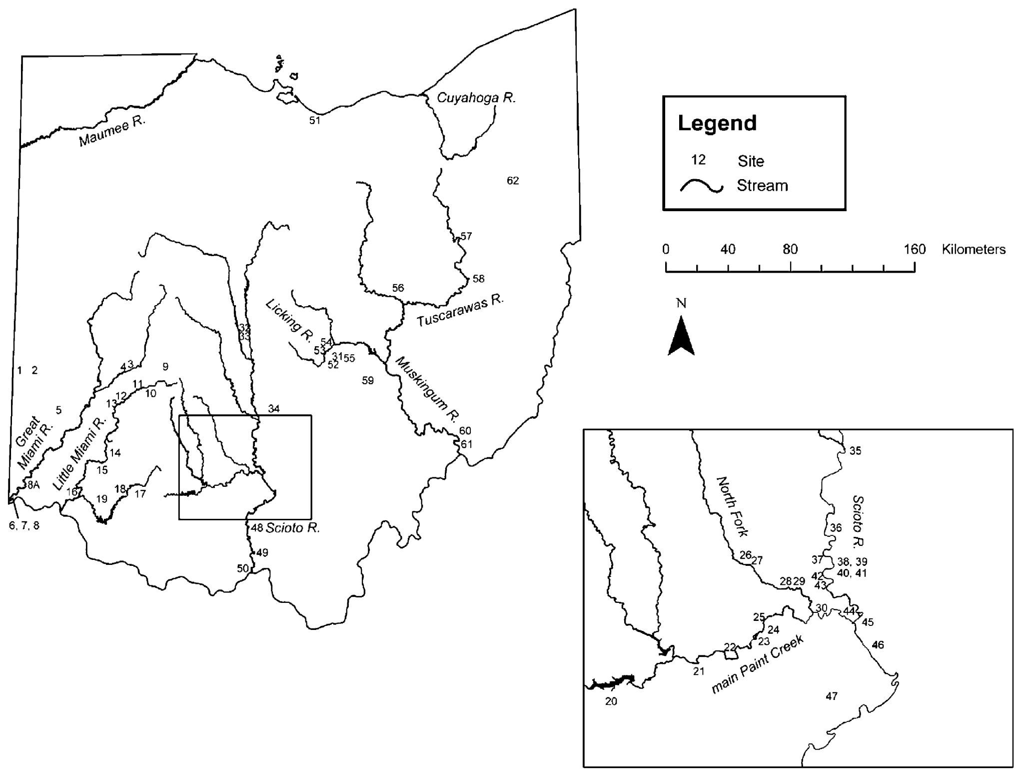

Figure 7.1. Map of locations of sites in the HOPEBIOARCH electronic data base and other major earthen enclosures. Sites are listed by number and their names are given in this figure caption. * = sites in the electronic data base. + = additional major earthworks. (1) * Pence. (2) * Lee. (3) * Boblett. (4) * Campbell. (5) * Fortney. (6) * Headquarters. (7) * Twin Mounds. (8) * Miami Fort. (8A) * Shinkal. (9) * Manring. (10) * Finney. (11) * Glen Helen. (12) * Purdom. (13) * Irvin Coy. (14) * Fort Ancient. (15) * Stubbs. (16) * Turner. (17) * John Boyle's Farm. (18) * Perry Township. (19) * Richard Shumard's Farm. (20) * West. (21) * Rockhold. (22) * Seip. (23) + Baum. (24) + Spruce Hill. (25) * Bourneville. (26) * Old Town/Frankfort. (27) * Ater. (28) * Hopewell. (29) + Anderson. (30) + Junction. (31) * Rutledge. (32) * Wright. (33) * Melvin Phillips. (34) * Snake Den. (35) * Circleville. (36) + Blackwater. (37) + Dunlap. (38) + Cedar Bank. (39) * Ginther. (40) * Shilder. (41) * Hopeton. (42) * Mound City. (43) + Shriver. (44) + Works East. (45) + High Bank. (46) * Liberty. (47) * McKenzie. (48) + Seal. (49) * Tremper. (50) + Portsmouth. (51) * Esch. (52) * Stone. (53) * Wells. (54) + Eagle. (55) * Hazlett. (56) * Martin. (57) * Yant. (58) * Kohl. (59) + Levina Russell/Rollins Ford Farm. (60) * Joseph Dayrs' Farm. (61) * Marietta. (62) * North Benton.

Table 7.1. Locations of Ohio Hopewell Sites by Major and Minor Drainage

Sites by Region or Major Drainage	Associated Minor Drainage
Northeastern Ohio	
Esch Mounds	Lake Erie basin, Black River valley
North Benton Mound	Mahoning River valley
Far Northern Muskingum Drainage, Tuscarawas Branch	
Kohl Mound	Tuscarawas valley
Martin Mound	Walhonding valley
Yant Mound	Tuscarawas valley
Central Muskingum Drainage	
Hazlett Mounds and Earthwork	Watershed of the Licking River and Jonathan Creek
Levina Russell/Rollins Ford Farm Mound	Jonathan Creek valley
Newark Earthwork	Licking valley
Rutledge Mound	Watershed of the Licking River and Jonathan Creek
Stone Mound	Watershed of the Licking River and Jonathan Creek
Lower Muskingum Drainage	
Joseph Dayrs' Farm Mound	Muskingum valley
Marietta Area Mound	Muskingum valley
Marietta Earthwork	Muskingum valley
Northern Scioto Drainage:	
Melvin Phillips Mound Group	Main Scioto valley
Wright-Holder Earthwork	Main Scioto valley
Central Scioto Drainage, Circleville Area	
Circleville Earthwork	Main Scioto valley
Snake Den Mound Group	Watershed of Little Walnut Creek and Dry Run Creek
South-Central Scioto Drainage, Chillicothe Area	
Ater Mound	North Fork of Paint Creek valley
Bourneville Earthwork	Main Paint Creek valley
Ginther Mound and Earthwork	Main Scioto valley
Hopeton Earthwork	Main Scioto valley
Hopewell Earthwork	North Fork of Paint Creek valley
Liberty Earthwork	Main Scioto valley
Mound City Earthwork	Main Scioto valley
Old Town (Frankfort) Earthwork	North Fork of Paint Creek valley
Rockhold Mound Group	Main Paint Creek valley
Seip Earthwork	Main Paint Creek valley
Shilder Mound	Main Scioto valley
West Mound	Rocky Fork of Paint Creek valley
Southern Scioto Drainage	
McKenzie Mound Group Portion of Waverly Mound Group	Main Scioto valley
Tremper Mound and Earthwork	Main Scioto valley
Little Miami Drainage, Southwestern Ohio:	
Finney Mound	Little Miami valley
Fort Ancient Area Mound Group	Little Miami valley
Fort Ancient Earthwork	Little Miami valley
Glen Helen Mound	Little Miami valley
Irvin Coy Mound	Little Miami valley
John Boyle's Farm Mound	East Fork of the Little Miami valley
Perry Township Mound	East Fork of the Little Miami valley
Purdom Mound Group	Little Miami valley
Richard Shumard's Farm Mound	East Fork of the Little Miami River valley

(*Continued*)

Table 7.1. (*continued*)

Sites by Region or Major Drainage	Associated Minor Drainage
Stubbs Earthwork	Little Miami valley
Turner Earthwork	Little Miami valley
Great Miami Drainage, Southwestern Ohio	
Boblett Mound Group	Donnels Creek valley
Campbell Earthwork	Donnels Creek valley
Fortney Mound	Twin Creek Valley
Headquarters Site	Confluence of the Great Miami and Ohio Rivers
Lee Mound	Price's Creek valley
Manring Mounds and Earthwork	Beaver Creek valley
Miami Fort Earthwork	Confluence of the Great Miami and Ohio Rivers
Pence Mound	Whitewater Creek valley
Shinkal Mound	Great Miami valley
Twin Mounds	Confluence of the Great Miami and Ohio Rivers

Table 7.2. Ceremonial Centers, Mounds, and Cemeteries, and Their Numbers of Individuals and Independent Graves in the Data Base[1]

Site by Drainage or Region	No. of Mounds at Site	No. of Mounds or Cemetery Areas in Data Base	No. of Individuals in Data Base	No. of Independent Graves in Data Base	Site No. on Map, Figure 7.1
Northeastern Ohio					
Esch Mounds (Erie Basin)	2	2	49	45	51
North Benton Mound (Mahoning River)	1	1	14	14	62
Far Northern Muskingum Drainage					
Kohl Mound	1	1	3	3	58
Martin Mound	1	1	11	11	56
Yant Mound	1	1	1	1	57
Central Muskingum Drainage					
Hazlett Mounds and Earthwork	2	1	2	2	55
Levina Russell/Rollins Ford Farm Mound	1	1	1	1	59
Newark Earthwork	11+[2]	1	1	1	53, 54
Rutledge Mound	1?	1	4	3	31
Stone Mound	16–17	1	3	3	52
Lower Muskingum Valley:					
Joseph Dayrs' Farm Mound	1	1	1	1	60
Marietta Area Mound	1?	1	1	1	61
Marietta Earthwork	16+	1	1	1	61
Northern Scioto Drainage:					
Melvin Phillips Mound Group	3	2	2	2	33
Wright-Holder Earthwork	4	3	17	17	32
Central Scioto (Circleville Area):					
Circleville Earthwork	11	1	2	2	35
Snake Den Mound Group	4	2	9	9	34
South-Central Scioto Drainage (Chillicothe Area):					
Ater Mound	1	1	60	50	27
Bourneville Mound	1	1	11	11	25
Ginther Mound and Earthwork	1	1	0	0	39
Hopewell Earthwork	38	17	216+	192	28

(*Continued*)

Table 7.2. ***(continued)***

Site by Drainage or Region	No. of Mounds at Site	No. of Mounds or Cemetery Areas in Data Base	No. of Individuals in Data Base	No. of Independent Graves in Data Base	Site No. on Map, Figure 7.1
Hopeton Earthwork	3–4 [3]	1	2	2	41
Liberty Earthwork	14	4	87	82	46
Mound City Earthwork	24	14	117	111	42
Old Town (Frankfort) Earthwork	9?	4	49	44	26
Rockhold Mound Group	4	3	5	5	21
Seip Earthwork	18	3	125	96	22
Shilder Mound	1	1	1	1	40
West Mound	1	1	10	9	20
Southern Scioto Drainage					
McKenzie Mound Group Portion of Waverly Mound Group	3	3	10	10	47
Tremper Mound and Earthwork	1	1	4 not commingled 375+ commingled	8	49
Little Miami Drainage, Southwestern Ohio:					
Finney Mound	1	1	6	6	10
Fort Ancient Area Mound Group	3	1	15	15	14
Fort Ancient Earthwork	26	9	16 not commingled 52+ commingled	22	14
Glen Helen Mound	1	1	7	5	11
Irvin Coy Mound	1	1	19	18	13
John Boyle's Farm Mound	1	1	3 not commingled several commingled	4	17
Perry Township Mound	1	1	2	2	18
Purdom Mound Group	7	2	20	18	12
Richard Shumard's Farm Mound	1	1	1	1	19
Stubbs Earthwork	4	0	0	0	15
Turner Earthwork	18	7	93+	70	16
Great Miami Drainage, Southwestern Ohio[4]					
Boblett Mounds	7	1	1	1	3
Campbell Mounds	3	1	11	11	4
Fortney Mound	1	1	8	8	5
Headquarters Site	0	1	3	3	6
Lee Mound	1	1	3 commingled	1	2
Manring Mounds and Earthwork	2	2	3	3	9
Miami Fort Earthwork	3	1	5	4	8
Pence Mound	1?	1	11+	4	1
Shinkal Mound	1	1	5	2	8*A*
Twin Mounds	2	2	4	3	7
TOTAL	281+	116	1052+ not commingled 431+ commingled	936	

[1] There are a number of well-known Hopewellian earthworks in Ohio that have been excavated to varying degrees but for which no burials have been recovered. These include the hillforts of Fort Hill, Spruce Hill, and Pollock. We do not include the West Farmington mound (Miller 1878), which Seeman (1979a) lists as Hopewell. The vertical layering of bodies in the mound and other attributes suggest Adena affiliation.

[2] At least 11 mounds comprised the Cherry Valley Mound Group in the elliptical earthwork (Lepper 2004:77, n.d. 6). Some of these may be Adena rather than Hopewell constructions.

[3] The three to four mounds are small ones interior to the square and additional to the four marker mounds just inside the four gateway entrances to the site.

[4] The Todd mound (33BU205), located in Butler country, Ohio, contained 10 extended inhumations and 1 cremation, of which only 2 have good field descriptions. At present, the field notes and photographs of artifacts cannot be located. The artifacts and human remains taken from the mound are housed in the Department of Anthropology, The University of Cincinnati. They are currently being inventoried by Prof. Ken Tankersley.

of deceased persons can be different from the number of independent graves, because some graves contained multiple persons. Table 7.3 provides extended information for only those sites with multiple burial mounds or cemetery areas within them. For each site, it lists by mound or cemetery area the number of deceased persons and the number of independent graves in each mound that are reported in the data base. Table 7.4 lists excavated Hopewell mounds in Ohio for which internal provenience information on the deceased, artifacts, and graves is entirely or largely missing. Of these mounds, only the Edwin Harness mound, Fort Ancient earthwork, Fortney mound, Lee mound, and Manring Mound 1 had provenience information on some burials and are included in the HOPEBIOARCH data base.

Table 7.3. Ceremonial Centers with Multiple Mounds or Cemeteries and their Numbers of Individuals and Independent Graves within each Excavated Mound or Cemetery in the Data Base

Sites by Drainage	Number of Individuals in Data Base	Number of Independent Graves in Data Base
Northeastern Ohio: Erie Basin		
Esch Mounds	49	45
Mound 1	24	22
Mound 2	25	23
Central Muskingum Drainage		
Newark Earthwork	1	1
Wells Mound 1	0	0
Wells Mound 3	1	1
Eagle Mound	0	0
Northern Scioto Drainage:		
Melvin Phillips Mound Group	2	2
Mound 1	1	1
Mound 2	1	1
Wright-Holder Earthwork	17	17
Enclosure	1	1
Stone	11	1
West	5	5
Central Scioto (Circleville Area):		
Snake Den Mound Group	9	9
Mound C	1	1
Mound D	8	8
South-Central Scioto Drainage (Chillicothe Area):		
Hopewell Earthwork	216+	192
Mound 2	5	4
Mound 3	2+	2
Mound 4	10	8
Mound 7	3	3
Mound 8	3	3
Mound 11	2	2
Mound 16	1	1
Mound 18	2	2
Mound 19	1	1
Mound 20	3	2
Mound 23	48	43
Mound 24	12	11
Mound 25	101	85
Mound 26	7	7
Mound 27	10	10

(*Continued*)

Table 7.3. (*continued*)

Sites by Drainage	Number of Individuals in Data Base	Number of Independent Graves in Data Base
Mound 29	5	5
Mound 30	1	1
Liberty Earthwork	87	82
Edwin Harness Mound	79	76
Russell Brown Mound 1	1	1
Russell Brown Mound 2	4	2
Russell Brown Mound 3	3	3
Mound City Earthwork	118	112
Mound 1	1	1
Mound 2	19	19
Mound 3	4	4
Mound 7	13	13
Mound 8	9	9
Mound 9	14	14
Mound 10	2	2
Mound 12	4	4
Mound 13	29	23
Mound 15	2	2
Mound 18	11	11
Mound 20	1	1
Mound 23	7	7
Mound 24	1	1
Old Town (Frankfort) Earthwork	49	44
Porter Mound 15	13	12
Porter Mound 17	6	2
Porter Mound 28	22	22
Unnamed	8	2
Rockhold Mound Group	5	5
Mound 1	1	1
Mound 2	3	3
Mound 3	1	1
Seip Earthwork	125	96
Mound 1	123	94
Mound 3	1	1
Mound 4	1	1
Southern Scioto Drainage		
McKenzie Mound Group	10	10
Mound A	1	1
Mound B	1	1
Mound C	8	8
Little Miami Drainage, Southwestern Ohio:		
Fort Ancient Earthwork	68+	22
East Terrace	18+	3
Middle Fort (Crescent Gateway)	1	1
Mound 50	1	1
North Fort (Stone Mound)	1+	1
South Terrace	1+	1
Southerly Mound	1	1
Southwest Terrace	4	4
West Middle Terrace	20+	1
West Terrace	21	9

(*Continued*)

Table 7.3. (*continued*)

Sites by Drainage	Number of Individuals in Data Base	Number of Independent Graves in Data Base
Purdom Mound Group	20	18
Mound 1–2	17	15
Mound 3/4	3	3
Turner Earthwork	93+	70
Mound 1	8	5
Mound 2	1	1
Mound 3	4	2
Mound 11	3	3
Mound 12	9	8
Burial Place within the Great Enclosure	65+	48
Marriot Mound	3	3
Great Miami Drainage, Southwestern Ohio:		
Manring Mounds and Earthwork	3	3
Mound 1	1	1
Mound 2	2	2
Twin Mounds and Village	4	3
Mound 1	2	1
Village Site	2	2

Table 7.4. Mounds for which Internal Provenience Information on Individuals, Artifacts, and Graves is Missing or Largely Missing

Central Muskingum Drainage
Brown Mound, Muskingum Co. (Carskadden and Slater 1969)

Central Scioto (Circleville Area):
Caldwell Mound, Ross Co. (Kramer 1951; Prufer 1961)

South-Central Scioto Drainage (Chillicothe Area):
Seip Earthwork, Conjoined Mound, Ross Co. (Mills 1909)
Liberty Earthwork, Edwin Harness Mound, Ross Co. (Mills 1907)

Little Miami Drainage, Southwestern Ohio:
Cincinnati Earthwork and Mounds, Hamilton Co. (Clarke 1876; Starr 1960:86–87)
Mary A. Cardan Mound, 33-Ha-144, Hamilton Co. (Starr 1960:117)
Loveland Mound Group (Starr 1960:47)
"Fountain Square" Earthwork and Mounds (Starr 1960:23–24)
Fort Ancient Earthwork (see site bibliography)

Great Miami Drainage, Southwestern Ohio:
Fortney Mound, Montgomery Co. (Ohio Historical Society)
Lee Mound, Preble Co. (McPherson 1921)
Campbell Mound No. 2. (Altick 1935a)
Manring Mound 1 (Altick 1941b)

SITE DESCRIPTIONS

This section of the chapter presents systematic descriptions of each site in the HOPEBIOARCH data base. Each site description was written to the form of a template, in an attempt to systematically consider and summarize the following kinds of information:

- site name
- the major drainage in which the site is located, and any minor drainage
- whether an earthen enclosure occurs at the site, and its shape
- the area and/or dimensions of the earthen enclosure
- the number of mounds comprising the site
- the number of individuals of Middle Woodland age who were excavated, tallied by whether they were inhumed, cremated, or charred
- the map number of the site on Figure 7.1
- the institution(s) at which the artifacts from the site are curated
- the institution(s) at which the skeletons from the site are curated
- the institution where excavation records for the site are curated
- an essay that provides additional information, including:
    - more specific information on the location of the site (e.g., township, county, physiographic location)
    - who excavated the site and when
    - the diameter (or length and width) of each mound
    - what parts of the site were excavated
    - the adequacy of reporting of age and sex information about human remains
    - the adequacy of reporting of the stratigraphic and horizontal locations of human remains and artifacts
    - the adequacy of reporting of the positions of artifacts relative to each corpse at each site

The adequacy with which the ages and sexes have been reported for the individuals buried within a site is determined from the AgeCode and SexCode variables in the data base. When less than 25% of the individuals at a site have information on their age, the adequacy of reporting is considered "poor". An individual is counted as having information on his or her age if he or she could be categorized as a child, adolescent, young adult, middle adult, or old adult. "Fair", "good", and "excellent" ratings are used to describe the adequacy of reporting of ages of individuals within a site when information on age is available respectively for 25–49% of individuals, 50–74% of individuals, and 75% or more of individuals from the site. The same percentage scales are used to characterize the adequacy with which information is reported on the sexes of individuals within a site. An individual is counted as having information about his or her sex if he or she could be categorized as female, probable female, male, or probable male.

Analogous ranking systems are used here to describe the adequacy of documentation of the stratigraphic and horizontal locations of individuals buried within a site, and the positions of artifacts within the graves of individuals buried within a site. Information on artifact position within graves was assessed considering only complete and partial inhumations, and omitting cremations.

The names of the institutions where artifacts, human remains, and written documents are curated, or known to not be curated in the case of collections that have seemingly disappeared, are abbreviated when many institutions are involved. The abbrevi- ations are as follows:

CMC	Cincinnati Museum Center
CMNH	Cleveland Museum of Natural History
FMNH	Field Museum of Natural History, Chicago
HOCU	Hopewell Culture National Historical Monument, Chillicothe, OH

NMNH National Museum of Natural History, Smithsonian Institution, Washington D.C.
OHS Ohio Historical Society, Columbus
PMAE Harvard Peabody Museum of Archaeology and Ethnology, Boston
UCN University of Cincinnati Department of Anthropology

Site descriptions are presented below in alphabetical order.

Ater Mound (Raymond Ater Mound)

Major Drainage	South-Central Scioto drainage
Minor Drainage	North Fork of Paint Creek valley
Associated Earthwork	None
Size of Earthwork	Not applicable
Number of Mounds	One mound covering two conjoined burial areas
MW Individuals Uncovered	08 inhumations, 52 cremated individuals
State Map Symbol (Figure 7.1)	27
Maps of Site	Appendix 7.2
Location of Artifacts	Ohio Historical Society, Columbus
Location of Human Remains	Ohio Historical Society, Columbus
Location of Excavation Records	Ohio Historical Society, Columbus

Summary

The Raymond Ater mound is located in Concord Township, Ross County, Ohio, approximately one-half mile southeast of the town of Frankfort. It was built on the southerly tip of a spur of elevated land, 20 feet above the valley floor and on the west side of Old Town Run, approximately one-fourth mile north of the confluence of Old Town Run and the North Fork of Paint Creek (Baby 1948). The mound had been disturbed by previous activity and was no longer intact. The undisturbed portion of the mound was excavated by Raymond Baby in 1948. The original height and boundaries of the mound could not be determined due to disturbance by a bulldozer, and no measurements were attempted (Baby 1948). Estimated dimensions were 160 feet long, 77 feet wide, and 5 1/2 feet tall (Ohio Historical Society 1948).

Information on the ages and sexes of the Ater skeletons is generally poor, primarily due to the high proportion of cremations that comprise the sample. Reliable age information is available for approximately 18% of the total sample, and 75% of the inhumations. Reliable sex information is available for only 8% of the Ater sample, but for 67% of the adult inhumations.

Basic information on the stratigraphic and horizontal locations of the burials is excellent with relatively few exceptions (Greber 1976:Figure 29A; Baby 1948). Furthermore, reporting of the positions of the artifacts associated with the skeletons is excellent.

Boblett Mound Group

Major Drainage	Great Miami drainage
Minor Drainage	Donnels Creek valley
Associated Earthwork	None
Size of Earthwork	Not applicable
Number of Mounds	Seven mounds
MW Individuals Uncovered	01 inhumation
State Map Symbol (Figure 7.1)	03
Maps of Site	Appendix 7.2
Location of Artifacts	Clark County Historical Society, Springfield, OH
Location of Human Remains	Clark County Historical Society, Springfield, OH
Location of Excavation Records	Clark County Historical Society, Springfield, OH

Summary

The Boblett mound group is located in Bethel Township, Clark County, Ohio, on a secondary terrace 600 feet east of Donnels Creek, a tributary of the Mad River branch of the Great Miami River, and about one mile from the Campbell earthwork (Altick 1939, 1941a). The group comprises seven mounds, one of which (Mound 2) was excavated by the farm's owner, Mr. Boblett, in 1939 (Altick 1941a). Mr. Boblett excavated most of the central portion of the mound, uncovering approximately two-thirds of the floor space. He kept field notes on the excavation, and reported the results to the Clark County Historical Society.

Mound 1 was oval in structure, 3 feet high, 32 feet north-south, and 30 feet east-west. Its original height was probably reduced somewhat by cultivation, but it had not apparently been explored at the time of the survey (Altick 1939). Six additional mounds were associated with the site southwest of Boblett Mound 1. These mounds were located upon several knolls. They appeared to be undisturbed, probably because they were located in the woods (Altick 1939). Mound 2 was a truncated, conical mound with a nearly circular base. It was 4 feet high, and 30 feet in diameter. Mound 3 was located on a knoll a little to the southeast of Mound 2, and had an oval shape. It was 2 feet high, and measured 39 feet long and 23 feet wide. Mound 4 was oval in shape, and measured 3 feet high, 23 feet long and 13 feet wide. Mound 5 was also oval in shape, and measured 2 feet high, 21 feet long and 14 feet wide. Mound 6 was oval in shape, and measured 3 feet high, 16 feet long and 11 feet wide. Mound 7 was also oval-shaped and measured 2 feet high, 10 feet long, and 8 feet wide.

Although Altick (1941a:30–31) argued that Boblett Mound 2 and the neighboring Campbell Mounds 1 and 2, one mile to the southwest, are Adena in cultural affiliation, we assess them to have been Hopewellian. Our evaluation is based on the many drilled bear canines found in Boblett Mound 2, which is largely a Middle Woodland trait, the Lowe Flared Base points and one Snyders point in Boblett Mound 2, and the thin pottery, averaging 1/8–3/8 inch, found in Campbell Mounds 1 and 2 (Altick 1941a:26, 29, Figure 4).

Information on the sex of the single inhumation is non-existent. The only age information provided is the observation that the five teeth found still in the mandible were completely unworn, suggesting a younger adult. Basic information on the stratigraphic and horizontal location of the burial is excellent. Reporting of the positions of artifacts associated with the skeleton is also excellent.

Bourneville Earthwork

Major Drainage	South-Central Scioto drainage
Minor Drainage	Main Paint Creek valley
Associated Earthwork	Large circular enclosure, smaller circle 800 feet to the northwest
Size of Earthwork	Large circle: eight acres
Smaller circle: probably less than one acre	
Number of Mounds	Two mounds
MW Individuals Uncovered	10 inhumations, 01 cremation
State Map Symbol (Figure 7.1)	25
Maps of Site	None
Location of Artifacts	Ohio Historical Society, Columbus
Location of Human Remains	Ohio Historical Society, Columbus
Location of Excavation Records	Ohio Historical Society, Columbus

Summary

The Bourneville Earthwork is located in Ross County, Ohio, approximately one-half mile east of Bourneville, on a terrace in the Paint Creek valley (Squier and Davis 1848, Plate XXX; McBeth 1960; Baby 1961; Ohio Historical Society 1959). The two mounds were located approximately 1000 feet to the southeast and northeast of the large circular enclosure (Squier and Davis 1848:Plate XXX). The larger mound, known as the Bourneville mound, was disturbed by road construction workers who removed seven or eight skeletons from the northwest side (McBeth 1960). The undisturbed portion of the mound was excavated by Tom Porter and Donald McBeth in 1959 (McBeth 1960; Porter and McBeth 1960). The original height and boundaries of the mound are unknown. The smaller mound was located about 250 feet from the smaller circle, and its disposition is unknown (Baby 1961).

Information on the ages and sexes of the Bourneville skeletons is non-existent. Basic information on the stratigraphic and horizontal locations of the burials is also absent. Limited information on the positions of artifacts associated with the three skeletons excavated by Porter and McBeth is available. No information on artifact position is available for the skeletons removed by the road crew.

Campbell Earthwork

Major Drainage	Great Miami drainage
Minor Drainage	Donnels Creek valley
Associated Earthwork	One elongated, irregular rectangle
Size of Earthwork	Encloses two acres
Number of Mounds	Three mounds
MW Individuals Uncovered	07 inhumations, 04 cremations
State Map Symbol (Figure 7.1)	04
Maps of Site	Appendix 7.2
Location of Artifacts	Clark County Historical Society, Springfield, OH
Location of Human Remains	Clark County Historical Society, Springfield, OH
Location of Excavation Records	Clark County Historical Society, Springfield, OH

Summary

The Campbell earthwork is located in Bethel Township, Clark County, Ohio, on a high terrace to the west side of Donnels Creek valley, a tributary of the Mad River branch of the Great Miami River (Altick 1935a). The group lies one mile southwest of the Boblett mound group. Mound 1 was excavated by Altick in 1935. It was a truncated conical mound 6 feet high with a sunken apex 18 inches deep, and 50 feet in diameter (Altick 1935a). It apparently was never disturbed by cultivation. Most of the floor area was likely excavated, as the mound was estimated to contain 5000 cubic feet of earth, and the excavation crew was said to have handled about 8000 cubic feet of material in the process of excavating, and then restoring the mound.

Mound 2 was also a truncated conical mound, measuring 2 ½ feet high and 26 feet in diameter at the time of excavation. Altick (1935a) specifically mentions exploring all areas of the mound using trenches. Mound 2 contained an estimated 1000 cubic feet of soil, and approximately this amount was said to have been handled in excavating and restoring the mound. These numbers, and a map in the field notes, would seem to indicate that approximately half of the mound floor was exposed. Mound 3 was an effigy mound, built in the shape of a bird. It was 1 ½ feet tall, 40 feet long, and 28 feet wide. This mound was apparently not excavated.

Information on the ages and sexes of the Campbell skeletons is non-existent. Basic information on the stratigraphic and horizontal locations of the burials is poor for Mound 1 as no floor map is available, although it is often possible to place burials within certain segments of the mound based on written descriptions of their general locations. No discrete burials were identified in Mound 2, but a floor plan of the mound is provided, including horizontal locations of some features and isolated artifacts. Reporting of the positions of artifacts associated with the skeletons is non-existent.

Circleville Earthwork

Major Drainage	Central Scioto drainage
Minor Drainage	Main Scioto valley
Associated Earthwork	Square enclosure joined to a circular enclosure
Size of Earthwork	Square enclosure: 841.5 feet per side Circular enclosure: 1,188 feet perimeter
Number of Mounds	11 mounds total. One in the circular enclosure (Mound D), eight in the square enclosure, two outside the earthwork (Mounds C and E)
MW Individuals Uncovered	02 cremations (Mound D)
State Map Symbol (Figure 7.1)	35
Maps of Site	None
Location of Artifacts	PMAE; NMNH; Not at the Museum of the American Philosophical Society (Peale's American Museum, Philadelphia)
Location of Human Remains	Not at the PMAE, NMNH, or the Museum of the American Philosophical Society (Peale's American Museum, Philadelphia)
Location of Excavation Records	Not at the Museum of the American Philosophical Society (Peale's American Museum, Philadelphia)

Summary

The Circleville earthwork is located within the city limits of Circleville, not far from the junction of Hargus Creek with the Scioto River, within the Scioto valley (Atwater 1820). Mound D, at the center of the circular enclosure, was leveled entirely some time between 1815 and 1820, probably for use as construction material. During its removal, the contents of the mound were observed and reported by Caleb Atwater (Atwater 1820). The mound was 10 feet high and "several rods in diameter" at the time of demolition. The eight mounds within the square enclosure were all of similar size, about 40 feet in diameter and 4–5 feet high. Mound E, outside the circular enclosure, was approximately 90 feet high. No information is given on the diameter of Mound E, nor any dimensions of Mound C.

Information on the ages and sexes of the two Circleville cremations is non-existent. Basic information on the stratigraphic and horizontal locations of the burials is available, although the horizontal locations are estimated distances from the mound center.

Esch Mounds

Major Drainage	Lake Erie basin
Minor Drainage	Black River valley
Associated Earthwork	None
Size of Earthwork	Not applicable
Number of Mounds	Two mounds
MW Individuals Uncovered	42 inhumations, 07 cremations
State Map Symbol (Figure 7.1)	51
Maps of Site	None
Location of Artifacts	Ohio Historical Society, Columbus
Location of Human Remains	Ohio Historical Society, Columbus
Location of Excavation Records	Ohio Historical Society, Columbus

Summary

The Esch mounds are located in Erie County, Ohio, approximately three miles south of Huron on the west bank of the Black River (Author Unknown, n.d.). The mounds are situated at the edge of a bluff approximately 500 feet from the river. The bulk of the mound was excavated by Emerson Greenman with the assistance of Robert Goslin in 1930 (Ohio Historical Society, n.d.). A 20 foot square section of the center of Mound 1 was excavated in 1930 by the Huron Boy Scout Troop prior to excavation by Greenman and Goslin (Author Unknown, n.d.). No information is available on the dimensions of either mound.

Information on the ages and sexes of the Esch skeletons is fair. Reliable age information is available for approximately 28% of the inhumations, and sex information is available for approximately 17% of the adult inhumations.

Basic information on the horizontal and stratigraphic locations of the burials is excellent with relatively few exceptions (Author Unknown 1930a, b). Reporting of the positions of artifacts associated with the skeletons is good.

Finney Mound

Major Drainage	Little Miami drainage
Associated Earthwork	None
Size of Earthwork	Not applicable
Number of Mounds	One mound
MW Individuals Uncovered	03 inhumations, 03 cremations
State Map Symbol (Figure 7.1)	None
Maps of Site	10
Location of Artifacts	Private collection of Joseph Finney, Xenia, OH
Location of Human Remains	Unknown
Location of Excavation Records	Private collection of Charles Stout, Clifton, OH; Ohio Historical Society, Columbus, OH

Summary

The Finney mound is located in Miami Township, Greene County, Ohio, approximately one mile south of Clifton, in rolling uplands above the Little Miami valley (Finney, n.d.). The mound measured 47 feet in diameter and 22 inches high at the time of excavation. It was excavated by Charles Stout in 1970.

Information on the ages of the Finney mound skeletons is fair, while information on the sexes is good. The source of the estimates, however, is unclear. Limited information on the vertical locations of the burials is available, but the horizontal locations are not described. Reporting of the positions of artifacts associated with the burials is non-existent.

Fort Ancient Area Mound Group

Major Drainage	Little Miami drainage
Associated Earthwork:	Apparently none
Size of Earthwork	Not applicable
Number of Mounds	Three mounds
MW Individuals Uncovered	15 inhumations
State Map Symbol (Figure 7.1)	14
Maps of Site	Appendix 7.2
Location of Artifacts	Not at FMNH, NMNH, PMAE, OHS, CMC, UCN
Location of Human Remains	Not at FMNH, NMNH, PMAE, OHS, CMC, UCN
Location of Excavation Records	Not at FMNH, NMNH, PMAE, OHS, CMC, UCN

Summary

The three mounds near Fort Ancient are located on a plateau about 1.5 miles southeast of the Fort Ancient earthwork (Moorehead 1908). The mounds are described as “good-sized”, but no other information on dimensions is given. One of these mounds was excavated by

Moorehead, apparently in 1907. The outer edge of the mound was composed of a roughly laid stone wall, within which were 15 skeletons with their feet pointing toward the center of the mound.

Information on the ages and sexes of the burials, stratigraphic and horizontal locations of the remains, and positions of artifacts associated with the skeletons is non-existent.

Fort Ancient Earthwork

Major Drainage	Little Miami drainage
Associated Earthwork	Two irregularly shaped enclosures joined by a narrow, enclosed isthmus
Size of Earthwork	Encloses approximately 100 acres
Number of Mounds	26
MW Individuals Uncovered	66+ inhumations, 02+ cremations
State Map Symbol (Figure 7.1)	14
Maps of Site	Appendix 7.2
Location of Artifacts	Ohio Historical Society CMC, Not at NMNH
Location of Human Remains	Not at FMNH, NMNH, OHS, CMC, UCN One cranium at PMAE; Possibly at NMNH
Location of Excavation Records	Not at FMNH, NMNH, PMAE, OHS, CMC, UCN

Summary

The Fort Ancient earthwork is located on a bluff on the east bank of the Little Miami River in Washington Township, Warren County, Ohio (Moorehead 1890; Morgan 1970). The enclosure is situated 270 feet above the valley floor, and is almost entirely surrounded by water. The site is bounded on the west by the Little Miami River, on the east and southeast by Cowen Run, and on the north by Randall Run. Artificial streams dug from the primary gateway of the site to the two smaller streams function to more fully surround the site by water (Cowan et al. 2004). The earthwork is divided into three interconnected sections known as the North Fort, Middle Fort, and South Fort. The total length of the earthwork is 18,712 feet (Moorehead 1890). In addition, a long set of parallel walls runs 2760 feet from between the two artificial streams near the north-northeast corner of the North Fort, to the point where Cowen and Randall Runs originate less than 300 feet apart (Cowan et al. 2004). Although the earthwork, mounds, and stone piles appear to have been mostly constructed during the Middle Woodland period, late prehistoric people also used the site, making it difficult to identify Middle Woodland components with certainty. It appears that the mound and gateway burials, a few burials from the tops of earthwork walls,and terrace burials around the earthwork are Middle Woodland, while burials in the portion of the site known as the South Fort interior, as well as those from Anderson Village, are probably Fort Ancient (Robert Connolly, personal communication). This division of burials by location is also supported by Moorehead's (1890:49) observation that the skulls taken from the "stone heaps", which were primarily found on the terraces outside the enclosure walls, were thicker, with a more acute facial angle, and a lower forehead. Skulls from burials lined or covered with stones within the enclosure walls, on the other hand, were thinner with a less acute facial angle and a higher forehead.

The North Fort contained six mounds and a number of stone graves (Moorehead 1890; Morgan 1970:20–21). Four of the mounds in the North Fort roughly form the corners of a square (Moorehead 1890; Morgan 1970:20–21). The fifth is a smaller mound along the east wall and was covered with burnt stone. This mound was apparently one of several excavated by Mills (1908) and produced what were apparently several commingled cremations. Mound 65 was the easternmost mound of the rough square and closest to the East Gateway. It was excavated by Moorehead in 1889, and was described as small.

The Middle Fort contained two mounds that measured 20 feet tall and stood 10 feet apart, which formed the Great Gateway. An additional mound was located among some crescent shaped wall structures (Moorehead 1890; Morgan 1970). The center of this latter mound was excavated sometime prior to Mills' visit in 1908, and produced a single decayed skeleton with several artifacts (Mills 1908). The South Fort contained one mound at the extreme northern end near the gateway to the Middle Fort. It is described as a platform mound, and was about 4 feet high (Moorehead 1890). A non-mound cemetery and "village site" associated with late prehistoric people, were also uncovered in the South Fort (Moorehead 1890; Morgan 1970:20–21).

Several mounds, graves, and artifact caches were recovered from the area outside the enclosure, but contained within the boundaries of the river and streams. Within the parallel walls running northeast from the North Fort was found a mound at the extreme northeast terminus (Morgan 1970). In 1975, the Powell cache, a ritual deposit of stone, stone tools, and flakes of various sorts, was found near the eastern end of the parallel walls but outside the space they enclosed. At the southeast end of these parallel walls closer to the North Fort are Mounds 68 and 69. These mounds were originally about 60 feet apart and associated with the southwest terminus of each of the parallel walls. Mound 68 was to the north, measured 10 feet high, and was originally approximately 40 feet in diameter (Moorehead 1890). Mound 69 was to the south, and measured 12 feet high and 80 feet in diameter. Both mounds were essentially fully excavated by Fowke (Moorehead 1890). The space between these two mounds and the East Gateway of the North Fort is referred to as the Hopewell Village site. The Cowen-Wolfe copper cache was found within the northeast section of this area in 1898 (Cowan et al. 2004).

The area to the southeast of the North Fort is known as the Eastern Plateau. At least 11 mounds are known to have existed on this plateau (Cowan et al. 2004). Moorehead (1890) investigated three of these small mounds. The largest of these was Mound 50, located 300–400 yards southeast of the South Fort. It was 4 feet high and about 40 feet in diameter. It appears to be of Middle Woodland date due to the presence of trimmed mica sheets. Mound 51 was located 200 yards south of Mound 50 and measured 1.5 feet high by 40 feet in diameter. Mound 52 was 200 yards from the fort wall and measured 2 feet high and 17 feet in diameter. The inner boundary of the floor of this mound was encircled by stones. All three mounds were apparently fully explored.

Several of the terraces outside the walls of Fort Ancient produced burial areas that were thickly covered with stones. On the terrace east of the walls of the Middle Fort, just east of the Great Gateway, were found many stone-covered burial areas (Moorhead 1890). Moorehead notes that "…one or two of these…" were investigated. One covering of stones measured 15–25 inches in height, and extended over an area of 20 feet by 80 feet. Outside the southern extremity of the South Fort, another large stone-covered cemetery area was found. A large terrace on the west side of the South Fort produced a number of similar burial areas. This terrace was only about 20–25 feet wide in places, yet extended around the hill for a distance of nearly a quarter of a mile. The terrace was covered with river stones up to 4 feet deep in places. Six graves were excavated by Moorehead on this terrace. Two were mass graves with minima of 20 and 12 individuals each. A third large grave was sampled and produced three individuals. Another large grave, 20 feet long and 12 feet wide, contained four individuals. The remaining two graves were small, with three individuals each. Another small stone grave was found at the edge of the terrace near the North Lookout point.

At least two additional mounds are known from outside the area enclosed by waterways. Cowan et al. (2004) mention a burial mound recently discovered on the plateau area about 200 meters north of Randall Run, and a mound known as the Whitaker mound is located several hundred meters east of Cowen run.

Information on the ages and sexes of the Fort Ancient skeletons is generally poor, partly because many of the presumed Middle

Woodland skeletons from the site are either commingled, or so poorly described that they appear to have been commingled. Reliable age information is available for only 3% of the total sample, and 13% of the non-commingled burials. Reliable sex information is available for only 1% of the total sample, and for 7% of the adult, non-commingled burials.

Basic information on the stratigraphic and horizontal locations of the burials is almost non-existent. Reporting of the positions of the artifacts associated with the skeletons is poor.

Fortney Mound

Major Drainage	Great Miami drainage
Minor Drainage	Twin Creek valley
Associated Earthwork	None
Size of Earthwork	Not applicable
Number of Mounds	One mound
MW Individuals Uncovered	08 inhumations
State Map Symbol (Figure 7.1)	05
Maps of Site	None
Location of Artifacts	Ohio Historical Society, Columbus
Location of Human Remains	Not at the Ohio Historical Society, Columbus
Location of Excavation Records	Not at the Ohio Historical Society, Columbus

Summary

The Fortney mound is located in Jackson Township, Montgomery County, Ohio, approximately one mile southwest of Farmersville, on a spur of upland projecting into the Twin Creek valley (Mills 1919; Ohio Historical Society, n.d.). The mound was oblong in shape, and measured 83 feet long, 45 feet wide, and 12–15 feet in height at the time of excavation. Three graves were excavated by amateurs sometime prior to 1916, and partially or mostly removed. Limited information about the contents of these graves was obtained from local residents. The remainder of the mound was completely excavated by Truman Mills in 1916 or 1917.

Information on the ages of the Fortney mound skeletons is poor, while information on the sexes is fair. Basic information on the stratigraphic and horizontal locations of the graves is excellent, although no map is available. Reporting of the positions of the artifacts associated with the skeletons is good.

Ginther Mound and Earthwork

Major Drainage	South-Central Scioto drainage
Minor Drainage	Main Scioto valley
Associated Earthwork	Cedar Bank (circular enclosure)
Size of Earthwork	250 feet in diameter
Number of Mounds	One mound
MW Individuals Uncovered	None
State Map Symbol (Figure 7.1)	39
Maps of Site	Appendix 7.2
Location of Artifacts	Ohio Historical Society, Columbus
Location of Human Remains	Not applicable
Location of Excavation Records	Ohio Historical Society, Columbus

Summary

The Ginther mound is located in Ross County, Ohio, approximately four miles north of Chillicothe. It is part of the Cedar Bank complex on the east side of the Scioto River valley (Shetrone 1922; Squier and Davis 1848). The Cedar Bank complex consists of a large square earthwork and a small open circular earthwork. The Ginther mound is located just outside the circular earthwork to the south of the much larger square enclosure. The mound is a truncated pyramid, and is visible on Squier and Davis' (1848:Plate 18) map of the Cedar Bank earthwork. The mound was partially excavated by Squier and Davis in the 1840s and completed by Henry C. Shetrone in 1922 (Shetrone 1925). The mound measured over 100 feet in diameter, was 10 feet high at its highest point, and contained an estimated 1500 cubic yards of earth (Shetrone 1922).

Glen Helen Mound

Major Drainage	Little Miami drainage
Associated Earthwork	Apparently none
Size of Earthwork	Not applicable
Number of Mounds	One mound
MW Individuals Uncovered	07 inhumations
State Map Symbol (Figure 7.1)	11
Maps of Site	Appendix 7.2
Location of Artifacts	Dayton Museum of Natural History
Location of Human Remains	Dayton Museum of Natural History
Location of Excavation Records	Dayton Museum of Natural History

Summary

The Glen Helen mound is located near Yellow Springs in Miami Township, Greene County, Ohio, on a plateau above a steep bluff that overlooks a small tributary of the Little Miami valley, and 137 meters southeast of a geodetic mark at Yellow Springs (Ohio Historic Preservation Office 1976; Marschall 1972). The mound was constructed of stone with a central chamber (Marschall 1972). At the time of excavation, the mound was 1.6 meters high and 15 meters wide. Some earth had been deposited on the mound in the past to fight erosion, so these may not reflect its original dimensions. Preliminary excavations were conducted in 1953 and 1954 by Frank Van Wort. No reports of these excavations are extant. Additional excavations were conducted in 1971 as a field school under the direction of Wolfgang Marschall. At minimum, Van Wort apparently excavated a trench through what appeared to be the center of the mound, but which turned out to be somewhat north of center. Wolfgang Marschall excavated approximately one-third of the mound, including the central burial chamber of the stone mound, overlapping somewhat with the previously excavated area.

Information on the ages and sexes of the Glen Helen mound skeletons is good. Basic information on both the stratigraphic and horizontal locations of burials is also good. Reporting of the positions of artifacts relative to the skeletons is poor.

Hazlett Mounds and Earthwork

Major Drainage	Central Muskingum drainage
Minor Drainage	Licking River and Jonathan Creek watersheds
Associated Earthwork	Squarish enclosure and an open circle enclosure
Size of Earthwork	Squarish enclosure encompasses seven acres
Number of Mounds	Two mounds
MW Individuals Uncovered	02 inhumations
State Map Symbol (Figure 7.1)	55
Maps of Site	Appendix 7.2
Location of Artifacts	Ohio Historical Society, Columbus
Location of Human Remains	Ohio Historical Society, Columbus
Location of Excavation Records	Ohio Historical Society, Columbus

Summary

The Hazlett earthwork is located on the extreme western end of Flint Ridge, in Hopewell and Franklin townships, Licking County, Ohio, approximately 12 miles southeast of Newark and 1 1/2 miles west of Flint Ridge State Memorial, within the watershed between the Licking River and Jonathan Creek (Ohio Historical Society, n.d.; Mills 1919). The ridge on which the earthwork stands rises about 300 feet above the valley of the Licking River (Salisbury and Salisbury 1863). Two mounds were present within the enclosure. The larger of the two is known as the Hazlett mound, the smaller is a stone mound located a short distance to the east of the larger mound. The Hazlett mound was heavily disturbed in the 1870s at which time parts of one of the skeletons as well as associated artifacts were removed (Mills 1919, 1921). The undisturbed portion was excavated by William C. Mills, Henry C. Shetrone, and W. M. McLean in 1919. The mound measured 90 feet by 85 feet at its base and was approximately 13 feet high (Mills 1919). However, a report by Salisbury and Salisbury (1863) prior to the disturbance, described the mound as measuring 100 feet in diameter and 15 feet high. The stone mound was described as an irregular, star-shaped mound measuring 4 feet tall and 40 feet in diameter. The stone mound has apparently only been excavated by an amateur archaeologist, and reportedly produced two skeletons with some associated artifacts (Carskadden and Fuller 1967).

Information on the ages and sexes of the two Hazlett inhumations is non-existent. Basic information on the stratigraphic and horizontal locations of both burials is available. Reporting of the positions of associated artifacts relative to the skeletons is excellent.

Headquarters Site

Major Drainage	Great Miami drainage
Minor Drainage	Confluence of the Great Miami and Ohio Rivers
Associated Earthwork	None
Size of Earthwork	Not applicable
Number of Mounds	None
MW Individuals Uncovered	03 inhumations
State Map Symbol (Figure 7.1)	06
Maps of Site	None
Location of Artifacts	University of Cincinatti, Department of Anthropology
Location of Human Remains	University of Cincinatti, Department of Anthropology
Location of Excavation Records	University of Cincinatti, Department of Anthropology

Summary

The Headquarters site is located in Shawnee Lookout Park on a broad terrace near the confluence of the Great Miami and Ohio Rivers, about 40 feet above the floodplain (Lee and Vickery 1972). The site measured 150 feet northeast-southwest by 120 feet northwest-southeast when surveyed in the 1960s (Fischer 1968). The northwest edge of the site was cut away during construction of a road, and the western portion of the site was disturbed during construction of a basement and driveway for a private home that later became Park Headquarters. One burial was removed during excavation of the basement, but permission to examine the remains and any associated artifacts was denied by the owner of the house. Part of the central and eastern portion of the site spent some time under cultivation. Salvage excavation of the Headquarters site was undertaken when a road cut through the northern periphery of the site (Lee and Vickery 1972). An area of approximately 200 square feet was excavated at the northern periphery of the site, and produced non-mound burials.

Information on the ages and sexes of the Headquarters site skeletons is excellent. Basic information on the stratigraphic and horizontal locations of remains and artifacts is poor. Reporting of the positions of artifacts associated with the skeletons is excellent.

Hopeton Earthwork

Major Drainage	South-Central Scioto drainage
Minor Drainage	Main Scioto valley
Associated Earthwork	Hopeton Works: Overlapping large square and circular enclosures. Two small, open circular enclosures. Long parallel walls.
Size of Earthwork	Circular Enclosure: 20 acres Square Enclosure: 20 acres Parallel Walls: 2400 feet long
Number of Mounds	Three mounds in square enclosure
MW Individuals Uncovered	02 inhumations
State Map Symbol (Figure 7.1)	41
Maps of Site	Appendix 7.2
Location of Artifacts	Not at the HOCU, OHS, NPS Midwest Archaeological Center (Lincoln, NE), or with Louise Stanhope; probably in private hands.
Location of Human Remains	Not at the HOCU, OHS, NPS Midwest Archaeological Center (Lincoln, NE), or with Louise Stanhope; probably in the private collection of Mary Goodman, Chillicothe, OH
Location of Excavation Records	Not at the Ohio Historical Society, Columbus

Summary

The Hopeton earthwork is located in Ross County, Ohio, four miles north of Chillicothe, on a terrace in the valley of the Scioto River (Squier and Davis 1848). The interior of the square enclosure contains two modestly sized, oval-shaped mounds and one or two very small mounds (Squier and Davis 1848:52, Platte XVII). The modestly sized mounds are now spread over an approximately 25 meter diameter circular area and a 20×40 meter oval area, based on topography only (Jarrod Burks, personal communication, 2003). Their original areas would have been significantly smaller.

Burials were found outside the earthwork, approximately 50 feet northwest of the end of a 2400 foot causeway associated with the earthwork (Goodman 1973). The burials were apparently not associated with a mound. One of the two burials had been greatly disturbed by some unknown excavator.

Age and sex information is available for the more complete skeleton. Reporting of artifact positions relative to the better preserved skeleton is excellent.

Hopewell Earthwork

Major Drainage	South-Central Scioto drainage
Minor Drainage	North Fork of Paint Creek valley
Associated Earthwork	One very large, mostly rectangular enclosure and a much smaller square enclosure
Size of Earthwork	Rectangular enclosure: 2800 feet long by 1800 feet wide enclosing 111 acres Square enclosure: 850 feet square enclosing 16 acres
Number of Mounds	38 mounds both within and outside the two enclosures
MW Individuals Uncovered	136 inhumations, 46 cremations, 34 charred skeletons
State Map Symbol (Figure 7.1)	28
Maps of Site	Appendix 7.2
Location of Artifacts	Ohio Historical Society (Shetrone excavations) and Field Museum of Natural History (Moorehead excavations)
Location of Human Remains	Ohio Historical Society (Shetrone excavations) and Field Museum of Natural History (Moorehead excavations)
Location of Excavation Records	Ohio Historical Society (Shetrone excavations) and Field Museum of Natural History (Moorehead excavations)

Summary

The Hopewell site is located in Union Township, Ross County, Ohio, approximately seven miles northwest of Chillicothe, on a terrace in the Paint Creek valley, about one-third mile from the creek (Shetrone 1926a; Moorehead 1922). The dimensions of each mound and the portions examined by each excavator are described below:

Mound 1. Less than 3 feet high and already disturbed by cultivation in the 1840s (Squier and Davis 1848). Minimal excavations were carried out by Squier and Davis in the 1840s. The mound had been completely leveled by the 1890s (Moorehead 1922).

Mound 2. Eighty feet in diameter and 6–7 feet high (Squier and Davis 1848). Squier and Davis excavated a 6 foot by 4 foot section near the center in the 1840s. Moorehead (1922) excavated the bulk of what remained of the center in the 1890s. Shetrone excavated the remaining ring in the 1920s (Shetrone 1926a).

Mound 3. Fifty-five feet in diameter and 30 inches high in the 1920s (Shetrone 1926a). The crematory basin was apparently excavated by Squier and Davis in the 1840s (Moorehead 1922). The bulk of the mound was excavated by Moorehead in the 1890s. Shetrone excavated the marginal strip 6 feet across that remained after Moorehead's examination (Shetrone 1926a).

Mound 4. Forty-five feet in diameter and 6 feet high (Shetrone 1926a). A 6 foot by 10 foot section of the center was apparently excavated by Squier and Davis in the 1840s (Moorehead 1922). Moorehead excavated more of the center (Moorehead 1897a), and Shetrone excavated the remaining ring, representing approximately half of the mound.

Mound 5. Dimensions unknown. Squier and Davis excavated the crematory basin in the 1840s (Squier and Davis 1848). The remainder of the mound was apparently destroyed by cultivation by the 1920s (Shetrone 1926a).

Mound 6. Dimensions unknown. This mound was one of several destroyed by highway and railroad construction (Shetrone 1926a).

Mound 7. Estimated to have been 85 feet long, 75 feet wide, and close to 10 feet high (Shetrone 1926a). This mound was one of several wholly or partially destroyed by highway and railroad construction. Railroad workers apparently cut a drift into this mound and encountered three skeletons which they tossed back into the mound after removing the artifacts. Shetrone excavated a strip representing what remained of the central one-third of the mound in the 1920s.

Mound 8. Dimensions unknown. This mound was partially destroyed by highway or railroad construction. Moorehead excavated the portion that remained undisturbed in the 1890s (Moorehead 1922).

Mound 9. Dimensions unknown. Squier and Davis examined two crematory basins in this mound (Squier and Davis 1848). The mound was destroyed by highway or railroad construction (Shetrone 1926a).

Mound 10. Dimensions unknown. This mound was destroyed by highway or railroad construction (Shetrone 1926a).

Mound 11. Fifty feet in diameter and 18 inches high at center (Shetrone 1926a). This mound had been previously disturbed, showing evidence of two test shafts, both approximately 5 feet in diameter. One shaft was found at the center and the other at a point midway between the center and the the north margin (Shetrone 1926a). The remainder of the mound was excavated by Shetrone in the 1920s.

Mound 12 - Mound 13. Dimensions unknown. These mounds were destroyed by highway or railroad construction (Shetrone 1926a).

Mound 14 - Mound 16. Dimensions unknown. These mounds were destroyed by cultivation sometime prior to Shetrone's excavations (Shetrone 1926a).

Mound 17. Dimensions unknown. This mound was thoroughly excavated by Shetrone in the 1920s (Shetrone 1926a).

Mound 18. Seventy-five feet in longest diameter, 55 feet wide, 3 feet 8 inches high (Moorehead 1922). This mound was partially destroyed by cultivation (Moorehead 1922). Moorehead excavated what remained of this mound in the 1890s.

Mound 19. Fifty four feet in diameter and 3 feet high (Moorehead 1922). This mound had been previously disturbed by unknown excavators (Moorehead 1922). Moorehead excavated what remained of the mound in the 1890s.

Mound 20. Twenty five feet in diameter and 20 inches high at center (Shetrone 1926a). Shetrone thoroughly excavated this mound in the 1920s.

Mound 21 - Mound 22. Dimensions unknown. These mounds were destroyed by cultivation sometime prior to Shetrone's excavations (Shetrone 1926a).

Mound 23. One hundred fifty feet long and 10–12 feet high (Moorehead 1922). Moorehead excavated approximately two-thirds of this mound in the 1890s. Shetrone excavated the western one-third in the 1920s (Shetrone 1926a).

Mound 24. Fifty feet in diameter and 30 inches high (Shetrone 1926a). A substantial portion of the northern half of the mound had been disturbed prior to Moorehead's examination in the 1890s (Moorehead 1922), and Squier and Davis apparently disturbed an area approximately 10 feet in diameter at the mound's center (Dorsey 1891a). Moorehead excavated the northern half of the mound, and Shetrone completed examination of the southern half in the 1920s.

Mound 25. Five hundred feet long and 220 feet wide (Squier and Davis 1848). The prepared floor surface alone measured 470 feet by 130 feet (Shetrone 1926a). Approximately 40% of this mound was excavated by Moorehead in the 1890s (Moorehead 1922). The remainder was excavated by Shetrone in the 1920s.

Mound 26. Estimated to have been 40 feet long by 35 feet wide (Shetrone 1926a). This mound was partially disturbed by construction of a farmhouse. The remainder was excavated by Shetrone in the 1920s.

Mound 27. Fifty-six feet long by 50 feet wide (Moorehead 1922). The majority of this mound was excavated by Moorehead in the 1890s. Shetrone excavated the tiny strip that remained in the 1920s (Shetrone 1926a).

Mound 28. Twenty feet in diameter and 10 inches high (Shetrone 1926a). This mound was thoroughly excavated by Shetrone in the 1920s.

Mound 29. Eighty-nine feet long by 80 feet wide and 4 feet 3 inches high (Moorehead 1922). The majority of this mound was excavated by Moorehead in the 1890s.

Mound 30 - Mound 32. Dimensions unknown. These mounds were thoroughly examined by Shetrone in the 1920s (Shetrone 1926a).

Mound 33. Thirty feet in diameter and 3 feet high (Shetrone 1926a). This mound was thoroughly examined by Shetrone in the 1920s.

Mound 34 - Mound 36. Dimensions unknown. These mounds were thoroughly examined by Shetrone in the 1920s (Shetrone 1926a).

Mound 37. Dimensions unknown. A portion of this mound had been disturbed by previous excavations. The undisturbed portion was thoroughly excavated by Moorehead in the 1890s (Moorehead 1926).

Mound 38. Dimensions unknown. This mound was thoroughly examined by Shetrone in the 1920s (Shetrone 1926a).

Information on the ages and sexes of the Hopewell skeletons is generally better for those skeletons excavated by Shetrone than for those excavated by Moorehead. Moorehead's excavations produced 122 provenienced individuals, 115 (94%) of which were inhumations (including the inhumations that Moorehead described as "charred"). If the "charred" individuals are excluded, there are 106 inhumations (87%). Shetrone's excavations produced 94 provenienced individuals, 56 (60%) of which were inhumations. The difference in percentage of inhumations between the two excavators probably reflects more complete reporting of the burial features encountered by Shetrone. A similar difference in the quality of information is seen in age and sex designations for the Hopewell site. Reliable sex information is available for approximately 14% of Moorehead's adult skeletal sample (15% of inhumations), while 40% of Shetrone's individuals (68% of adult inhumations) could be assigned a sex. Reliable age information is available for approximately 9% of Moorehead's individuals and inhumations, while 48% of Shetrone's individuals (81% of inhumations) could be assigned to an age category. For the skeletal sample as a whole, sex designations were obtained for 24% of provenienced individuals (32% of inhumations) and age designations were obtained for 25% of provenienced individuals (32% of inhumations). The primary reason for the difference in the quality of information available from the Moorehead and Shetrone excavations can probably be attributed to more thorough collection and labeling of skeletons by Shetrone's survey.

Basic information on the stratigraphic and horizontal locations of the burials is also better for Shetrone burials than for Moorehead burials. Over 75% of the Shetrone burials had good information on horizontal location, and over 80% had information on stratigraphic location (Greber and Ruhl 1989; Shetrone 1926a, 1925, 1924, 1923, 1922). These numbers were lower (70% and 58% respectively) for Moorehead (Moorehead 1922, 1891–1892). Reporting of the positions of artifacts associated with the skeletons was excellent for the Shetrone burials (over 90%), and fair for Moorehead burials (less than 50%).

Irvin Coy Mound

Major Drainage	Little Miami drainage
Associated Earthwork	Apparently none
Size of Earthwork	Not applicable
Number of Mounds	One mound
MW Individuals Uncovered	18 inhumations, 01 cremation
State Map Symbol (Figure 7.1)	13
Maps of Site	Appendix 7.2
Location of Artifacts	Not at FMNH, NMNH, PMAE, OHS, CMC, UCN
Location of Human Remains	Not at FMNH, NMNH, PMAE, OHS, CMC, UCN
Location of Excavation Records	Not at FMNH, NMNH, PMAE, OHS, CMC, UCN

Summary

The Irvin Coy mound is located in Beavercreek Township, Greene County, Ohio, southwest of the intersection of Shakertown and Fairfield-Bellbrook Roads, in uplands to the west of the Little Miami valley (Wood and Allman 1961). The mound was excavated by James Wood and John Allman in 1958 and 1959, and measured 3 feet high and 74 feet in diameter at the time of excavation. The mound had apparently been much higher at one time, as there was evidence of both previous excavation and extensive cultivation. Most of the mound was located on the farm of Mr. Irvin Coy, but a small portion was on the property of the adjacent landowner, with a fence running along the property line. Mr. Coy allowed excavation of the portion of the mound on his side of the property line, but then sold the farm after two years, bringing excavation to an end. According to the excavation map (Wood and Allman 1961: Figure 1), approximately one-third of the mound area was excavated. The excavated area comprises the majority of the central portion of the mound.

Information on the sexes of the Irvin Coy mound skeletons is non-existent. Age information is limited to distinguishing adults from subadults for some of the skeletons. Basic information on the horizontal locations of the burials is good. Information on the stratigraphic locations of the burials is limited to an indication of the depth of the first three burials, and reporting of which individual was buried above the other in two additional pairs of graves. Reporting of the positions of artifacts associated with the skeletons is non-existent.

John Boyle's Farm Mound

Major Drainage	Little Miami drainage
Minor Drainage	East Fork of Little Miami valley
Associated Earthwork	Circular enclosure
Size of Earthwork	Unknown
Number of Mounds	Apparently one mound only
MW Individuals Uncovered	02 inhumations, several cremations
State Map Symbol (Figure 7.1)	17
Maps of Site	Appendix 7.2
Location of Artifacts	Not at FMNH, NMNH, PMAE, OHS, CMC, UCN
Location of Human Remains	Not at FMNH, NMNH, PMAE, OHS, CMC, UCN
Location of Excavation Records	Not at FMNH, NMNH, PMAE, OHS, CMC, UCN

Summary

The John Boyle's Farm mound is located in Brown County near St. Martins, Ohio, in the valley of the East Fork of the Little Miami River (Moorehead 1890). The mound was partially excavated by Moorehead in 1888. It had a 70 foot base, was 7 feet high, and surrounded by a circular enclosure. The mound was originally much higher, but had been under cultivation for many years by the time of excavation (Moorehead 1892). A 20 foot wide north-south trench through the center of the mound revealed an estimated one-third of the mound floor.

Information on the ages and sexes of the Boyle's Farm skeletons is non-existent. Basic information on the stratigraphic and horizontal locations of the burials is provided on a map (Moorehead 1890:Figure XL). Position information is also provided for the single artifact that accompanied one of the Boyle's Farm skeletons.

Joseph Dayrs' Farm Mound

Major Drainage	Lower Muskingum drainage
Associated Earthwork	Unknown
Size of Earthwork	Not applicable
Number of Mounds	Apparently one mound only
MW Individuals Uncovered	01 inhumation
State Map Symbol (Figure 7.1)	60
Maps of Site	None
Location of Artifacts	Not at FMNH, NMNH, PMAE, OHS, CMC, UCN
Location of Human Remains	Not at FMNH, NMNH, PMAE, OHS, CMC, UCN
Location of Excavation Records	Not at FMNH, NMNH, PMAE, OHS, CMC, UCN

Summary

The Joseph Dayrs' Farm Mound is located near Lowell, in Washington County, Ohio, in the valley of the Muskingum River (Moorehead 1892). No information is available about the presence of an earthwork, the size of the mound, or the completeness of the excavations. The mound is only mentioned as part of a discussion about copper artifacts recovered in the Muskingum valley (Moorehead 1892:27). It is not even clear whether Moorehead conducted the excavation.

Information on the age and sex of the single skeleton is non-existent, and no information is provided on the stratigraphic and horizontal locations of the burial. However, reporting of the positions of artifacts associated with the skeleton is excellent.

Kohl Mound

Major Drainage	Far Northern Muskingum drainage
Minor Drainage	Tuscarawas valley
Associated Earthwork	None
Size of Earthwork	Not applicable
Number of Mounds	One mound
MW Individuals Uncovered	02 inhumations, 01 cremation
State Map Symbol (Figure 7.1)	58
Maps of Site	Appendix 7.2
Location of Artifacts	Probably in private collection, Janice Whitman, Bangor, Maine
Location of Human Remains	Probably in private collection, Janice Whitman, Bangor, Maine
Location of Excavation Records	Probably in private collection, Janice Whitman, Bangor, Maine

Summary

The Kohl mound is located in Goshen Township, Tuscarawas County, Ohio, on a ridge above the Tuscarawas River (Whitman 1977). The mound measured 25 feet north-south, 15 feet east-west, and 22 inches high. It was excavated by faculty and students from Kent State Tuscarawas in 1972.

Information on the ages and sexes of the Kohl mound skeletons is non-existent. Basic information on the horizontal locations of the burials is good. Reporting of the positions of the artifacts associated with the skeletons is excellent.

Lee Mound

Major Drainage	Great Miami drainage
Minor Drainage	Price's Creek
Associated Earthwork	None
Size of Earthwork	Not applicable
Number of Mounds	One mound
MW Individuals Uncovered	03–04 cremations (estimated)
State Map Symbol (Figure 7.1)	02
Maps of Site	None
Location of Artifacts	Ohio Historical Society, Columbus
Location of Human Remains	Unknown
Location of Excavation Records	Unknown

Summary

The Lee mound is located in Monroe Township, Preble County, two miles southeast of Eldorado (McPherson 1921). It is located within a few yards of the edge of the second terrace overlooking Price's Creek. The mound measured 65 feet in diameter north-south, 55 feet east-west, and 40 inches high at the time of excavation. It was excavated by H. R. McPherson and Chas A. Smith in September of 1920. The whole mound was examined except for a small portion in the northeast section which supported a large tree. An estimated 150 cubic yards of earth were removed in excavating the mound.

Information on the ages and sexes of the Lee mound cremations is non-existent. Basic information on the horizontal locations of the burials as well as reporting of the positions of the artifacts relative to the cremated remains is non-existent.

Levina Russell/Rollins Ford Farm Mound

Major Drainage	Central Muskingum drainage
Minor Drainage	Jonathan Creek
Associated Earthwork	None
Size of Earthwork	Not applicable
Number of Mounds	One mound
MW Individuals Uncovered	01 inhumation
State Map Symbol (Figure 7.1)	59
Maps of Site	None
Location of Artifacts	Ohio Historical Society, Columbus
Location of Human Remains	Ohio Historical Society, Columbus
Location of Excavation Records	None

Summary

The Levina Russell/Rollins Ford Farm mound is located in Newton Township, Muskingum County, Ohio (Carskadden, 2001), on a ridge top on the north side of Twomile Run, 0.5 miles west of Route 345 and two miles south of the town of Fultonham (Baby 1963). The single burial known from this site was exposed by cultivation in 1960. The mound itself was destroyed by plowing.

The single burial was that of a child. Basic information on the horizontal and stratigraphic location of the burial as well as the positions of artifacts associated with the skeleton is non-existent because of disturbance.

Liberty Earthwork

Major Drainage	South-Central Scioto drainage
Minor Drainage	Main Scioto valley
Associated Earthwork	One square enclosure and two circular enclosures
Size of Earthwork	Square enclosure: 1080 feet per side enclosing 27 acres Large circular enclosure: 1700 feet diameter enclosing 40 acres Small circular enclosure: 800 feet diameter
Number of Mounds	14 mounds
MW Individuals Uncovered	Harness: 15 inhumations, 153 burned or cremated individuals, 06 individuals of unknown treatment. Only 79 individuals reported in the data base. Russell Brown: no inhumations, 08 cremations Putnam Mounds: unknown number
State Map Symbol (Figure 7.1): 46	
Maps of Site	Appendix 7.2
Location of Artifacts	British Museum, London; CMNH; OHS; PMAE
Location of Human Remains	CMNH, OHS
Location of Excavation Records	CMNH, OHS

Summary

The Liberty earthwork is located in Liberty Township, Ross County, Ohio, eight miles south of Chillicothe, on a terrace in the Scioto River valley (Mills 1907). The earthwork is situated on the second terrace of the Scioto River approximately 2.6 km from the modern channel (Seeman and Soday 1980).

Edwin Harness Mound. The Edwin Harness mound was the largest mound at the Liberty site and was located within the large circular enclosure near its junction with the square enclosure (Squier and Davis 1848:Plate XX). The Harness mound measured 160 feet long, 80–90 feet wide, and 20 feet high on its tallest end, declining to 11 feet high at its lowest peak (Mills 1907; Squier and Davis 1848). Mills (1907) estimated that the mound contained approximately 4700 cubic yards of earth.

The mound was excavated by several individuals. Squier and Davis sunk two test shafts in this mound in 1846, approximately one-third the distance from the north and south ends of the mound. One probably measured approximately 10 feet by 10 feet, while the other may have been somewhat smaller. Sometime in either 1884 or 1885, several schoolboys under the guidance of a Mr. Wilson, excavated two shafts, one somewhere between the two shafts of Squier and Davis, the other right next to Squier and Davis' shaft B (Putnam 1886). These boys evidently removed a considerable number of copper artifacts, considering the relatively small size of their excavations. In 1885, Frederic Putnam excavated an approximately 18 foot wide trench from the north end of the mound about 1/3 of the way through (Mills 1907). The trench was apparently widened in the vicinity of burials (Mills 1907). Putnam reported that 12 burial chambers were opened by his team, though specific information is only provided for a single burial. In 1896, Warren K. Moorehead continued Putnam's trench southward at approximately 30 feet wide, then decided the work would go faster by means of tunneling. He excavated 98 feet of main tunnel and 155 feet of side tunnels, exposing a total of 27 interments. The tunnels averaged 5 feet in width. In 1903 and 1905, Mills exposed most of the floor of the mound during some fairly extensive excavations, apparently backfilling as he went (Greber 1983). He uncovered a total of 133 burials (Mills 1907). Greber (1983) completed excavation of the mound, uncovered several additional burials, and documented the post hole pattern of the charnel house under the mound.

Although Moorehead (1897b) numbered his 27 burials consecutively, he supplied much of the information about the skeletons in clusters, with a few specific descriptions of certain burials dispersed throughout the text. For example, he mentioned that all but two of the skeletons were cremated, then provided a specific burial number for one of the uncremated skeletons. He also noted that the only artifacts recovered were found with eight of the cremations. The information about these burials was sufficient to warrant inclusion in the HOPEBIOARCH database, but Moorehead's lack of specificity about burial numbers necessitated our assigning numbers from his 1 to 27 range "for him" in some cases. Should Moorehead's notes about these excavations ever come to light, some of the burial numbers in the data base would not match the numbers he assigned. Mills (1907) followed a similar pattern at the site. He would report on a particular burial, then discuss several subsequent burials without indicating their specific burial numbers. In these cases, we assigned numbers to burials sequentially from the last burial number specifically mentioned.

Russell Brown Mounds. The Russell Brown mounds represent three mounds from a cluster of seven found to the northeast of the earthwork. They were excavated by Frank Soday in 1961. Mound 1 measured 24 meters in diameter and 1 meter high at the time of excavation, Mound 2 was 30 meters long, 14 meters wide, and 0.8 meters high, and Mound 3 was 30 meters long, 20 meters wide, and 1 meter high (Seeman and Soday 1980).

Since all burials encountered were cremations, information on the ages and sexes of the burials was poor. Sex could not be reliably assigned to any of the burials, and age could only be assigned to two individuals. Basic information on the stratigraphic and horizontal locations of the burials is excellent. The only missing information is the horizontal location of one individual.

Putnam Mounds. Putnam excavated a cluster of three mounds just outside a gateway on the eastern side of the large circular enclosure, and one mound north of this cluster of three (Mills 1907). The small westward mound of the cluster was completely excavated and contained no burials or artifact caches. The other two were burial mounds that were also completely excavated. Apparently, no provenience information was reported for the burials in these mounds. The mound north of the cluster of three was also completely excavated by Putnam, but no burials or artifact caches were recovered.

In general, information on the ages and sexes of skeletons from the Liberty excavations is poor. Reliable age information is available for 10% of the sample, and 33% of the inhumations. Reliable sex information is available for only 5% of the sample, and only 20% of the adult inhumations.

Basic information on the stratigraphic and horizontal locations of the burials is also poor, except for the burials from the Russell Brown mounds. Reporting of the positions of the artifacts associated with the skeletons is also poor.

Manring Mounds and Earthwork

Major Drainage	Great Miami drainage
Minor Drainage	Beaver Creek valley
Associated Earthwork	Embankment present
Size of Earthwork	91 meters long
Number of Mounds	Two mounds
MW Individuals Uncovered	02+ inhumations, 01 cremation
State Map Symbol (Figure 7.1)	09
Maps of Site	None
Location of Artifacts	Clark County Historical Society, Springfield, OH
Location of Human Remains	Not in the Clark County Historical Society
Location of Excavation Records	Clark County Historical Society, Springfield, OH

Summary

The Manring earthwork is located in Harmony township, Clark County, Ohio, a mile northeast of the Newlove and National Roads, in the valley of Beaver Creek, a tributary of the Mad River branch of the Great Miami River (Seeman and Cramer 1982). The site is situated about 25 feet above the creek. Mounds 1 and 2 were approximately 300 feet apart. Mound 1 was oval in shape, and in 1919 was 25 feet high, 250 feet long north-south, and 200 feet wide east-west (Altick 1941b), making it one of the largest Hopewell mounds anywhere. Mound 2 was 3 feet high and 30 feet in diameter in 1919 (Altick 1941b). It had a sunken apex of about 8 inches below the surrounding surface, possibly from the collapse of internal structures.

The north-central portion of Mound 1 was destroyed in conjunction with construction of what is now US Route 40 in the 1830s (Seeman and Cramer 1982; Altick 1941b). This construction destroyed about 25% of the mound (Altick 1941b). In 1940, the mound was graded by a contractor until an area of dark, organic soil containing human bone was exposed (Seeman and Cramer 1982). This was partially excavated and screened by amateurs looking for artifacts. Uncremated burials were present in an area 4 meters long by 3 meters wide, but the number of burials and any artifact associations are unknown. What remained was systematically excavated a few days later by Altick.

Mound 2 had apparently never been explored until George Manring used a power shovel to excavate the center of the mound in 1946. The same year, Altick excavated five trenches radiating away from the center of the mound. No map is available for this mound, so it is unclear what proportion of the mound floor was exposed through these excavations.

Information on the ages and sexes of the Manring skeletons is non-existent. Basic information on both the stratigraphic and horizontal locations of the burials is poor. Reporting on the positions of artifacts associated with the skeletons is non-existent.

Marietta Area Mound

Major Drainage	Lower Muskingum drainage
Associated Earthwork	Apparently none
Size of Earthwork	Not applicable
Number of Mounds	Apparently one mound
MW Individuals Uncovered	01 inhumation
State Map Symbol (Figure 7.1)	61
Maps of Site	None
Location of Artifacts	Unknown
Location of Human Remains	Unknown
Location of Excavation Records	Unknown

Summary

The Marietta Area mound is located a few miles from Marietta in Washington County, Ohio, in the Lower Muskingum River valley (Atwater 1820). The mound is described as "…about the magnitude of the one in Marietta…" suggesting a size of approximately 10 feet high and 30 feet in diameter (Atwater 1820:175). It was apparently excavated under the direction of Dr. S. P. Hildreth, but the extent of his excavation is unclear.

No information on the age, sex, horizontal location or stratigraphic location of the burial was provided. Reporting on the positions of artifacts associated with the skeleton is excellent.

Marietta Earthwork

Major Drainage	Lower Muskingum drainage
Associated Earthwork	Two rectangular enclosures and one small circular enclosure
Size of Earthwork	Larger enclosure: encompasses 40 acres Smaller enclosure: encompasses 20 acres Circular enclosure: dimensions unknown
Number of Mounds	At least 16 mounds
MW Individuals Uncovered	01 inhumation. The mound from which it was excavated is unclear
State Map Symbol (Figure 7.1)	61
Maps of Site	None
Location of Artifacts	NMNH, PMAE
Location of Human Remains	not at NMNH or PMAE
Location of Excavation Records	Unknown

Summary

The mound excavated at the Marietta earthwork is located in Marietta, Washington County, Ohio, on the east side of the Muskingum River valley, about half a mile from its junction with the Ohio River (Atwater 1820). The enclosures were constructed on an elevated plain above the banks of the river. It is unclear which of the mounds contained the single inhumation, although it appears not to have been the very large mound within the small circular enclosure. The report merely states that it was "in one of the streets of Marietta, on the margin of the plain, near the fortifications..." (Atwater 1820). The mound was excavated by R. J. Meigs, Jr. The extent of his excavation is unknown. The mound was estimated to have originally measured about 10 feet high and 30 feet in diameter.

No information on the age, sex, horizontal or vertical position of the burial was provided. However, the estimated height of the skeleton was 6 feet, suggesting a male. Reporting on the positions of artifacts associated with the skeleton is excellent.

Martin Mound

Major Drainage	Far northern Muskingum drainage
Minor Drainage	Walhonding valley
Associated Earthwork	None
Size of Earthwork	Not applicable
Number of Mounds	One mound
MW Individuals Uncovered	08 inhumations, 01 cremation, 01 charred skeleton
State Map Symbol (Figure 7.1)	56
Maps of Site	Appendix 7.2
Location of Artifacts	*Ferdon Excavation:* Johnson-Humrickhouse Museum, Coshocton, OH *Mortine and Randles Excavation:* Private collection, Wayne Mortine, Newcomerstown, OH
Location of Human Remains	*Ferdon Excavation:* Discarded by Johnson-Humrickhouse Museum, Coshocton, OH *Mortine and Randles Excavation:* Ohio State University via James Morton, Zanesville, OH; Temperance House Museum, Newcomerstown, Ohio
Location of Excavation Records	*Ferdon Excavation:* Not in Johnson-Humrickhouse Museum, Coshocton, OH; possibly brief notes made by Emerson Greenman at the OHS *Mortine and Randles Excavation:* No longer exist, per Wayne Mortine, Newcomerstown, OH

Summary

The Martin mound is located in Bethlehem Township, Coshocton County, Ohio, approximately two miles west of Warsaw, on the edge of the highest terrace of the north side of the valley of the Walhonding River (Mortine and Randles 1978). The mound measured 50 feet in diameter and 2 feet high. It was first excavated by Edwin Ferdon in 1931 with the help of his brother and some Boy Scouts. Ferdon excavated a trench in the central part of the mound, uncovering four inhumations, ornaments, and artifacts (Mortine and Randles 1978). The artifacts are in the Johnson-Humrickhouse Museum collections, but apparently are lumped with artifacts from other sites in the Johnson brothers' collection and may not be identifiable (Patti Malenki, personal communication 2007). Mortine and Randles excavated most of the remainder of the mound in 1975 and 1976, uncovering six inhumations and one cremation.

Some information on age and sex is available for most of the Mortine and Randles burials, although the source of the estimates is unknown. Information on the stratigraphic and horizontal locations of the burials is poor for the Ferdon excavation, but excellent for the Mortine and Randles burials. Reporting of the positions of the artifacts associated with the skeletons is also excellent for the Mortine and Randles burials.

McKenzie Mound Group (Part of the Larger, Waverly Mound Group)

Major Drainage	Southern Scioto drainage
Minor Drainage	Main Scioto valley
Associated Earthwork	None
Size of Earthwork	Not applicable
Number of Mounds	At least three mounds
MW Individuals Uncovered	09 inhumations, 01 cremation
State Map Symbol (Figure 7.1)	47
Maps of Site	None
Location of Artifacts	Ohio Historical Society
Location of Human Remains	Ohio Historical Society
Location of Excavation Records	Not at the Ohio Historical Society, Columbus

Summary

The McKenzie mound group portion of the Waverly mound group is located near Waverly in Pike County, Ohio, on the second terrace above the Scioto River valley. All three mounds were apparently partially excavated by Moorehead in 1897 (Moorehead 1899). Mound A measured 40 feet in diameter and 3 feet high, Mound B was 50 feet in diameter and 4 feet high, and Mound C was 125 feet in diameter and 6 feet high.

Information on the ages and sexes of the McKenzie skeletons is poor. Reliable sex information is not available for any of the skeletons, and age is only available for one subadult.

Basic information on the stratigraphic and horizontal locations of the burials is good, with many of the burials located horizontally, stratigraphically, or both. Reporting of the positions of artifacts associated with the skeletons is excellent.

Melvin Phillips Mound Group

Major Drainage	Northern Scioto drainage
Minor Drainage	Main Scioto valley
Associated Earthwork	One square enclosure Two small open circular enclosures nearby
Size of Earthwork	Square enclosure encompasses 8 acres
Number of Mounds	Three mounds
MW Individuals Uncovered	02 cremations
State Map Symbol (Figure 7.1)	33
Maps of Site	None
Location of Artifacts	Ohio Historical Society, Columbus
Location of Human Remains	Ohio Historical Society, Columbus
Location of Excavation Records	Ohio Historical Society, Columbus

Summary

The Melvin Phillips mound group is located in Franklin County, Ohio, just north of the town of Linworth, on a promontory on the west side of the Olentangy River, about 2300 feet west of the Worthington Works (Baby 1964a, 1964b; Potter 1965; Squier and Davis 1848:84, Plate 29 no. 3). Mounds 1 and 2 were only about 5 feet apart (Potter 1965). Mound 1 was excavated by Raymond Baby in 1964 (Baby 1964a), and Mound 2 was excavated by Martha Potter in 1965. Mound 1 was only 2 feet high at the time of excavation, was believed to have been elliptical in shape, and measured about 44 feet wide and 75 feet long (Baby 1964a). Size information is not provided for Mound 2 or Mound 3. The southern half of Mound 1 was accidentally destroyed while grading for a road (Baby 1964a). Despite this damage, excavation of what remained revealed a post mold pattern belonging to the northeast corner of a rectangular, round-cornered house-like structure covering a semi-circular primary mound (Baby 1964a, 1964b). This primary mound covered one or more burials (Baby 1964b). Reconstruction of information from the field notes suggests that at least one burial in this area was a cremation. It is unclear from the field notes exactly how much of Mound 2 was intact at the time of excavation, but an estimated two-thirds of the floor space was explored. Mound 3 was apparently no longer identifiable in 1965 (Potter 1965).

Information on the ages and sexes of the Melvin Phillips skeletons is non-existent. Basic information on the stratigraphic and horizontal locations of the burial in Mound 2 is excellent, and is provided relative to the locations of various stakes. Reporting of the locations of the artifacts found in Mound 2 is also excellent. No artifacts were associated with the skeleton.

Miami Fort Earthwork

Major Drainage	Great Miami drainage
Minor Drainage	Confluence of the Great Miami and Ohio Rivers
Associated Earthwork	Rectanguloid enclosure broken at several places by deep ravines
Size of Earthwork	Encloses 12 acres
Number of Mounds	Three mounds
MW Individuals Uncovered	05 inhumations
State Map Symbol (Figure 7.1)	08
Maps of Site	None
Location of Artifacts	University of Cincinnati
Location of Human Remains	University of Cincinnati
Location of Excavation Records	University of Cincinnati

Summary

The Miami Fort earthwork is located on a ridge top just northeast of the confluence of the Great Miami and Ohio Rivers in Hamilton County, Ohio (Fischer 1968). The site is situated 250–290 feet above the valley floor. The enclosure contains two activity areas originally called the east and west villages, and three mounds are also associated with the earthwork. Two 10 foot test squares were excavated from the west village portion of the enclosure by Fischer in 1965. The east village portion was excavated between 1965 and 1967. Initial excavation involved a 20 foot test square at the center of the village area. This was followed by two 10 foot squares adjacent to the northwest and southeast corners of the initial excavation, and two trenches measuring 50–55 feet in length and 5 feet in width running south and east from the initial excavation. Three test units measuring 5 by 10 feet were also excavated at the periphery of the east village area. The space within the enclosure has apparently never been under cultivation.

Mounds 1 and 2 were partially excavated by Fischer during the 1966 field season (Fischer 1966). Mound 1, located 100 yards west of the earthwork, is the largest mound at the site. It measured 4–5 feet high and 80 feet in diameter at the time of excavation. The original height may have been greater, as the mound was under cultivation for a period of time. The center of the mound was excavated twice by unknown persons, disturbing an area measuring 10–12 feet in diameter and totaling perhaps 100 square feet. Fragments of human skeletal material suggest that these excavators encountered and removed burials. Fischer excavated an area of approximately 275 square feet from the center of the mound into the north-northeast section. Combining the various excavations, approximately 10% of the total mound area appears to have been explored.

Mound 2 measured 50 feet east–west, 30 feet north–south, and 3.5 feet high (Fischer 1968). It was undisturbed at the time of excavation. Fischer explored an area of approximately 135 square feet from near the southern periphery of the mound to the mound center (Fischer 1966).

Information on the ages of the skeletons from Mound 1 is poor. Skeletons are simply divided into adult and juvenile categories. Information on the sexes of these skeletons is fair. Basic information on the stratigraphic and horizontal locations of burials is good. Reporting of the positions of the only artifacts associated with a skeleton is non-existent.

Mound City Earthwork

Major Drainage	South-Central Scioto drainage
Minor Drainage	Main Scioto valley
Associated Earthwork	Square enclosure
Size of Earthwork	Encompasses 13 acres
Number of Mounds	Twenty four mounds within the enclosure
MW Individuals Uncovered	117 cremated individuals, 01 individual of unknown treatment
State Map Symbol (Figure 7.1)	42
Maps of Site	Appendix 7.2
Location of Artifacts	Hopewell Culture National Historical Park; British Museum, London (Squier and Davis Collection)
Location of Human Remains	Hopewell Culture National Historical Park
Location of Excavation Records	Hopewell Culture National Historical Park

Summary

The Mound City mounds are located in Ross County, Ohio, four miles north of Chillicothe, in the Scioto River valley (Mills 1922). The dimensions of each mound and the portions examined by each excavator are described below:

Mound 1. Dimensions unknown. A portion of the mound was apparently excavated by Squier and Davis in 1846 (Squier and Davis 1848).

Mound 2. Ninety feet in diameter and 7 1/2 feet tall (Squier and Davis 1848). Squier and Davis excavated a six foot square shaft in the center of the mound in 1846. Mills excavated one-half of this mound in 1920 (Mills 1922).

Mound 3. One hundred forty feet long, 80 feet wide, and 10 feet tall (Squier and Davis 1848). Squier and Davis excavated a 22 foot long, 4 1/2 foot wide portion of the center of this mound in 1846. Mills excavated a large portion of the mound in 1920 (Mills 1922).

Mound 4 - Mound 6. Dimensions unknown. A portion of each mound was apparently excavated by Squier and Davis in 1846 (Squier and Davis 1848).

Mound 7. Ninety feet in diameter and 17 feet high (Squier and Davis 1848). Squier and Davis excavated a nine foot square section in the center of the mound in 1846. Mills excavated the majority of the remaining mound in 1920 (Mills 1922).

Mound 8. Dimensions unknown. Squier and Davis excavated an eight foot square section in the center of the mound in 1846 (Squier and Davis 1848). Two-thirds or more of the remainder was excavated by Mills in 1920 (Mills 1922).

Mound 9. Dimensions unknown. A portion of the mound was apparently excavated by Squier and Davis in 1846 (Squier and Davis 1848). Another portion was excavated by Mills in 1920 (Mills 1922).

Mound 10 - Mound 11. Dimensions unknown. A portion of each mound was apparently excavated by Squier and Davis in 1846 (Squier and Davis 1848).

Mound 12. Dimensions unknown. A portion of the mound was apparently excavated by Squier and Davis in 1846 (Squier and Davis 1848). Another portion was excavated by Mills in 1920 (Mills 1922).

Mound 13. Seventy feet in diameter and 3 feet high (Mills 1922). A portion of the mound was apparently excavated by Squier and Davis in 1846 (Squier and Davis 1848). This mound was modified during construction of a barracks for Camp Sherman (Mills 1922). Most of the remainder of the mound was excavated by Mills in 1920.

Mound 14. Dimensions unknown. A portion of the mound was apparently excavated by Squier and Davis in 1846 (Squier and Davis 1848).

Mound 15. Dimensions unknown. A portion of the mound was apparently excavated by Squier and Davis in 1846 (Squier and Davis 1848). Another portion was excavated by Mills in 1920 (Mills 1922).

Mound 16. Dimensions unknown. A portion of the mound was apparently excavated by Squier and Davis in 1846 (Squier and Davis 1848).

Mound 17. Dimensions unknown. A five foot by four foot section of the center of the mound was excavated by Squier and Davis in 1846 (Squier and Davis 1848). Another portion was excavated by Mills in 1920 (Mills 1922).

Mound 18. Dimensions unknown. A portion of the mound was apparently excavated by Squier and Davis in 1846 (Squier and Davis 1848). Mills excavated half or more of the mound in 1920 (Mills 1922).

Mound 19. Dimensions unknown. A portion of the mound was apparently excavated by Squier and Davis in 1846 (Squier and Davis 1848).

Mound 20. Dimensions unknown. A portion of the mound was apparently excavated by Squier and Davis in 1846 (Squier and Davis 1848). The mound was almost completely leveled in making a parade ground for Camp Sherman prior to Mills' excavations in 1920 (Mills 1922).

Mound 21. Dimensions unknown. A portion of the mound was apparently excavated by Squier and Davis in 1846 (Squier and Davis 1848). Mills excavated nearly all of what remained in 1920 (Mills 1922).

Mound 22. Dimensions unknown. A portion of the mound was apparently excavated by Squier and Davis in 1846 (Squier and Davis 1848).

Mound 23. Dimensions unknown. A portion of the mound was apparently excavated by Squier and Davis in 1846 (Squier and Davis 1848). Approximately half of the mound was obliterated during construction of a barracks for Camp Sherman. The remaining one-third or so of the mound was excavated by Mills in 1920 (Mills 1922).

Mound 24. Dimensions unknown. A portion of the mound was apparently excavated by Squier and Davis in 1846 (Squier and Davis 1848).

Information on the ages and sexes of the Mound City skeletons is essentially nonexistent, partially because none of the burials were inhumations (Mills 1922). Basic information on the horizontal and stratigraphic locations of the burials is good to excellent for most of the mounds, with approximately 80% of horizontal locations and about 2/3rds of stratigraphic locations indicated.

Newark Earthwork (Including the Wells and Eagle Mounds)

Major Drainage	Central Muskingum drainage
Minor Drainage	Licking valley
Associated Earthwork	Five enclosures connected by a network of parallel walls
Size of Earthwork	Originally encompassed more than two square miles Two circular enclosures: 20 acres and 30 acres One elliptical enclosure: perhaps 30–50 acres One square enclosure: 20 acres One octagonal enclosure: 50 acres
Number of Mounds	31+ mounds
MW Individuals Uncovered	Unknown
State Map Symbol (Figure 7.1)	53, 54
Maps of Site	None
Location of Artifacts	Ohio Historical Society, Columbus
Location of Human Remains	Unknown
Location of Excavation Records	Ohio Historical Society, Western Reserve Historical Society

Summary

The Newark earthwork is located in the city of Newark, Licking County, Ohio (Greenman 1928). Mounds can be found in four of the five enclosures that comprise the earthwork (Squier and Davis 1848; Lepper, 2004). In addition, a few mounds are known to have stood outside these enclosures (Squier and Davis 1848). The largest number of mounds was found in the elliptical enclosure (Lepper, 2004). This enclosure contained at least 11 conical mounds, surrounding a large, irregularly shaped central mound measuring 20 feet high, 140 feet long, and 40 feet wide. This mound was mostly destroyed during railroad construction in the 1850s, but, according to newspaper accounts, contained a "tier of skeletons" placed with their heads together, and feet radiating outward (Lepper, 2004). Plate XXV in Squier and Davis suggests a 13th mound may have existed in the enclosure. Most of the burials at Newark seem to have been concentrated within the mounds inside the elliptical enclosure. One of the conical mounds was dug through in 1827 by canal workers, exposing a number of burned human bones covered with mica sheets (Lepper, 2004).

The octagonal enclosure contained eight truncated pyramidal mounds of about 5 feet high and measuring between 80 and 100 feet at the base (Squier and Davis 1848). The square enclosure contained seven mounds, and the large circle contained four conjoined mounds at the center. These are known collectively as the Eagle mound, as they were thought to represent a bird in flight. Squier and Davis provide measurements for the "body" of the eagle at 7 feet high, 155 feet long and 63 feet wide, for each "wing" at 5 feet high, 110 feet long and 45 feet wide. No mounds are discernible in the smaller circle. In addition, Squier and Davis (1848) indicate four additional mounds near the large pond within the site.

In 1928, Emerson Greenman excavated a group of three mounds near the earthwork that were found together on the Wells estate. These mounds are described as being located 1000 feet directly west of the fairground circle. Wells Mound 1 measured somewhat less than 72 feet north-south and 55 feet east-west, and around 4 feet high. Wells Mound 2 was located about 20 feet to the northwest of Mound 1, and measured 25 feet in diameter. It had been previously excavated at the center by unknown excavators. Measurements are not available for Wells Mound 3, although the stakes that surrounded the mound formed a rectangle 65 feet north-south by 52 feet east-west. A trench 7 feet wide was excavated from the west side of this mound, presumably through its center. A burial was encountered along the way. The Eagle Mound at the center of the large circular enclosure was also excavated by E. F. Greenman in 1928 (Greenman 1928).

No burials were uncovered from any of the mounds that made up the "Eagle". Squier and Davis (1848) did report, however, that the long mound composing the "body" of the bird had been opened previously. A deposit of artifacts was removed from Wells Mound 1, and a burial from Wells Mound 3. Information on the stratigraphic locations of these proveniences is excellent, and information on the horizontal location can be estimated from a sketched map in the field notes (Greenman 1928).

North Benton Mound

Major Drainage	Mahoning River drainage
Associated Earthwork	Apparently none
Size of Earthwork	Not applicable
Number of Mounds	One mound
MW Individuals Uncovered	05 inhumations, 09 cremations
State Map Symbol (Figure 7.1)	62
Maps of Site	Appendix 7.2
Location of Artifacts	Ohio Historical Society, Columbus
Location of Human Remains	Ohio Historical Society, Columbus
Location of Excavation Records	Ohio Historical Society, Columbus

Summary

The North Benton mound is located in Mahoning County, Ohio, approximately one-quarter mile west of North Benton village, in the Mahoning drainage, a branch of the Beaver River (Magrath 1945). A small segment of the southern part of the site was excavated by unknown individuals prior to excavations by Magrath and Saltsman in the 1940s. The mound measured 75 feet in diameter and 7.5 feet tall at the time of excavation. The top of the mound had been cut down twice previously, once to make a burial platform for a modern individual, and again to build a public speaker platform for a centennial celebration (Magrath 1945).

Information on the ages and sexes of the North Benton skeletons is only fair, primarily due to the high proportion of cremations that comprise the sample. Reliable sex information is available for between 40% and 50% of the inhumations.

Basic information on the stratigraphic and horizontal locations of the burials is excellent (Magrath 1945). Reporting of the positions of associated artifacts relative to the inhumations is also excellent.

Old Town (Frankfort) Earthwork (Includes the Porter Mound Group)

Major Drainage	South-Central Scioto drainage
Minor Drainage	North Fork of Paint Creek valley
Associated Earthwork	One square and two circular enclosures
Size of Earthwork	Encloses 50 acres
Number of Mounds	Eight mounds
MW Individuals Uncovered	30 inhumations, 19 cremations
State Map Symbol (Figure 7.1)	26
Maps of Site	Appendix 7.2
Location of Artifacts	*Porter Mound 15*: NMNH, OHS *Porter Mound 38*: Ohio Historical Society
Location of Human Remains	*Porter Mound 15*: NMNH, Not at OHS *Porter Mound 38*: Not at OHS
Location of Excavation Records	*Porter Mound 15*: NMNH; Md 15 and/or 18 at OHS *Porter Mound 38*: Possibly at OHS

Summary

The Frankfort earthwork is located in Ross County, Ohio, on the northeastern edge of the town of Frankfort, on a terrace on the northeast bank of the North Fork of Paint Creek Valley (Squier and Davis 1848:Plate 21, Figure 4; Moorehead 1892). The earthwork enclosed at least eight mounds, four in the square enclosure, and four or five in the larger of the two circular enclosures. Moorehead called one cluster of three mounds in the circular enclosure the "Porter mounds". He also stated there was a cluster of two mounds about 300 yards north of the Porter mounds (Moorehead 1892). This statement appears to contradict Squier and Davis' map, which shows only a single mound in that same area. Moorehead described the two mounds as being close together. The larger of the two mounds, designated Mound 15, was excavated by Warren K. Moorehead in 1888. It was oval in outline and measured 6 feet high, although its estimated original height was 9 feet (Moorehead 1889). The mound was 110 feet long and 62 feet wide. Excavation of the smaller of the two mounds is reported by Fowke (1902:342). It was 72 feet across the base and 9 feet high.

The Porter mound cluster was located about 300 yards from the first cluster (Moorehead 1892). The northern mound measured 15 feet high with a diameter of 120 feet, the middle mound was 6 feet tall with an east-west breadth of about 65 feet, and the southern mound was 9 feet high and 72 feet wide. These three mounds were so close together that their bases united. Moorehead (1892) excavated the second largest mound of this group, designated Mound 38, in 1889. Both Mound 15 and Mound 38 were essentially fully excavated. In each case, a trench was made through the long axis of the mound, leaving only a few feet of unexcavated space between the lateral extent of the excavation and the mound edge. Exploratory tunnels were then excavated into what remained to verify that nothing had been missed.

Information on the sexes of the Frankfort skeletons is non-existent. Age is only mentioned for a single skeleton, which is described as being a child. Basic information on the stratigraphic and horizontal locations of the burials is excellent. Reporting of the positions of the artifacts associated with the skeletons is also excellent.

Pence Mound

Major Drainage	Great Miami drainage
Minor Drainage	Whitewater Creek valley
Associated Earthwork	None
Size of Earthwork	Not applicable
Number of Mounds	One mound
MW Individuals Uncovered	07 inhumations, 03 cremations, 01 individual of unknown treatment
State Map Symbol (Figure 7.1)	01
Maps of Site	None
Location of Artifacts	Ohio Historical Society, Columbus
Location of Human Remains	Ohio Historical Society, Columbus
Location of Excavation Records	Unknown

Summary

The Pence mound is located in Jefferson Township, Preble County, Ohio, 1.5 miles north of New Paris. It is situated on a terrace of the valley of the east branch of Whitewater Creek, a branch of the Great Miami River (McPherson 1922). The mound was excavated in 1922 by Harry McPherson. The mound measured 4.5 feet high and 75 feet north-south at the time of excavation.

Information on the sexes of the Pence mound skeletons is non-existent. Age information is limited to distinguishing adults from subadults for some of the skeletons. Information on the stratigraphic locations of the burials is good, although horizontal positions are described more generally. Reporting of the positions of artifacts associated with the skeletons is non-existent.

Perry Township Mound

Major Drainage	Little Miami drainage
Minor Drainage	East Fork of Little Miami valley
Associated Earthwork	Apparently none
Size of Earthwork	Not applicable
Number of Mounds	Apparently one mound
MW Individuals Uncovered	02 inhumations
State Map Symbol (Figure 7.1)	18
Maps of Site	None
Location of Artifacts	Probably at OHS; Not at FMNH, NMNH, PMAE, OHS, CMC, UCN
Location of Human Remains	Not at OHS, FMNH, NMNH, PMAE, OHS, CMC, UCN
Location of Excavation Records	OHS; Not at FMNH, NMNH, PMAE, OHS, CMC, UCN

Summary

The Perry Township mound is located in Perry Township, Brown County, Ohio, in the drainage of the East Fork of the Little Miami River. More specific information was not provided by Moorehead (1908:138). The mound was excavated by Moorehead sometime between 1887 and 1898. Mound dimensions were not provided. However, Moorehead does report that the entire tumulus was carefully examined, suggesting fairly complete excavation.

Information on the ages and sexes, and the stratigraphic and horizontal locations of burials and artifacts is non-existent. Reporting of the positions of the only artifacts associated with a skeleton is excellent.

Purdom Mound Group

Major Drainage	Little Miami drainage
Associated Earthwork	Apparently none
Size of Earthwork	Not applicable
Number of Mounds	Five to seven mounds
MW Individuals Uncovered	13+ inhumations, 06+ cremations
State Map Symbol (Figure 7.1)	12
Maps of Site	None
Location of Artifacts	Dayton Museum of Natural History
Location of Human Remains	Dayton Museum of Natural History
Location of Excavation Records	Dayton Museum of Natural History

Summary

The Purdom mound group is located in Green County, Ohio, two miles northwest of Xenia, on a dissected plateau on the west bank of the Little Miami River (Heilman and Mahoney 1996). The mounds were partially excavated by Robert Adams in 1931, but later excavators have found it difficult to identify which mounds Adams designated as Mound 1, Mound 1/2, and Mound 3. Part of the problem stems from the fact that he did not include a north arrow on his site map. Adams focused his excavations on Mound 1/2 and Mound 3. The estimated original size of Mound 1-2 was 2 meters high by 18 meters long and 15 meters wide. The location of Mound 3 is still uncertain. It may be the mound designated by Heilman and Mahoney as Mound 3/4. Mound 3/4 is about one meter high and 13 meters in diameter.

Adams removed most of the central portion of Mound 1-2 during his excavation. Bailey's excavation removed the remainder of the west side. J. Heilman and Lynn Mahoney reinvestigated Mound 1-2 in 1990–1991. Despite these three investigations of the mound, extensive portions of the eastern side of the mound remained unexcavated. The only excavations in Mound 3/4 were a single trench meandering through the mound, presumably from the Adams excavations, and a follow-up excavation of this trench in a failed attempt to ascertain whether this mound was indeed Adams' Mound 3.

Information on ages and sexes of the Purdom mound skeletons is mixed. This information is excellent for the recent excavations by Heilman and Mahoney, but apparently non-existent for the earlier Adams excavations. Information on the stratigraphic locations of burials is poor for the Adams excavations, while information on the horizontal locations is excellent. Information on both the stratigraphic and horizontal locations of burials is excellent for the Heilman and Mahoney excavations in 1991, and fair for the 1992 excavation. The main reason for this difference is that a floor map is not provided for the 1992 excavation (Heilman and Mahoney 1996). Information on positions of artifacts associated with the skeletons appears to be excellent for both the Adams, and Heilman and Mahoney excavations.

Richard Shumard's Farm Mound

Major Drainage	Little Miami drainage
Minor Drainage	East Fork of Little Miami valley
Associated Earthwork	Apparently none
Size of Earthwork	Not applicable
Number of Mounds	One mound
MW Individuals Uncovered	01 inhumation
State Map Symbol (Figure 7.1)	19
Maps of Site	Appendix 7.2
Location of Artifacts	Not at FMNH, NMNH, PMAE, OHS, CMC, UCN
Location of Human Remains	Not at FMNH, NMNH, PMAE, OHS, CMC, UCN
Location of Excavation Records	Not at FMNH, NMNH, PMAE, OHS, CMC, UCN

Summary

The Richard Shumard's Farm mound is located on a high point of land in Stone Lick Township, Clermont County, in the drainage of the East Fork of the Little Miami River (Moorehead 1908, 1892). It overlooks a deep, narrow valley at the bottom of which flows Rocky Run Creek (Moorehead 1892). The mound was fully excavated by Warren Moorhead sometime prior to 1892, and measured 2 feet high and 25 feet in diameter at the time of excavation (Moorehead 1892). It had been undisturbed by either plough or shovel. A pavement of limestones was found beneath the mound, measuring 9–10 feet in breadth.

Information on the age and sex of the skeleton from Richard Shumard's Farm mound is non-existent, although a drawing of the mound floor suggests the skeleton was of adult height. Basic information on the stratigraphic location of the burial is excellent, and information on the horizontal location is provided, although the orientation of the skeleton relative to the cardinal directions is not given (Moorehead 1892). Reporting of the positions of the artifacts associated with the skeleton is excellent (Moorehead 1908, 1892).

Rockhold Mound Group

Major Drainage	South-Central Scioto drainage
Minor Drainage	Main Paint Creek valley
Associated Earthwork	Apparently none
Size of Earthwork	Not applicable
Number of Mounds	Four mounds
MW Individuals Uncovered	01 inhumation, 02 cremations, and 02 individuals of unknown treatment
State Map Symbol (Figure 7.1)	21
Maps of Site	Appendix 7.2
Location of Artifacts	Ohio Historical Society, Columbus
Location of Human Remains	Ohio Historical Society, Columbus
Location of Excavation Records	Ohio Historical Society, Columbus

Summary

The Rockhold mound group is located in Paxton Township, Ross County, Ohio, approximately 1.2 miles west of Bainbridge corporation limits along State Route 50 and 0.4 miles south of Route 50, on the first and second terraces of the main Paint Creek valley (Mullan 1973). Mounds 1 and 2 (dimensions unknown) were excavated by Emerson Greenman in 1929 (Ohio Historical Society, n.d.). Mound 3 was excavated by Donald McBeth in 1944, at which time it was 14 inches high (Morgan 1944).

Information on the ages and sexes of the Rockhold skeletons is poor, primarily because only one inhumation is known from the site. For this single individual, sex was determined but age was not. Basic information on the stratigraphic and horizontal location of the single burial in Mound 3 is known (Morgan 1944). Reporting of the positions of artifacts associated with the skeleton is fair, with the position of one of the four artifact types present being reported.

Rutledge Mound

Major Drainage	Central Muskingum drainage
Minor Drainage	Licking River and Jonathan Creek watersheds
Associated Earthwork	Apparently none
Size of Earthwork	Not applicable
Number of Mounds	One mound
MW Individuals Uncovered	03 inhumations, 01 cremation
State Map Symbol (Figure 7.1)	31
Maps of Site	Appendix 7.2
Location of Artifacts	Ohio Historical Society, Columbus
Location of Human Remains	Ohio Historical Society, Columbus
Location of Excavation Records	Ohio Historical Society, Columbus

Summary

The Rutledge mound is located in Franklin Township, Licking County, Ohio, seven miles southeast of Newark and 0.25 miles east of Linnville Pike, within the watershed between the Licking River and Jonathan Creek (Bartell n.d.). The site was excavated in 1930 but the identity of the excavator is unclear. The mound measured 110 feet in diameter and 14 feet tall at the time of excavation.

Reliable sex information is available for all of the inhumations, while age information is not available for any of them. Basic information on the stratigraphic and horizontal locations of the burials is excellent (Bartell, n.d.). Reporting of the positions of artifacts associated with the skeletons is non-existent.

Seip Earthwork

Major Drainage	South-Central Scioto drainage
Minor Drainage	Main Paint Creek valley
Associated Earthwork	One square and one irregular enclosure
Size of Earthwork	Square enclosure: encloses 27 acres Irregular enclosure: encloses 77 acres
Number of Mounds	18 mounds (eight within the enclosures, 10 more nearby)
MW Individuals Uncovered	12 inhumations, 113 cremations (excludes Mound 2)
State Map Symbol (Figure 7.1)	22
Maps of Site	Appendix 7.2
Location of Artifacts	Ohio Historical Society, Columbus
Location of Human Remains	Ohio Historical Society, Columbus
Location of Excavation Records	Ohio Historical Society, Columbus

Summary

The Seip mounds are located in Paxton Township, Ross County, Ohio, approximately 17 miles southwest of Chillicothe and three miles east of Bainbridge, on a terrace in the valley of main Paint Creek (Greber 1976; Mills 1909). The earthwork was situated at the edge of a bluff approximately 500 feet from the river. Only four of the mounds were excavated and published. Mound 1 (also called the Pricer mound) was 240 feet long, 160 feet wide, and 30 feet high (Squier and Davis 1848). It was excavated by Henry Shetrone and Emerson Greenman in the 1920s (Shetrone and Greenman 1931). Mound 2 was made up of three sections, one of which was 120 feet in diameter, the second 70 feet in diameter, and the third 40 feet in diameter (Mills 1909). The height of the mound was 18 feet at the highest point. It was excavated by Mills in 1905. Mound 3 was 63 feet long and 33 feet wide. It was excavated by Shetrone and Greenman in the 1920s. Mound 4 was nearly obliterated by the 1920s and could not be measured (Shetrone and Greenman 1931). The remainder was excavated by Shetrone and Greenman in the 1920s.

Information on the ages and sexes of the Seip skeletons is fair despite the large proportion of cremations. Reliable sex information is available for approximately 20%–25% of all burials at the site, and could be determined for all of the adult inhumations. Reliable age information is available for approximately 75% of the inhumations.

Descriptions of the stratigraphic and horizontal locations of the burials is excellent for Mound 1 (Shetrone and Greenman 1931, Shetrone 1926a). Reporting of the positions of artifacts associated with the skeletons is also excellent.

Shilder Mound

Major Drainage	South-Central Scioto drainage
Minor Drainage	Main Scioto valley
Associated Earthwork	Cedar Bank is 1/3 mile distant: Large rectangular enclosure
Size of Earthwork	Encloses 32 acres
Number of Mounds	One mound
MW Individuals Uncovered	01 inhumation
State Map Symbol (Figure 7.1)	40
Maps of Site	None
Location of Artifacts	Ohio Historical Society, Columbus
Location of Human Remains	Not at the Ohio Historical Society, Columbus
Location of Excavation Records	Ohio Historical Society, Columbus

Summary

The Shilder mound is located in Ross County, Ohio, approximately four miles north of Chillicothe on a terrace of the Scioto River valley. The mound is located about one-third mile south of the Cedar Bank earthwork, and only a few hundred yards northwest of the Ginther mound. It appears to be the "small mound" depicted on Squier and Davis' (1848) Plate 18, northwest of the open circle enclosure and the truncated pyramid representing the Ginther mound. The diameter of the mound was unknown at the time of excavation, but its height was measured at 2 feet (Shetrone 1925). The mound was excavated by Henry Shetrone in 1922.

Information on the age and sex of the single inhumation is non-existent. The stratigraphic and horizontal location of the burial is known. Reporting of the positions of artifacts associated with the skeleton is non-existent.

Shinkal Mound

Major Drainage	Great Miami drainage
Associated Earthwork	Apparently none
Size of Earthwork	Not applicable
Number of Mounds	One mound
MW Individuals Uncovered	04 inhumations, 01 cremation
State Map Symbol (Figure 7.1)	8A
Maps of Site	Appendix 7.2
Location of Artifacts	Not at Cincinnati Museum Center
Location of Human Remains	Not at Cincinnati Museum Center
Location of Excavation Records	Not at Cincinnati Museum Center

Summary

The Shinkal mound is located in the eastern part of Miami Township, Hamilton County, in hilly uplands to the east of the Great Miami valley. It lies a mile or so northeast of what was, in 1960, the Township School on Bridgetown Road (Starr 1960:97). The mound was excavated by a group of amateurs in 1952. The mound is estimated to have been 4 feet high and 250 feet in circumference at the time of excavation, based on what remained of the mound in 1960. According to the site map (Starr 1960:96), approximately one-quarter of the mound area was excavated. The excavated area comprises a wide trench through the central portion of the mound.

Information on the ages and sexes of the Shinkal mound skeletons is non-existent, although drawings of three of the inhumations suggest adults. Basic information on the stratigraphic locations of the burials is non-existent, and information on the horizontal locations is poor. Reporting of the positions of the single artifact associated with one of the skeletons is non-existent.

Snake Den Mound Group

Major Drainage	Central Scioto drainage
Minor Drainage	Little Walnut Creek and Dry Run Creek watersheds
Associated Earthwork	Circular clay enclosures (several)
Size of Earthwork	Small. Most of the circles measure 100–150 feet diameter
Number of Mounds	Four mounds (A, B, D, and G per map designations)
MW Individuals Uncovered	08 inhumations, 01 cremation
State Map Symbol (Figure 7.1)	34
Maps of Site	Appendix 7.2
Location of Artifacts	Ohio Historical Society, Columbus
Location of Human Remains	Ohio Historical Society, Columbus
Location of Excavation Records	Ohio Historical Society, Columbus

Summary

The Snake Den mounds are located in Walnut Township, Pickaway County, Ohio, approximately seven miles north of Circleville and one-half mile north of East Ringgold, within the watershed of Little Walnut Creek and Dry Run Creek (Moorehead 1899). The mound itself was situated on a high plateau. Mound A measured 125 feet in diameter and 12 feet high. Mound D was 104 feet long, 91 feet wide, and 11 feet high. Mound G was 130 feet in diameter and 12 feet high (Moorehead 1899). These mounds were excavated by Clarence Loveberry in 1897.

Information on the ages and sexes of the Snake Den skeletons is poor. Only one of the nine burials had an age assigned, and none had sex assigned. Descriptions of the stratigraphic and horizontal locations of the burials is good, although no floor plan is available. Only one of the inhumations was accompanied by artifacts, and the position, relative to the skeleton, of only one of the two artifact types is provided.

Stone Mound

Major Drainage	Central Muskingum drainage
Minor Drainage	Licking River and Jonathan Creek watersheds
Associated Earthwork	Oval earthen embankment (low)
Size of Earthwork	Unknown
Number of Mounds	One mound
MW Individuals Uncovered	Several inhumations: 03 from described proveniences
State Map Symbol (Figure 7.1)	52
Maps of Site	None
Location of Artifacts	Not at FMNH, NMNH, PMAE, OHS
Location of Human Remains	Not at FMNH, NMNH, PMAE, OHS
Location of Excavation Records	Not at FMNH, NMNH, PMAE, OHS

Summary

The Stone mound is located on a high hill in Licking County, eight miles south of Newark, two miles from the town of Thornville in Perry County, and seven miles from a stone fortification at Glenford. It is located within the watershed between the South Fork of the Licking River and Jonathan Creek (Moorehead 1897; MacLean 1885). The stone mound originally measured approximately 189 feet northeast-southwest, 207 feet northwest–southeast, and 50–55 feet tall (Moorehead 1897; MacLean 1885). In the early 1830s, 10,000–15,000 wagon loads of stone were apparently removed from the site for use in construction of the nearby reservoir (MacLean 1885), leaving little for later archaeologists to explore. Two of the primary mounds found at the periphery of the stone mound were opened by neighboring farmers in 1850. The large central mound was opened at a later date, producing several skeletons but "…no artifacts of note" (MacLean 1885). A section of the stone mound measuring 40×20 feet was excavated by Moorehead in 1896, as were eight or ten smaller holes. In each case, the underlying areas had apparently been disturbed by the stone removal work of the 1830s.

Information on the ages and sexes of the Stone mound skeletons is non-existent. Basic information on the stratigraphic and horizontal locations of the burials is also absent, as is any artifact position information.

Stubbs Earthwork

Major Drainage	Little Miami drainage
Associated Earthwork	Irregular Enclosure: Combined rectanguloid and semi-circular enclosure. One open-circle embankement to south of enclosure. Large, W-shaped gateway to west of enclosure.

(*Continued*)

(*Continued*)

Size of Earthwork	Primary embankments enclose 116 acres
Number of Mounds	Four mounds
MW Individuals Uncovered	None
State Map Symbol (Figure 7.1)	15
Maps of Site	None
Location of Artifacts	Cincinnati Museum Center
Location of Human Remains	Not applicable
Location of Excavation Records	Cincinnati Museum Center

Summary

The Stubbs earthwork is located on an outwash terrace approximately 200 meters from the south bank of the Little Miami River in Hamilton County, Ohio (Cowan 2006). The site is only seven kilometers downstream from Fort Ancient State Memorial (Genheimer 1997). The earthwork was first surveyed and mapped under poor weather conditions in 1839 (Whittlesey 1851), then was mostly obliterated in subsequent years, first by cultivation, and later by gravel mining for road construction (Cowan 2006). Excavation of earthwork remnants, portions of Mound 1, and nearby Middle Woodland sites were performed by the Cincinnati Museum Center over several field seasons between 1998 and 2004.

All four mounds at the site were located within the rectanguloid enclosure (Cowan 2006). Mound 1, or "Whittlesey's Mound", was an irregularly-shaped, multi-lobate mound measuring ca. 110 meters north-south by 55 meters east-west. Evidence from plow debris suggests that cultivation destroyed one or more burial features within the mound. The mound covered several "rooms", though it is unclear whether the structure represented a multi-room Big House, or a series of independent rooms under the various lobes. About half of the central portion of the mound, covering approximately 0.5 acres, still remains.

Two lobes of Mound 1 were excavated by the Cincinnati Museum Center in 1998 (Cowan 2006). One of these lobes is northeast of the preserved central portion, the other is south of it. These excavations explored perhaps 20% of the mound area, and each identified postholes indicating a structure beneath the lobe. The open circle was also excavated in 1998, and revealed a circular configuration of very large postmolds describing a circle 73 meters in diameter. A deposit known as the Koenig Quartz Deposit (Cowan 2005) was also recovered by artifact collectors near the earthwork at a location adjacent to the Middle Woodland Barnyard site. No burials were recovered from this site.

Tremper Mound and Earthwork

Major Drainage	Southern Scioto drainage
Minor Drainage	Main Scioto valley
Associated Earthwork	Circular enclosure
Size of Earthwork	480 feet across in its longest axis
Number of Mounds	One mound
MW Individuals Uncovered	04 individual cremations, 375+ commingled cremations
State Map Symbol (Figure 7.1)	49
Maps of Site	Appendix 7.2
Location of Artifacts	Ohio Historical Society, Columbus
Location of Human Remains	Ohio Historical Society, Columbus
Location of Excavation Records	Ohio Historical Society, Columbus

Summary

The Tremper mound is located in Rush Township, Scioto County, Ohio approximately five miles north of the city of Portsmouth at the confluence of Pond Creek and the Scioto valley, at the valley edge (Mills 1916). The mound itself was irregular in shape, measuring 250 feet at its greatest length, 150 feet at its greatest width, and 8 feet at its greatest height (Mills 1916). The mound was surveyed by Whittelsey in the early 1840s, and was excavated by William Mills in 1915.

Information on the ages and sexes of the Tremper skeletons is non-existent, perhaps due in part to the fact that all were cremated and most commingled (Mills 1916). Descriptions of the stratigraphic and horizontal locations of the burials is excellent.

Turner Earthwork

Major Drainage	Little Miami drainage
Associated Earthwork	Great oval enclosure and an elevated circle
Size of Earthwork	Oval enclosure: 1500 feet long, 950 feet wide Elevated circle: 485 feet in diameter
Number of Mounds	18 mounds (14 in the oval enclosure, four on a terrace near the elevated circle)
MW Individuals Uncovered	74 inhumations, 17 cremations
State Map Symbol (Figure 7.1)	16
Maps of Site	Appendix 7.2
Location of Artifacts	PMAE, CMC
Location of Human Remains	PMAE
Location of Excavation Records	PMAE

Summary

The Turner mounds are located in Anderson Township, Hamilton County, Ohio, in the valley of the Little Miami River, approximately eight miles from its junction with the Ohio valley (Willoughby 1922). The dimensions of each mound and cemetery area, as well as the portions examined by each excavator are described below:

Great Enclosure. The lateral extent of this burial area is unknown. It was elevated approximately one foot above the surrounding area (Willoughby 1922). Burials 1–25 were excavated by Putnam in 1886, Burials 26–32 were excavated by Metz in 1886, Burials 1a–9a were excavated by Saville in 1889, Burials 5b–12b were excavated by Saville in 1890, and Burials 1c–3c were excavated by Volk in 1905 (Willoughby 1922).

Mound 1. Fifty six feet in diameter and just under 5 feet tall in 1882 (Willoughby 1922).The mound was excavated by Putnam and Metz in 1882 and again by Metz in 1886.

Mound 2. Thirty feet in diameter and 2 feet high (Willoughby 1922). The identities of the individuals responsible for excavating this mound is unclear, although it seems likely that Metz was involved.

Mound 3. One hundred feet in diameter and 14 feet high. This mound was apparently excavated by Metz in the 1880s (Willoughby 1922).

Mound 4. One hundred eight feet long by 66 feet wide and 6 feet high. This mound was apparently excavated by Metz in the 1880s (Willoughby 1922).

Mound 5. Dimensions unknown. This mound was apparently excavated by Metz in the 1880s (Willoughby 1922).

Mound 6. Sixty six feet long, 44 feet wide, and 5 feet high. This mound was apparently excavated by Metz in the 1880s (Willoughby 1922).

Mound 7. Forty feet in diameter and a little over 5 feet high. This mound was apparently excavated by Metz in the 1880s (Willoughby 1922).

Mound 8. The lateral extent of this mound is unknown, but its height was reported to be 30 inches. This mound was apparently excavated by Metz in the 1880s (Willoughby 1922).

Mound 9. Sixty feet in diameter and 5 feet high. This mound was apparently excavated by Metz in the 1880s (Willoughby 1922).

Mound 10. Forty feet long and 3 feet high. This mound was apparently excavated by Metz in the 1880s (Willoughby 1922).

Mound 11. Dimensions unknown. This mound was apparently excavated by Metz in the 1880s (Willoughby 1922).

Mound 12. Fifty two feet in diameter and somewhat over 5 feet high. This mound was apparently excavated by Metz in the 1880s (Willoughby 1922).

Mound 13. Thirty feet in diameter and 2 feet high. This mound was apparently excavated by Metz in the 1880s (Willoughby 1922).

Mound 14. Thirty feet in diameter and 2 feet high. This mound was apparently excavated by Metz in the 1880s (Willoughby 1922).

Marriot Mound 1. Sixty feet in diameter and 2 feet high. Excavated by Metz and Putnam in 1884 (Willoughby 1922).

Marriot Mound 2. Dimensions unknown. This mound was much damaged prior to excavation (Willoughby 1922).

Cemetery Mound. Dimensions unknown. This mound was apparently undisturbed but had not been excavated at the time of Willoughby's report (Willoughby 1922).

Unnamed Mound. Dimensions unknown. No information is available for this mound except for its position on the map (Willoughby 1922).

Information on the ages and sexes of the Turner skeletons is fair. Approximately one-third of all burials at the site have a reliable age assigned, and slightly less than one-fourth have a sex assigned. For the inhumations alone, 42% have an age assigned and 27% of adults have a sex assigned.

Descriptions of the stratigraphic and horizontal locations of the burials are excellent. Burial positions are known for approximately 80% of the individuals at Turner. Reporting of the positions of artifacts associated with the skeletons is also excellent.

Twin Mounds

Major Drainage	Great Miami drainage
Minor Drainage	Confluence of Great Miami and Ohio Rivers
Associated Earthwork	Apparently none
Size of Earthwork	Not applicable
Number of Mounds	Two mounds, plus a nearby burial site
MW Individuals Uncovered	02 inhumations, 02 cremations
State Map Symbol (Figure 7.1)	07
Maps of Site	None
Location of Artifacts	University of Cincinnati, Department of Anthropology
Location of Human Remains	Unknown
Location of Excavation Records	Unknown

Summary

The Twin mounds and village are located in Shawnee Lookout Park, Miami Township, in the extreme southwestern corner of Hamilton County, Ohio, on a narrow ridge top between the Ohio River valley and the Great Miami River valley, overlooking their confluence (Starr 1960). The site is located approximately 200 feet above the level of the rivers (Bennett 1986). The center of each mound was excavated by pothunters during 1965 and 1966 (Fischer 1968). A double cremation was found approximately at the center of one of the mounds (Lee and Vickery 1972; Bennett 1986), and one or more burials are presumed to have been found at the center of the second (Fischer 1968). The double cremation is reported in the HOPEBIOARCH data base. Starr (1960) reports finding two burials in what Bennett (1986) refers to as the Eastern Habitation area. This Eastern Habitation area measured 400 feet east-west and 600 feet north-south. The Twin mounds were conjoined at their bases (Bennett 1986). The eastern mound was 8 feet high and 70 feet in diameter, and the western mound was 10 feet high and 70 feet in diameter (Fischer 1968). Both were probably higher but less wide before erosion, vandalism, and agriculture had their effects (Bennett 1986). It is unclear how much of the mound with the double cremation was excavated.

Information on the ages and sexes of skeletons, and the stratigraphic and horizontal locations of burials and artifacts is non-existent. Reporting of the positions of the only artifacts associated with a skeleton is poor.

West Mound

Major Drainage	South-Central Scioto drainage
Minor Drainage	Rocky Fork of Paint Creek valley
Associated Earthwork	None
Size of Earthwork	Not applicable
Number of Mounds	One mound
MW Individuals Uncovered	02 inhumations, 08 cremations
State Map Symbol (Figure 7.1)	20
Maps of Site	Appendix 7.2
Location of Artifacts	Ohio Historical Society, Columbus
Location of Human Remains	Ohio Historical Society, Columbus
Location of Excavation Records	Ohio Historical Society, Columbus

Summary

The West mound is located in Highland County, Ohio, approximately seven miles southeast of Hillsboro and two miles north of Marshal on the south side of Rocky Fork Lake (Porter and McBeth 1958). The mound was 100 feet long, 60 feet wide, and 6 feet high. It was excavated by Tom Porter and Don McBeth in 1957.

Information on the ages and sexes of the West mound skeletons is non-existent. The stratigraphic and horizontal locations of all burials are known. Reporting of the positions of the only artifacts associated with a skeleton is non-existent.

Wright-Holder Earthwork

Major Drainage	Northern Scioto drainage
Minor Drainage	Main Scioto valley
Associated Earthwork	One rectangular and two circular enclosures
Size of Earthwork	Rectangular enclosure: 287 feet long, 212 feet wide, enclosing eight acres.

(*Continued*)

(*Continued*)

	Circular enclosure 1: 120 feet in diameter Circular enclosure 2: 162 feet in diameter
Number of Mounds	Four mounds
MW Individuals Uncovered	14 inhumations, 03 cremations
State Map Symbol (Figure 7.1)	32
Maps of Site	None
Location of Artifacts	Ohio Historical Society, Columbus
Location of Human Remains	Ohio Historical Society, Columbus
Location of Excavation Records	Ohio Historical Society, Columbus

Summary

The Wright-Holder earthwork is located in Perry Township, Franklin County, Ohio, approximately one mile northeast of the village of Dublin on a terrace on the east side of the Scioto River valley (Shetrone 1924:341). Mound A measured 35 feet in diameter and 4 feet high. It was excavated by Henry Shetrone, probably in the early 1920s. Mound 2 was 24 feet in diameter and one foot high. Both of these mounds were located within the rectangular enclosure. Mound D (the Krumm mound) was 40 feet in diameter and 3 feet high. It was located within the larger circular enclosure. Mound 4 was 50 feet in diameter and 5 feet high (Thomas 1891). It was located outside the larger circular enclosure approximately 500 feet to the west (Shetrone 1924).

Information on the ages and sexes of the Wright-Holder skeletons is non-existent. Basic information on the stratigraphic and horizontal locations of the burials is poor, partly due to disturbance of the mounds by cultivation. Reporting of the positions of the only artifacts associated with a skeleton is excellent.

Yant Mound

Major Drainage	Far Northern Muskingum drainage
Minor Drainage	Tuscarawas valley
Associated Earthwork	None
Size of Earthwork	Not applicable
Number of Mounds	One mound
MW Individuals Uncovered	01 individual of unknown treatment
State Map Symbol (Figure 7.1)	57
Maps of Site	Appendix 7.2
Location of Artifacts	Private collection? Not at FMNH, NMNH, OHS, PMAE
Location of Human Remains	Private collection? Not at FMNH, NMNH, OHS, PMAE
Location of Excavation Records	Private collection? Not at FMNH, NMNH, OHS, PMAE

Summary

The Yant mound is located in Bethlehem Township, Stark County, Ohio, on a low terrace in the Tuscarawas River valley (Gramly et al.1985; Seeman 1996:307). It was first excavated by persons unknown who excavated a trench through the center of the mound. The mound was excavated again in 1983 by Richard Gramly, Edward Richards, and Dave Lehberger of the Sugarcreek Valley chapter of the Ohio Archaeological Society. The dimensions of the mound were not given.

Information on the ages and sexes of the Yant Mound skeletons is non-existent. Basic information on the stratigraphic and horizontal locations of the burials is good. No artifacts were found in direct association with a burial.

Table 7.5. Earthworks and Mounds Having Maps of their Spatial Layouts in Appendix 7.2

Site	File Name for Map	Bibliographic Source of the Map[1]	Explanation and Key
Northeastern Ohio: Erie Basin and Mahoning Drainage to Pennsylvannia			
Esch Mound Group (Erie Basin)	Esch Mound Group	Ohio Historical Society (n.d.2); redrawn	
Mound 1	Esch Mound 1	Ohio Historical Society (n.d.2); redrawn	
Mound 2	Esch Mound 2	Ohio Historical Society (n.d.2); redrawn	
North Benton Mound (Mahoning)	North Benton Mound Magrath 1945	Magrath (1945)	
	North Benton Mound Magrath 1939	Magrath (1939a); redrawn	
Far Northern Muskingum Drainage: Tuscarawas Drainage			
Kohl Mound	Kohl Mound	Whitman (1977); modified	
Martin Mound	Martin Mound	Mortine and Randles (1978:6, figure 2)	
Yant Mound	Yant Mound	Gramly et al. (1985)	
Central Muskingum Drainage			
Hazlett Mound Group and Earthwork	Hazlett Earthwork	Unzicker (n.d); labeled	
	Hazlett Mound	Mills (1919), composite of 2 maps; redrawn	
	Hazlett Mound Profiles	Mills (1919); redrawn	
Levina Russell/Rollins Ford Farm Mound			
Newark Earthwork			
Wells Mound 1			
Eagle Mound	Eagle Mound Greber 1996	Greber (1996:167, figure 9.10)	
	Eagle Mound Squier & Davis 1848	Squier and Davis (1848:68, figure 12); modified	
Rutledge Mound	Rutledge Mound	Ohio Historical Society (n.d.)	
Stone Mound			
Lower Muskingum Valley			
Joseph Dayrs' Farm Mound			
Marietta Area			
Marietta Earthwork			

[1]Some original maps have been "redrawn", "modified", and/or "labeled" to clarify them for this book: redrawn entirely or largely, modified in content to correct for omissions or errors in the original, and/or provided with additional labels, scales, and/or directional arrows or relabeled when labels were unclear.

(*Continued*)

Table 7.5. (*continued*)

Site	File Name for Map	Bibliographic Source of the Map	Explanation and Key
Northern Scioto Drainage			
Melvin Phillips Mound Group			
Mound 1			
Mound 2			
Wright-Holder Earthwork			
Enclosure			
Stone			
West			
Central Scioto (Circleville Area)			
Circleville Earthwork			
Snake Den Mound Group	Snake Den Mound Group	Moorehead (1899:113); redrawn	
Mound C			
Mound D			
South-Central Scioto Drainage (Chillicothe Area)			
Ater Mound	Ater Mound	Greber (1979:68); redrawn	
Bourneville Mound			
Ginther Mound and Earthwork	Cedar Banks Earthwork and Mound Group	Squier and Davis (1848:plate 8); labeled	
Ginther Mound	Ginther Mound	Shetrone (1925:159)	
Hopeton Earthwork	Hopeton Earthwork	Squier and Davis (1848:plate 7)	
Hopewell Earthwork	Hopewell Earthwork Shetrone 1926	Shetrone (1926a:foldout)	
	Hopewell Earthwork Moorehead 1922	Moorehead (1922:frontispiece)	
Shetrone's Mound 1			
Shetrone's Mound 2	Shetrone's Mound 2	Shetrone (1926a:19, figure 1)	
Shetrone's Mound 3			
Shetrone's Mound 4	Shetrone's Mound 4	Shetrone (1926a:32, figure 8)	
Shetrone's Mound 5			
Shetrone's Mound 7			
Shetrone's Mound 8			
Shetrone's Mound 9			
Shetrone's Mound 11			
Shetrone's Mound 16			
Shetrone's Mound 17	Shetrone's Mound 17	Shetrone (1926:45, figure 13)	
Shetrone's Mound 18	Shetrone's Mound 18	Dorsey 1891a; labeled	

Shetrone's Mound 19	Shetrone's Mound 19	Dorsey 1891; labeled	
Shetrone's Mound 20	Shetrone's Mound 20	Shetrone (1926a:51, figure 16)	
Shetrone's Mound 22	Shetrone's Mound 22	Dorsey 1891; labeled	
Shetrone's Mound 23	Shetrone's Mound 23	Moorehead (1922:plate 46), revision of Dorsey (1891); modified	Shetrone's Mound 23 Explanation
Shetrone's Mound 24	Shetrone's Mound 24	Moorehead 1922:plate 44	
Shetrone's Mound 25	Hopewell Mound 25 Greber&Ruhl	Greber and Ruhl (1989:foldout, figure 2.13); labeled, modified	Hopewell Mound25 Greber&Ruhl Explanation
	Mound 25 Shetrone1926	Shetrone (1926a:60–61, foldout, figure 21)	
	Mound 25 Shetrone 1926 with 1925 map grid	Shetrone (1926a:60–61, foldout, figure 21), Shetrone (July 12, 1925 field map with grid); redrawn	
	Mound 25 Moorehead 1891	Moorehead (1891)	
	Mound 25 Moorehead 1922	Moorehead (1922:plate 47);	
	Mound25Greber& RuhlMoorehead'sCuts	Greber and Ruhl (1989:40, foldout, figure 2.13); redrawn, modifed	
	Mound 25 Cut 3 Moorehead 1891	Moorehead (1891); redrawn	Mound 25 Cut 3 Moorehead 1891 Explanation
	Mound 25 Cuts 3,5,6 Moorehead 1892	Moorehead (1892); redrawn	
	Mound 25 Cuts Moorehead 1891	Moorehead (1891); redrawn	
Shetrone's Mound 26	Shetrone's Mound 26	Shetrone (1926a:102, figure 36)	
Shetrone's Mound 27	Shetrone's Mound 27	Moorehead (1922:plate 41A)	
Shetrone's Mound 28			
Shetrone's Mound 29	Shetrone's Mound 29	Moorehead (1922:plate 40)	
Shetrone's Mound 30			
Liberty Earthwork	Liberty Earthwork Group	Squier and Davis (1848:plate 20)	
Edwin Harness Mound	Harness MdMoorehead1897Putnam 1886	Greber (1979:31, figure 6.4; 1983:30, figure 3.3); redrawn	
	EdwinHarness MdMooreheadBurials1897	Moorehead (1897b: 224, figure 17); labeled	
	EdwinHarness MdMooreheadTunnels1897	Moorehead (1897b:223, figure 16); redrawn	
Russell Brown Mound 1	Russell Brown Mound 1	Seeman and Soday (1980:100, figure 3); labeled; see also Soday n.d.	Russell Brown Mound 1
Russell Brown Mound 2	Russell Brown Mound 2	Seeman and Soday (1980:108, figure 11); labeled; see also Soday n.d.	Russell Brown Mound 2
Russell Brown Mound 3	Russell Brown Mound 3	Seeman and Soday (1980:111, figure 14); labeled; see also Soday n.d.	Russell Brown Mound 3

(*Continued*)

Table 7.5. (*continued*)

Site	File Name for Map	Bibliographic Source of the Map	Explanation and Key
Mound City Earthwork	Mound City Earthwork	Brown (2004:152, figure 2)	
Mound 1	Mound 1 Brown 1994	Brown (1994:58a)	
Mound 2	Mound 2 Mills 1922	Mills (1922:444, figure 8)	
Mound 3	Mound 3 Mills 1922	Mills (1922:505, figure 38)	
Mound 7	Mound 7 Mills 1922	Mills (1922:480, figure 25)	
Mound 8	Mound 8 Brown 1994	Brown (1994:74a)	
	Mound 8 Mills 1922	Mills (1922:435, figure 4)	
Mound 9			
Mound 10	Mound 10 Brown 1979	Brown (1979:214)	
Mound 12 & 13	Mound 12+13 Brown 2004	Brown (2004:156, figure 4)	
	Mound 12+13 Mills 1922	Mills (1922:4449, figure 10)	
Mound 15	Mound 15 Brown 1994	Brown (1994:87a)	
Mound 18	Mound 18 Mills 1922	Mills (1922:469, figure 17)	
Mound 20	Mound 20 Brown 1994	Brown (1994:92a)	
Mound 23	Mound 23 Brown 1994	Brown (1994:94a)	
	Mound 23 Mills 1922	Mills (1922:460, figure 12)	
Mound 24			
Old Town (Frankfort) Earthwork	Old Town Earthwork and Mound Group	Squier and Davis (1848:plate 21, no. 4); modified	
Moorehead's (Porter) Mound 15	Old Town (Porter) Mound 15	Moorehead (1892:119)	Key for Old Town Mound 15
	Old Town (Porter) Mound 15 Skeleton R	Moorehead (1892:123)	
Moorehead's (Porter) Mound 17			
Moorhead's (Porter) Mound 38	Old Town (Porter) Mound 38	Moorehead (1892:136)	Key for Old Town Mound 38
Rockhold Mound Group			
Mound 1			
Mound 2			
Mound 3	Rockhold Mound 3	Morgan (1944); redrawn	
Seip Earthwork	Seip Earthwork and Mound Group	Squier and Davis (1848:plate 21, no. 2)	
Mound 1 (Pricer)	Seip-Pricer Mound	Greber (1979:58, figure 1A); labeled	
Mound 3	Seip Mound 3 Shetrone and Greenman 1931	Shetrone and Greenman (1931:479, figure 74); Shetrone (1925:33)	
Mound 4			
Shilder Mound			
West Mound	West Mound	Wood (1992:11, figures 2, 3), see also Greber (1996:167, figure 9.11)	

Southern Scioto Drainage			
McKenzie Mound Group			
Mound A			
Mound B			
Mound C			
Tremper Earthwork and Mound	Tremper Earthwork and Mound	Mills (1916:269, figure 2); redrawn	
	Tremper Mound	Mills (1916:271, figure 3); redrawn	
Little Miami Drainage, Southwestern Ohio			
Finney Mound			
Fort Ancient Area Mound Group			
Fort Ancient Earthwork	Fort Ancient Earthwork Moorehead 1890	Moorehead (1890:foldout)	
	Fort Ancient Earthwork Cowan et al. 2004	Cowan et al. (2004)	
Glen Helen Mound	Glen Helen Mound	Marschall (1972:3, figure 2)	
	Glen Helen Mound Burials I – IV	Marschall (1972:7, figure 5)	
Irvin Coy Mound	Irvin Coy Mound	Wood and Allman (1961:52, figure 1)	
John Boyle's Farm Mound	John Boyle's Farm Mound	Moorehead (1892:68, figure 5)	John Boyle's Farm Mound, Key
Perry Township Mound			
Purdom Mound Group			
Mound 1/2	Purdom Mound 1–2	Heilman and Mahoney 1996:292, figure 17.4) & Dayton Museum of Natural History (n.d.2) composited; labeled	
Mound 3/4	Purdom Mound 3–4	Dayton Museum of Natural History (n.d.2); modified	
Richard Shumard's Farm Mound	Richard Shumard's Farm Mound	Moorehead (1892:61, figure 3); labeled	
Stubbs Earthwork	Stubbs Earthwork Whittlesey 1851	Whittlesey (1851:plate II); labeled	
	Stubbs Earthwork Cowan 2007a	Cowan (2007a)	
	Whittlesey's Mound Cowan 2007b	Cowan (2007b)	
Turner Earthwork	Turner Earthwork and Mound Group	Willoughby and Hooton (1922:plate 1)	
Mound 1	Turner Mound 1	Willoughby and Hooton (1922:31, figure 13)	
Mound 2	Turner Mound 2	Willoughby and Hooton (1922:32, figure 14)	
Mound 3	Turner Mound 3	Willoughby and Hooton (1922:36, figure 17)	
	Turner Mound 3 et al	Willoughby and Hooton (1922:33, figure 15)	

(*Continued*)

Table 7.5. (*continued*)

Site	File Name for Map	Bibliographic Source of the Map	Explanation and Key
Mound 4	Turner Mound 4	Willoughby and Hooton (1922:64, figure 28)	
Mound 11			
Mound 12	Turner Mound 12	Willoughby and Hooton (1922:84, figure 41)	
Burial Place within the Great Enclosure	Turner Burial Place W&H1922	Willoughby and Hooton (1922:plate 3)	
	Turner Burial Place Greber 1979	Greber (1979:69); labeled	
	TurnerBurialPlaceGravesW&H1922Cross-section	Willoughby and Hooton (1922:plate 4)	
	Turner Burial Place Graves W&H1922	Willoughby and Hooton (1922:figure 9)	
Marriot Mound 1	Turner Marriot Mound 1	Putnam (1886a:450, figures 1, 2)	
Great Miami Drainage, Southwestern Ohio			
Boblett Mound Group	Boblett Mound	Altick (1941a:figures 1–3)	
Campbell Mound Group	Campbell Mound Group	Altick (1935b); redrawn	
Mound 1			
Mound 2	Campbell Mound 2	Altick (1935a); redrawn	
Headquarters	Twin Mounds, Miami Fort, Headquarters	Lee and Vickery (1972:8, figure 1)	
Lee Mound			
Manring Earthwork			
Mound 1			
Mound 2			
Miami Fort	Twin Mounds, Miami Fort, Headquarters	Lee and Vickery (1972:8, figure 1)	
Shinkal Mound	Shinkal Mound	Starr (1960:96)	
Twin Mounds	Twin Mounds, Miami Fort, Headquarters	Lee and Vickery (1972:8, figure 1)	
Western Ohio			
Pence Mound			

SPATIAL LAYOUTS OF THE SITES AND MOUNDS IN THE HOPEBIOARCH DATA BASE

The spatial arrangement of mounds, enclosures, and other features at many of the sites in the data base, and the layouts of burials, deposits, and other features under most of the mounds in the data base, are presented in Appendix 7.2. All maps, both published and unpublished, that are known to us and that are useful in placing burials, deposits, and other mortuary features in context have been assembled here. Table 7.5 lists the maps presented, references their sources, and gives the file names of the maps in Appendix 7.2. Table 7.6 lists correspondences between the numbers given by Squier and Davis (1848), Moorehead (1922), and Shetrone (1926a) to mounds at the Hopewell site.

Table 7.6. Correspondence of Mound Numbers Assigned by Shetrone (1926a), Moorehead (1922), and Squier and Davis (1848)

Shetrone's (1926a) Mound Numbers	Moorehead's (1922) Mound Numbers	Squier and Davis' (1848) Mound Numbers
1	1	no number
2	2	2
3	3	3
4	4	4
5 (mistakenly labeled 15 on map	5	5
6	6	6
7	7	7
8	8	8
9	9	9
10	10	10
11	11 or 20	11
12	12	12
13	no number	no number
14	14	14
15	15	15
16	16	16
17	17	no number
18	18	not shown
19	19	not shown
20	20 or 27	no number
21	not shown	not shown
22	not shown	not shown
23	23	no number
24	not shown	no number
25	25	no number
26	not shown	not shown
27	20?	not shown
28	not shown	not shown
29	17 not shown	not shown
30	not shown	not shown
31	not shown	not shown
32	not shown	not shown
33	not shown	not shown
34	not shown	not shown
35	not shown	not shown
36	not shown	not shown
37	21?	not shown
38	22?	not shown

BIBLIOGRAPHY OF ARCHAEOLOGICAL INFORMATION ABOUT THE SITES

The following bibliography lists published and unpublished sources of archaeological information on those Middle Woodland sites that are in the HOPEBIOARCH data base and then those that are not for lack of internal provenience information. Lastly, sources of information about the ages and sexes of human remains are presented.

Sites with Internal Provenience Information

Ater Mound

Baby, Raymond S.
1948 Field Notes: Ohio State Museum Archaeological Expedition (Site Ro 63). Unpublished document on file at the Ohio Historical Center, Columbus, OH (Envelope 18).

Bolmer, Barbara
1948 "Valley of Kings" is Probed Once Again For Treasures of Prehistoric Dwellers. *Chillicothe Gazette* 148(136):pages unknown. On file at the Ohio Historical Center, Columbus, OH.

Greber, N'omi
1976 Within Ohio Hopewell: Analysis of Burial Patterns from Several Classic Sites. Unpublished doctoral dissertation, Department of Anthropology, Case Western Reserve University.

Ohio Historical Society
n.d. Raymond Ater Mound Accession List (Accession #3062). Unpublished document on file at the Ohio Historical Center, Columbus, OH.
1948 Exciting Discoveries at Frankfort Mound. *Museum Echoes* 21(7):54–55.

Ohio State University School of Journalism
1948 Archaeologists Unearth Early Indian Ornaments. *The Ohio State Lantern* 68(5):pages unknown. On file at the Ohio Historical Center, Columbus, OH.

Wheaton, Bob
1948 New Clues to the Moundbuilders. *The Columbus Sunday Dispatch Magazine*, July 25th issue. On file at the Ohio Historical Center, Columbus, OH.

Boblett Mounds

Altick, Arthur R.
1939 The Survey of the Boblett Group of Prehistoric Mounds. *Escalade,* pp. 34–36.Springfield Writers' Club, Springfield, OH. On file at the Clark County Historical Society, Springfield, OH.
1941a Exploration of Mound 2 of the Boblett Group of Prehistoric Mounds. *Escalade,* pp. 25–35. The Springfield Writers' Club, Springfield, OH. On file at the Clark County Historical Society, Springfield, OH.

Boblett, K. M.
1939 Letter from K. M. Boblett to Arthur R. Altick, reporting the excavation of Mound 2 of the Boblett Group. On file at the Clark County Historical Society, Springfield, OH.

Bourneville Mound

McBeth, Donald
1960 Bourneville Mound, Ross County, Ohio. Ohio Archaeologist 10(1):12–14.

Ohio Historical Society
1959 Bourneville Mound Accession List (Accession #3721). Unpublished document on file at the Ohio Historical Center, Columbus OH.

Porter, Tom and Donald McBeth
1960 An Additional Note on the Bourneville Mound, Ross County, Ohio. *Ohio Archaeologist* 10(7):113–115.

Squier, Ephraim G. and Davis, E. H.
1848 Ancient Monuments of the Mississippi Valley: Comprising the Results of Extensive Original Surveys and Explorations. *Smithsonian Contributions to Knowledge* 1. Smithsonian Institution, Washington, D.C. Reprinted in 1973 by AMS Press.

Campbell Mounds

Altick, Arthur R.
1935a Field Notes: Archaeological Survey of the Campbell Group of Prehistoric Earthworks. Unpublished document on file at the Clark County Historical Society, Springfield, OH.
1935b Important Archaeological Discoveries Are Made in Old Mound in Clark County. *Springfield News – Sun,* June 16, 1935, p. 1. Newspaper clipping on file at the Clark County Historical Society, Springfield, OH.

Circleville Earthwork

Atwater, Caleb
1820 Description of the Antiquities Discovered in the State of Ohio. *The Transactions and Collections of the American Antiquarian Society* 1:109–251.

Marshall, James A.
1987 An atlas of American Indian geometry. *Ohio Archaeologist* 30(2):8–12.

Esch Mounds

Author Unknown
n.d. Esch Mounds, Erie County, Ohio. Unpublished manuscript on file at the Ohio Historical Center, Columbus, OH (Accession #1176, Site 33 ER 1).

Greenman, Emerson and Robert Goslin
1930a Field Notes: Esch Mound 1. Unpublished document on file at the Ohio Historical Center, Columbus, OH (Accession #1176, Site 33 ER 1).
1930b Field Notes: Esch Mound 2. Unpublished document on file at the Ohio Historical Center, Columbus, OH (Accession #1176, Site 33 ER 1)
Ohio Historical Society
n.d.1 Esch Mound 1 and 2 Accession List (Accession #1176, Site 33 ER 1). Unpublished document on file at the Ohio Historical Center, Columbus, OH.
n.d.2 Three maps of the Esch Mound Group, Esch Mound 1, and Esch Mound2. Unpublished maps on file at the Ohio Historical Center, Columbus, OH.

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W. C. MILL'S (1914) ARCHEOLOGICAL ATLAS OF OHIO

In this section and its associated Appendix 7.3 are presented fifty-two detailed-scale county maps and one state-wide overview map of the locations of earthen enclosures, mounds, and several other kinds of archaeological sites, as recorded in W. C. Mills' (1914) *Archeological Atlas of Ohio*. Maps are reproduced for only those counties in the southern two-thirds of the State of Ohio and with streams that drain into the Ohio River, as opposed to the Lake Erie basin. These counties are by far the primary areas of occupation of Adena and Hopewell peoples during the Early and Middle Woodland periods in Ohio. For the convenience of researchers, the maps for Franklin, Pickaway, Ross, Pike, and Scioto Counties are reproduced here in hard copy (Figures 7.2–7.7). These five counties encompass the bulk of the Scioto and Paint Creek valleys and the majority of earthworks and mounds of the Scioto Hopewell tradition. Table 7.7 summarizes tabulations made by Mills (1914) on the numbers of mounds and earthen enclosures in each of the fifty-two counties for which maps are reproduced here.

The maps provide a generalized picture of where Adena and Hopewell peoples lived in greater and lesser densities. All of the earthworks that are mapped can almost certainly be attributed to Adena and Hopewell peoples, and most of the earthen mounds can be. Building of earthen mounds did extend into the Early Late Woodland period (e.g., Seeman and Soday 1980), but these are infrequent. Stone mounds and graves were more common then (e.g., Otto 1980:68; Seeman and Dancey 2000:599–600), and these kinds of structures are distinguished from earthen mounds in Mills' maps. Only ten known Fort Ancient villages in Ohio include earthen mounds (Baby et al. 1966; Brose 1982; Mills 1904,1906; Oehler 1973:3–5, 41–47; Moorehead 1891–1892:63–76; Prufer and Shane 1970:151–157, 243; Ullman 1985:1–4; see also Church 1987:14, 16, 222, 223, Tables 1, 28; Griffin 1943:368–369, 1978:554–555; Otto 1980:69). Nearly all of these sites have a confined geographic distribution, occurring in the Scioto Valley (Baum, Blain, Enos Holmes, Feurt, Gartner, Kramer, Voss) or neighboring Ohio Brush Creek (Killen-Grimes-Wamsley site complex). Only two of these sites (Taylor, Turpin) are located at some distance, in the Little Miami valley (see Graybill [1981:138] and Griffin [1943:368–369] for Fort Ancient sites with earthen mounds beyond Ohio). Fort Ancient peoples more typically buried their dead in unmounded cemeteries or dispersed within villages with stone slabs over them or stone boxes around them (Griffin 1978:552; Prufer and Shane 1970:266).

The county maps distinguish earthen circular enclosures from square ones and complex ones comprised of both forms. The square and complex earthworks represent the hands of Hopewell peoples. The circular (and oval) earthworks in the Scioto drainage were built primarily by Adena peoples, although there are exceptions (e.g. the Shriver circle adjacent to Mound City and the oval Tremper earthwork were built by Hopewell peoples). In the Great and Little Miami drainages, circular (and oval) earthworks were constructed in frequency by both Adena and Hopewell peoples (e.g., the Turner site, the Bell Works; Riordon 1986; Squier and Davis 1848:Plate XXXIV–4; Willoughby and Hooton 1922).

The notation of sites and their approximate locations on the maps is close to the best that can be gotten today and an invaluable resource. The maps of the *Atlas* include many sites that had already been destroyed by agriculture and commercial and urban growth before the publication of the *Atlas* in 1914 (Mills 1914:iii) and many sites that subsequently were destroyed over the 20th century. Precursors of the maps of the *Atlas* were begun by Col. Charles Whittlesey, President of the Western Reserve Historical Society, in the early 1870s. He took to the task of recording all archaeological "monuments" known at the time in Ohio. To Whittlesey's data base were added many additional mounds published in an *Archaeological Map of Ohio* by the Smithsonian Institution in 1891, and then other mounds and sites by W. K. Moorehead of the Ohio Historical

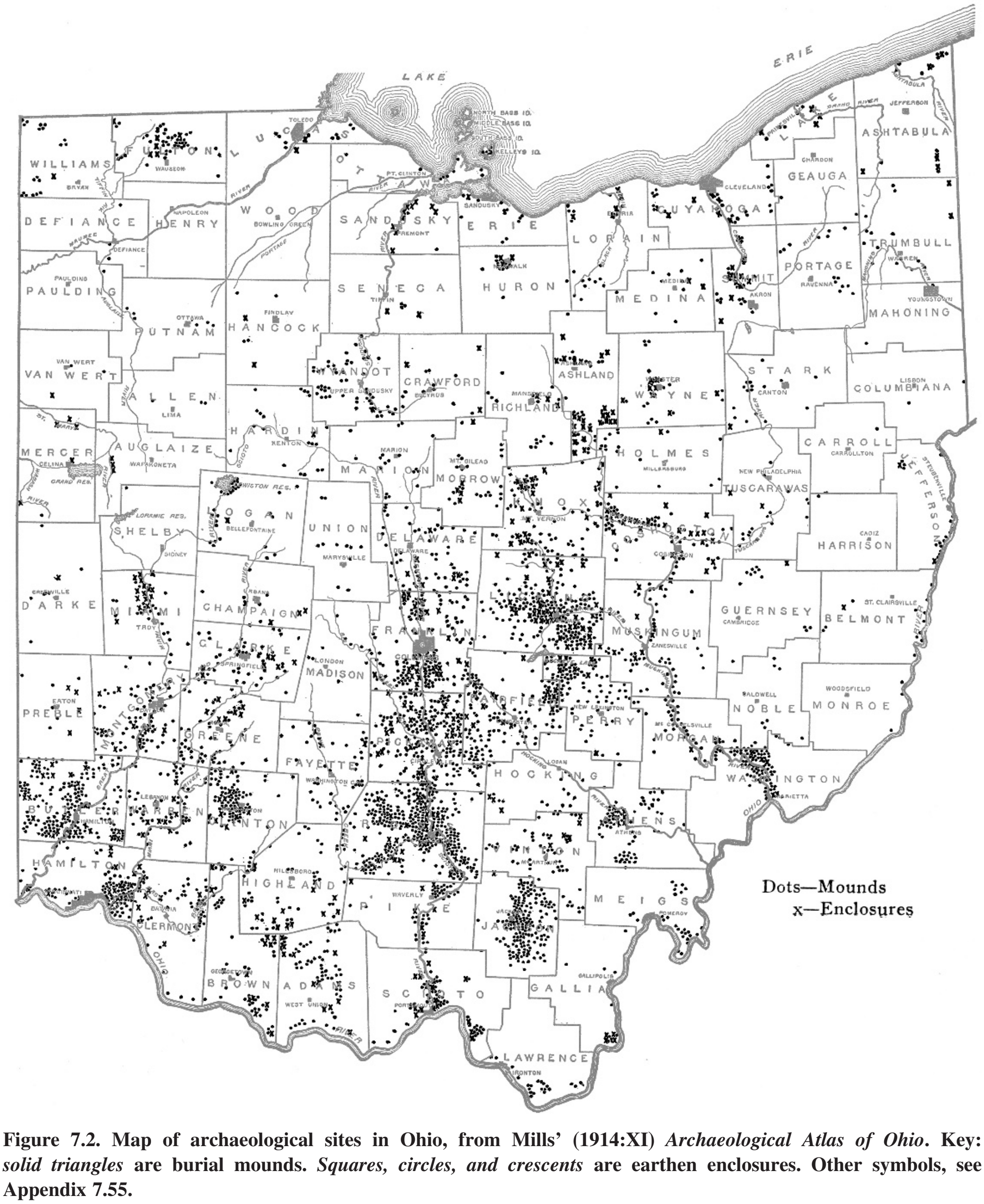


Figure 7.2. Map of archaeological sites in Ohio, from Mills' (1914:XI) *Archaeological Atlas of Ohio*. Key: *solid triangles* are burial mounds. *Squares, circles, and crescents* are earthen enclosures. Other symbols, see Appendix 7.55.

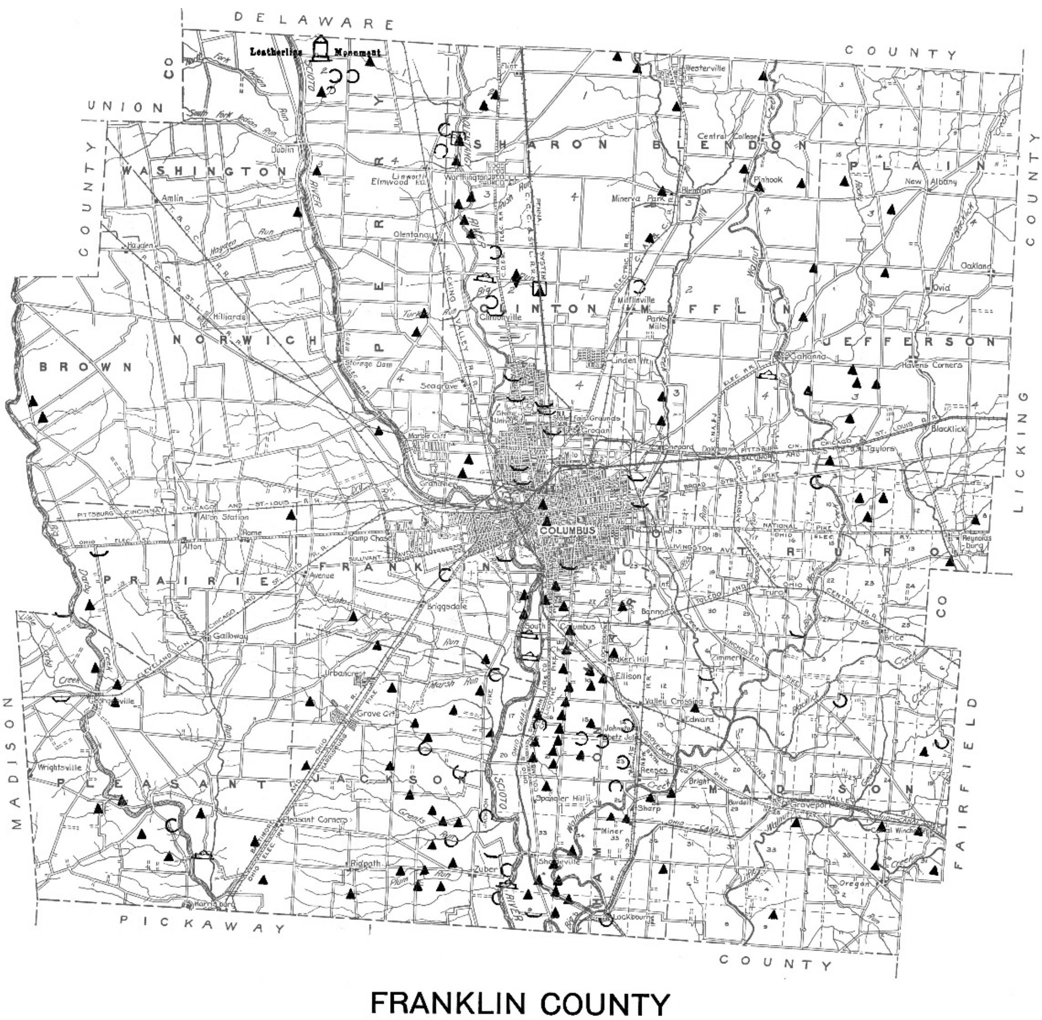


Figure 7.3. Map of archaeological sites in Franklin County, Ohio, from Mills' (1914:25) *Archaeological Atlas of Ohio*. Key: *solid triangles* are burial mounds. *Squares, circles, and crescents* are earthen enclosures. Other symbols, see Appendix 7.55.

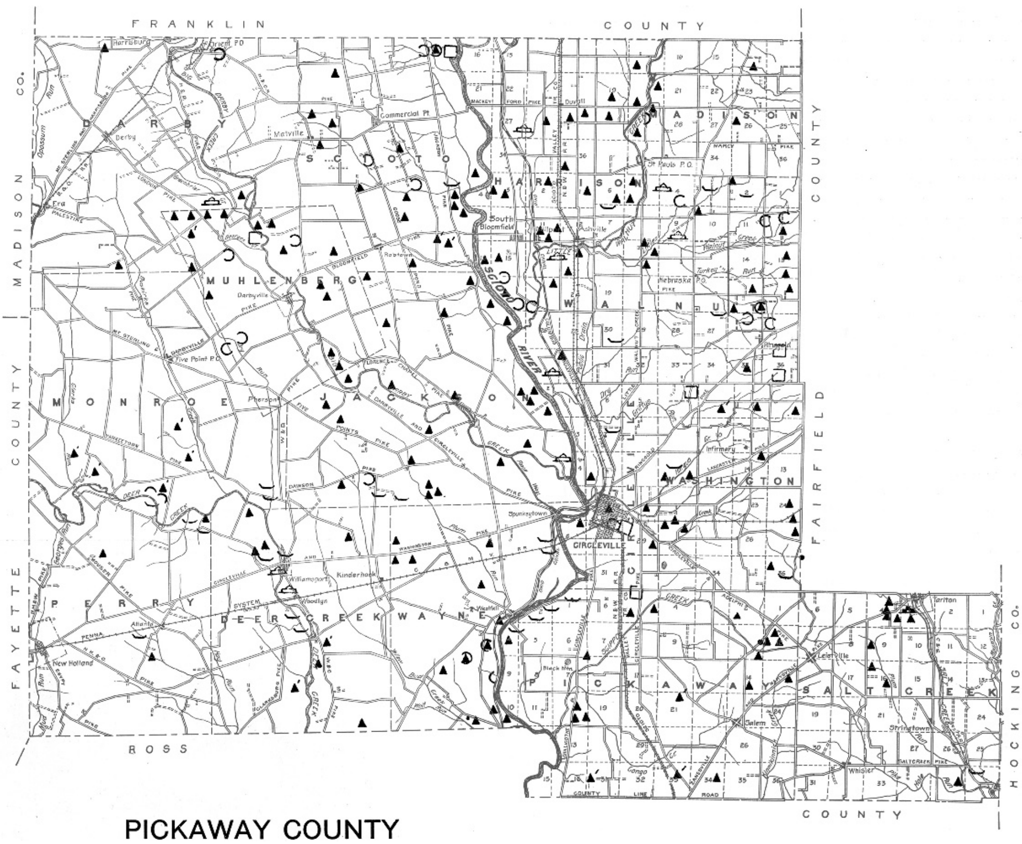
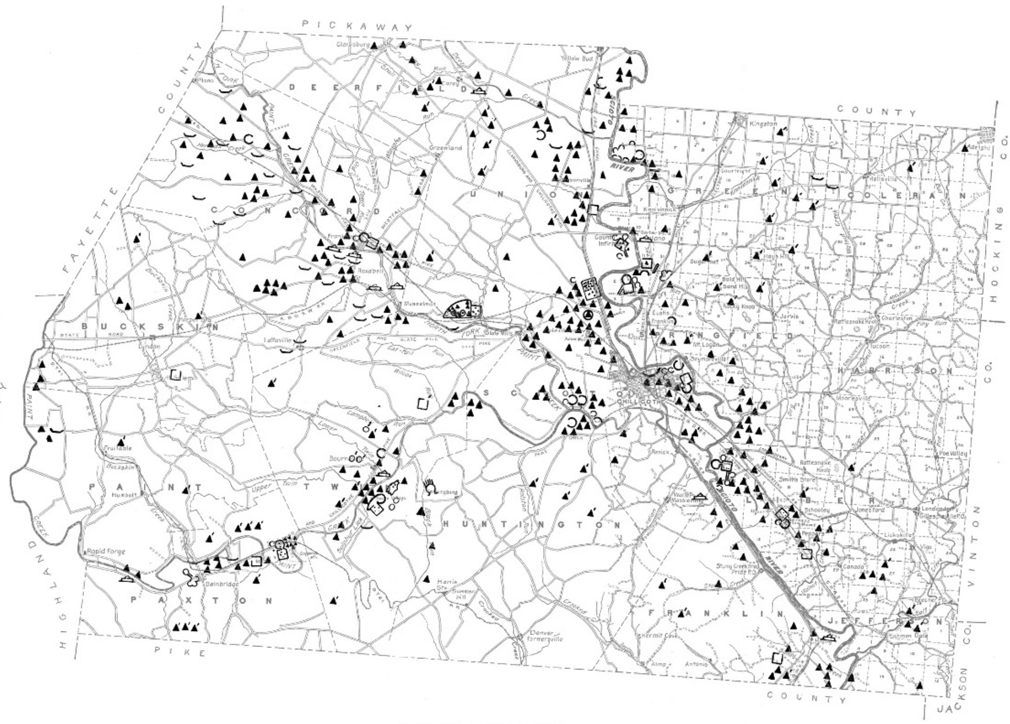


Figure 7.4. Map of archaeological sites in Pickaway County, Ohio, from Mills' (1914:65) ***Archaeological Atlas of Ohio*****. Key:** ***solid triangles*** **are burial mounds.** ***Squares, circles, and crescents*** **are earthen enclosures. Other symbols, see Appendix 7.55.**



ROSS COUNTY

Figure 7.5. Map of archaeological sites in Ross County, Ohio, from Mills' (1914:71) *Archaeological Atlas of Ohio*. Key: *solid triangles* are burial mounds. *Squares, circles, and crescents* are earthen enclosures. Other symbols, see Appendix 7.55.

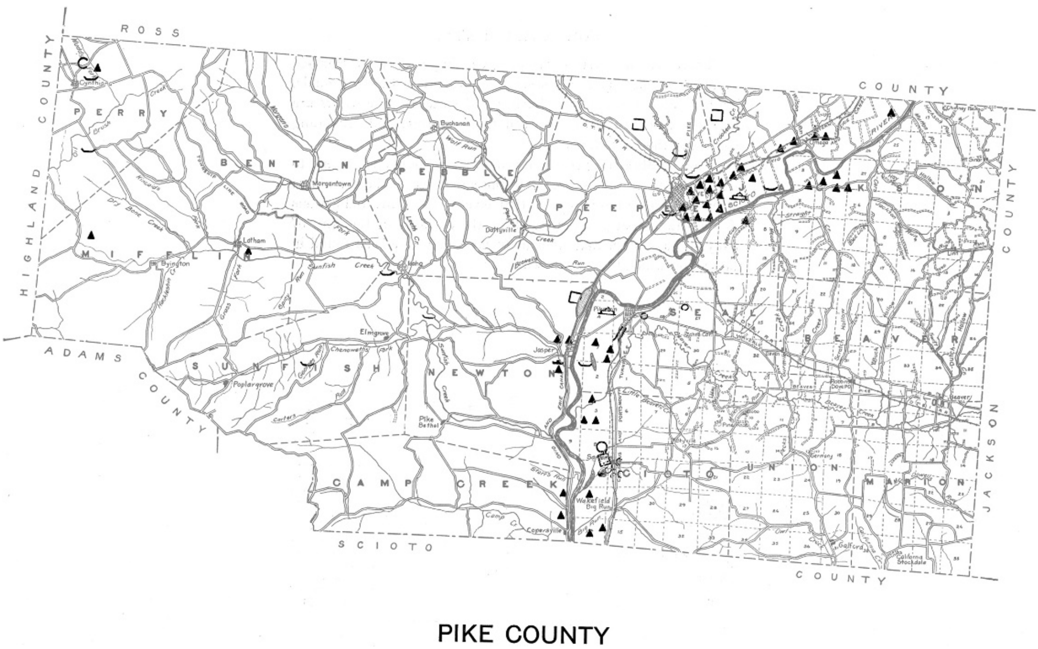


Figure 7.6. Map of archaeological sites in Pike County, Ohio, from Mills' (1914:66) *Archaeological Atlas of Ohio*. Key: *solid triangles* are burial mounds. *Squares, circles, and crescents* are earthen enclosures. Other symbols, see Appendix 7.55.

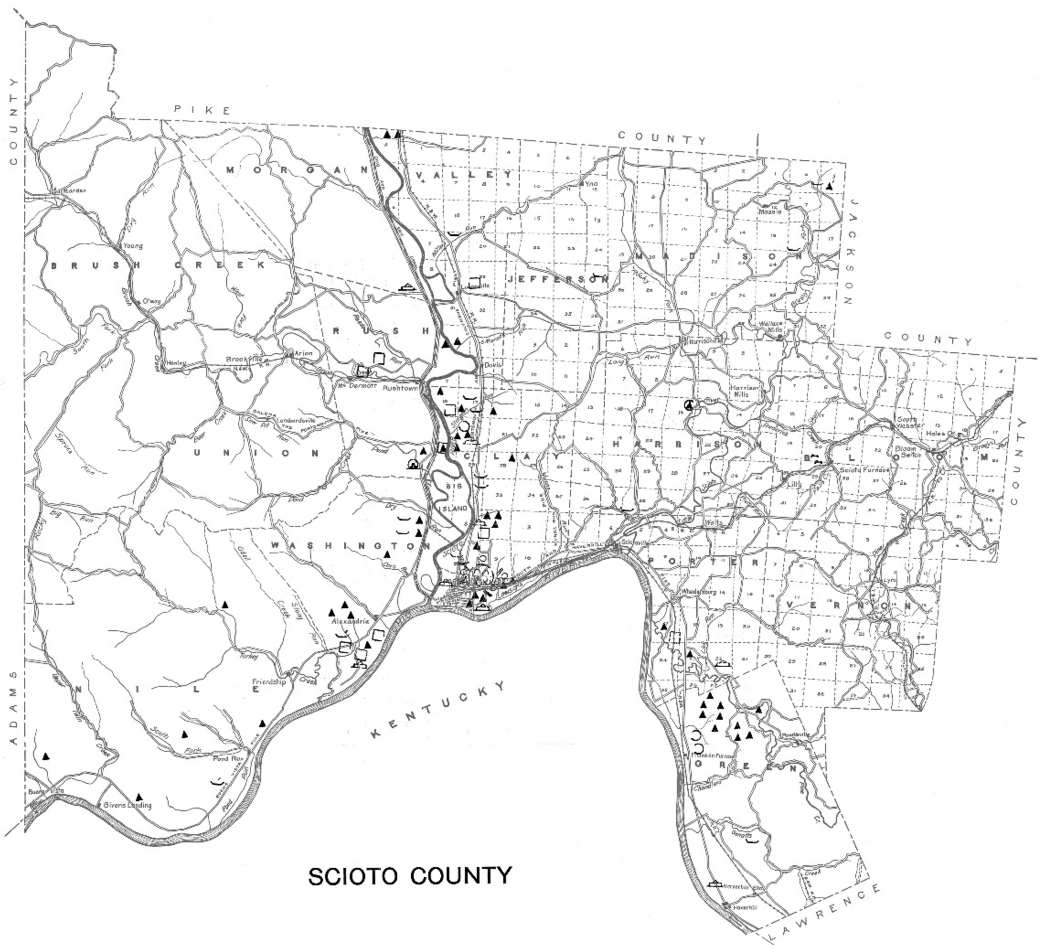


Figure 7.7. Map of archaeological sites in Scioto County, Ohio, from Mills' (1914:73) *Archaeological Atlas of Ohio*. Key: *solid triangles* are burial mounds. *Squares, circles, and crescents* are earthen enclosures. Other symbols, see Appendix 7.55.

Table 7.7. Numbers of Earthen Mounds and Enclosures in Counties of Ohio

County	Number of Mounds	Number of Circular, Square, and Crescent Enclosures	Total Number of Mounds and Enclosures (Almost All Early or Middle Woodland)	Physiographic Province	Drainage
Ross	370	49	419	Ecotone	Scioto
Licking	225	36	261	Ecotone	Muskingum
Butler	221	24	245	Till Plain	Great Miami
Pickaway	173	33	206	Till Plain	Scioto
Jackson	173	6	179	Plateau	Ohio
Franklin	132	28	160	Till Plain	Scioto
Hamilton	132	20	152	Till Plain	Great & Little Miami
Fairfield	112	14	126	Ecotone	Scioto & Hocking
Washington	102	6	108	Plateau	Muskingum
Clinton	93	10	103	Till Plain	Little Miami
Perry	86	7	93	Plateau	Hocking & Muskingum
Montgomery	76	14	90	Till Plain	Great Miami
Knox	67	22	89	Ecotone	Muskingum
Coshocton	62	21	83	Plateau	Muskingum
Athens	63	12	75	Plateau	Hocking
Adams	58	13	71	Ecotone	Ohio
Warren	62	8	70	Till Plain	Little Miami
Greene	61	8	69	Till Plain	Little Miami
Delaware	61	6	67	Till Plain	Scioto
Vinton	60	5	65	Plateau	Scioto & Ohio
Muskingum	54	9	63	Plateau	Muskingum
Scioto	47	14	61	Plateau	Scioto and Ohio
Clermont	47	11	58	Till Plain	Little Miami
Highland	45	13	58	Till Plain	Ohio
Brown	41	14	55	Till Plain	Ohio & Little Miami
Clark	47	7	54	Till Plain	Great & Little Miami
Ashland	26	26	52	Ecotone	Muskingum
Pike	44	8	52	Plateau	Scioto
Fayette	43	3	46	Till Plain	Scioto
Morgan	38	1	39	Plateau	Muskingum
Miami	22	15	37	Till Plain	Great Miami
Logan	33	1	34	Till Plain	Great Miami
Summit	21	11	32	Till Plain	Muskingum
Wayne	20	8	28	Plateau	Muskingum
Meigs	27	0	27	Plateau	Ohio
Morrow	21	5	26	Till Plain	Scioto & Muskingum
Lawrence	21	2	23	Plateau	Ohio
Hardin	20	2	22	Till Plain	Scioto
Hocking	17	3	20	Plateau	Hocking
Holmes	17	1	18	Plateau	Muskingum
Tuscarawas	16	2	18	Plateau	Muskingum
Marion	17	0	17	Till Plain	Scioto
Richland	14	3	17	Ecotone	Muskingum
Stark	16	1	17	Plateau	Muskingum
Gallia	11	4	15	Plateau	Ohio
Guernsey	11	1	12	Plateau	Muskingum
Madison	12	0	12	Till Plain	Scioto
Union	11	0	11	Till Plain	Scioto & Ohio
Champaign	6	4	10	Till Plain	Great Miami
Preble	6	4	10	Till Plain	Great Miami
Noble	8	0	8	Plateau	Muskingum & Ohio
Darke	6	1	7	Till Plain	Great Miami
Shelby	1	0	1	Till Plain	Great Miami
Total Number	3175	516	3691		

Society between 1895 and 1897. Thereafter, W.C. Mills of the Society "conducted a systematic examination of the state, county by county, verifying wherever possible those monuments already known and at the same time adding new records to the map" (Mills 1914:iii). Thus, the numbers and kinds of sites shown on the county maps and their approximate locations are likely pretty accurate. The maps do not allow the precise location of every site (Dancey 1984), and probably should not be used for studies of the immediate local physiographic and other criteria used by Adena and Hopewell peoples to situate their mounds and earthworks. Somewhat broader-scale studies of site catchment qualities, densities of sites within areas, and patterning of site densities across the Ohio landscape seem appropriate uses of the maps.

Comparision of site information in Mills' *Atlas* to that in the current *Ohio Archaeological Inventory* — the State of Ohio's site archaeological files that were begun in the 1970s — provides a verification of the accuracy of the *Atlas'* maps. The Pearson's correlation between the number of mounds in the *Atlas* and the number of mounds in the *Inventory* on a county-by-county basis is 0.700 (Seeman and Branch 2006:111). Mound occurrences in the *Inventory* "explain" about 50% of the variation in mound occurrences in the *Atlas*. This is a nearly perfect correspondence between the two data bases, given that about half the mounds in the *Atlas* have since been destroyed and are not recorded in the *Inventory*. Whereas the *Atlas* records over 3,500 mounds for all of Ohio at 1914 (Mills 1914:iv), the *Ohio Archaeological Inventory* documented only 1,505 mounds at the turn of the millennium (Seeman and Branch 2006:110). For Ross County, the *Atlas* shows 370 mounds (Mills 1914:71A), whereas the *Ohio Archaeological Inventory* recorded only 238 mounds (Seeman and Branch 2006:116).

Chapter **8**

Definition of Variables and Variable States

D. Troy Case, Christopher Carr, and Ashley E. Evans

This chapter continues from the previous in familiarizing the reader with the observations and variables – the rows and columns – in the HOPEBIOARCH data base. Here, we consider the 545 qualitative and quantitative variables used to describe the burials and ceremonial deposits within the ceremonial sites described by the data base.

The variables in the data base are of roughly six kinds (Table 8.1). The first 13 define the provenience and context of each observation: the site, mound, burial or ceremonial deposit designation, the primary source of information about the provenience, whether it is a burial or deposit, whether human remains in burial contexts were cremated, inhumed, or burned, the spatial cluster of graves in which it occurs within the mound, and associations among individuals within graves that contain multiple persons. The next 12 variables provide the best estimates of the age and sex of each individual in a burial, drawing upon evaluations made in Chapter 9. The physical anthropologists responsible for the estimates are also listed. The subsequent 13 variables describe, for burials, the materials used to wrap the remains, if any, various aspects of the form of the tomb, and its area and orientation. These variables are followed by 507 that either record qualitative and quantitative characteristics of the artifacts and raw materials put in each grave with the deceased or in each ceremonial deposit, or summarize information about groups of artifacts (e.g. number of species represented by power parts per provenience). The 507 variables are arranged by the artifacts' general social functions to the extent known (e.g., shaman-like paraphernalia, markers of other kinds of leadership, sodality markers, clan markers, personal items), similarity in forms (e.g., panpipes, flutes), and raw materials (e.g., quartz items, animal teeth). Of the 507 variables, 125 describe various artifact formal-material classes, 88 code the counts of these formal-material classes in individual graves or ceremonial deposits, for those classes having more than one item in some graves or deposits, and 297 variables, in triplets, describe the positions of artifacts within individual graves. Table 8.1 lists the first four kinds of variables concerned with provenience, age and sex estimates, tomb form, and artifact formal-material classes.

Table 8.1. List of Variables and the Number of Entries in Each

Variable Name	Unabbreviated Name	Number of Entries[1]	Percentage of Proveniences[2]
	Provenience Information		
Site	Site	1143	100.0%
Mound	Mound	1143	100.0%
Proven	Provenience	1143	100.0%
PrimSource	Primary Source	1143	100.0%
Cluster1	Cluster 1	281	24.5%
Cluster2	Cluster 2	21	1.8%
Cluster3	Cluster 3	2	0.2%
	Overview Information		
BurialDep	Burial/Ceremonial Deposit	1143	100.0%
Treatment	Body Treatment	1065	93.0%
ArtifAccum	Artifact Accumulation	1143	100.0%
MNI	Minimum Number of Individuals	1101	96.3%
IndAssoc	Individuals Associated	223	19.5%
ArtPresAbs	Artifacts Present or Absent	1143	100.0%
	Demographic Information		
AgeCode	Age Code	1057	92.5%
SexCode	Sex Code	1059	92.7%
Age1	Age 1	160	14.0%
Age2	Age 2	57	5.0%
Age3	Age 3	31	2.7%
PhysAnthAge	Physical Anthropologist, Age	437	38.2%
Sex1	Sex 1	86	7.5%
Sex2	Sex 2	76	6.6%
Sex3	Sex 3	73	6.4%
PhysAnthSex	Physical Anthropologist, Sex	234	20.5%
PAagree	Physical Anthropologists Who Agree	54	4.7%
PAdisagree	Physical Anthropologists Who Disagree	16	1.4%
	Body Treatment, Tomb Form and Size		
FloorPrep	Floor Preparation	311	27.2%
WallPrep	Wall Preparation	396	34.6%
CoverPrep	Cover Preparation	316	27.6%
BodyWrap	Body Wrapping	172	15.0%
Platform	Platform	212	18.5%
Water	Water Barrier	180	15.7%
WatPosit	Water Position	180	15.7%
WatShape	Water Shape	180	15.7%
GraveAreaQL	Grave Area Qualitative	244	21.3%
GraveAreaQT	Grave Area Quantitative	257	22.5%
GraveLength	Grave Length	270	23.6%
GraveWidth	Grave Width	285	24.9%
GraveOrien	Grave Orientation	500	43.7%
	Shaman-like Practitioner's Paraphernalia, Probable or Possible		
QuartzCryst	Quartz Crystals	7	0.6%
MicaSheet	Mica Sheets	58	5.1%
QuartzDisc	Quartz Discoids	1	0.1%
QuartzCone	Quartz Cones	2	0.2%
ConeHemi	Cones/Hemispheres	11	1.0%
QuartzBoat	Quartz Boatstones	2	0.2%
Boat	Boatstone, Non-Quartz	9	0.8%
QuartzCup	Quartz Cups	1	0.1%
QuarColorPeb	Quartz or Colored Pebbles	4	0.3%

(*Continued*)

Table 8.1. (*continued*)

Variable Name	Unabbreviated Name	Number of Entries[1]	Percentage of Proveniences[2]
Marble	Marbles	1	0.1 %
CopperBall	Copper Balls	4	0.3 %
Plummet	Plummets	5	0.4 %
FossilConc	Fossils/Concretions	6	0.5 %
TubeFuncUnk	Tubes, Function Unknown	9	0.8 %
Barracud	Barracuda Jaws	3	0.3 %
SharkTeeth	Shark Teeth	19	1.7 %
AlligTeeth	Alligator Teeth	4	0.3 %
Rattle	Rattlers/Tinklers	2	0.2 %
Fan	Fan Effigies	2	0.2 %
CPNose	Copper Nostril Inserts	3	0.3 %
Mushroom	Mushroom-Shaped Objects	2	0.2 %
FlyHuman	Flying Human	1	0.1 %
Owl	Owl Effigies	4	0.3 %
Supernat	Supernatural Effigies	2	0.2 %
GoatHorn	Goat Horn	1	0.1 %
Awl	Awls, Bone/Antler	44	3.8 %
QuartzBiface	Quartz Bifaces	14	1.2 %
GemBiface	Gem Bifaces	9	0.8 %
OtherTransBiface	Other Translucent Bifaces	4	0.3 %
ObsidBiface	Obsidian Bifaces	20	1.7 %
FancyPt	Fancy Points	5	0.4 %
Weapon	Weapon Effigies	2	0.2 %
FancyPrismBlade	Fancy Prismatic Blades	10	0.9 %
QuartzNum	Number of Quartz Object Types	41	3.6 %
Other Ceremonial Paraphernalia			
BigPipe	Big Smoking Pipes	2	0.2 %
SmallPipe	Small Smoking Pipes	44	3.8 %
Panpipe	Panpipes	14	1.2 %
Flute	Flutes/Whistles	3	0.3 %
PaintEquip	Painting Equipment	4	0.3 %
OchrePaint	Ochre or Paint	19	1.7 %
StoneTablet	Stone Tablets	14	1.2 %
FancyPot	Fancy Pottery Vessels	17	1.5 %
TortShellOrn	Tortoise Shell Ornaments	9	0.8 %
TrophSkJw	Trophy Skulls/Jaws	30	2.6 %
TrophFg	Trophy Fingers	2	0.2 %
TrophEar	Trophy Ears	1	0.1 %
TrophHn	Trophy Hands	2	0.2 %
HumanM	Human Figures, Male	1	0.1 %
HumanF	Human Figures, Female	2	0.2 %
HumanUk	Human Figures, Unknown Sex	9	0.8 %
AnimImage	Animal Images	16	1.4 %
CarveBone	Carved Bone	5	0.4 %
Paraphernalia and Role Markers of Nonshaman-like Leaders, Sodality Leaders and Members, and Other Important Persons			
Headplate	Headplates	34	3.0 %
CeltCopp	Celt, Copper	60	5.2 %
CeltAreaKnown	Celt Area, Known	10	0.9 %
CeltAreaAll	Celt Area, All	10	0.9 %
CeltAreaLgst	Celt Area, Largest	10	0.9 %
CeltAreaCode	Celt Area Code	10	0.9 %
TotCeltWeight	Total Celt Weight	29	2.5 %
CeltWtKnown	Celt Weight, Known	29	2.5 %

(*Continued*)

Table 8.1. (*continued*)

Variable Name	Unabbreviated Name	Number of Entries[1]	Percentage of Proveniences[2]
HeavyCelt	Heaviest Celt	29	2.5 %
LightCelt	Lightest Celt	29	2.5 %
LongCelt	Longest Celt	29	2.5 %
ShortCelt	Shortest Celt	29	2.5 %
CeltIron	Celt, Meteoric Iron	4	0.3 %
CeltCoal	Celt, Cannel Coal	3	0.3 %
CeltStone	Celt, Stone	31	2.7 %
Conch	Conch Shell Vessel	65	5.7 %
ShellSpoon	Shell Spoons	11	1.0 %
WandBaton	Wands/Batons	10	0.9 %
Breastplate	Breastplates	107	9.4 %
BPTotalArea	Breastplate Total Area	47	4.1 %
BPTotalNum	Breastplates, Total Number	47	4.1 %
BPLongest	Longest Breastplate	47	4.1 %
BPShortest	Shortest Breastplate	47	4.1 %
BPThickThin	Breastplate, Thick or Thin	28	2.4 %
Earspool	Earspools	150	13.1 %
CPCutout	Copper Cutouts	23	2.0 %
MicaCutout	Mica Cutouts	29	2.5 %
ShellCutout	Shell Cutouts	4	0.3 %
Crescent	Crescents	10	0.9 %
PendantGorg	Pendants/Gorgets	51	4.5 %
Button	Buttons	29	2.5 %
	Animal Power Parts that Mark Clans		
RaptorPP	Raptor Power Parts	6	0.5 %
WolfDogPP	Wolf/Dog Power Parts	22	1.9 %
BigCatPP	Big Cat Power Parts	19	1.7 %
FoxPP	Fox Power Parts	4	0.3 %
ElkPP	Elk Power Parts	8	0.7 %
DeerPP	Deer Power Parts	3	0.3 %
RaccoonPP	Raccoon Power Parts	11	1.0 %
OpossumPP	Opossum power Parts	2	0.2 %
BadgerPP	Badger Power Parts	1	0.1 %
MarmotPP	Marmot Power Parts	2	0.2 %
GroundhogPP	Groundhog Power Parts	1	0.1 %
SmMamPP	Small Mammal Power Parts	6	0.5 %
BeaverPP	Beaver Power Parts	5	0.4 %
BearPP	Bear Power Parts	86	7.5 %
KnSpeciesPPNum	Known Species Power Part Number	120	10.5 %
SpeciesUnkPP	Species Unknown Power Parts	12	1.0 %
	Personal Decoration and Wealth		
Bead	Beads	177	15.5 %
BeadNeck	Bead Necklaces	33	2.9 %
BraceAnklet	Bracelets/Anklets	20	1.7 %
BeadString	Bead Strings	12	1.0 %
HairSkew	Hair Skewers	3	0.3 %
	Utilitarian Objects Not Obviously Ceremonial		
Container	Containers	85	7.4 %
NeedleBodkin	Needles or Bodkins	25	2.2 %
BoneAntPointKnife	Bone/Antler Points/Knives	5	0.4 %
CopperRod	Copper Rods	3	0.3 %

(*Continued*)

Table 8.1. (*continued*)

Variable Name	Unabbreviated Name	Number of Entries[1]	Percentage of Proveniences[2]
HornBiface	Hornstone Bifaces	1	0.1 %
OtherFlintBiface	Other Flint Bifaces	77	6.7 %
OtherFlintPrisBlad	Other Flint Prismatic Blades	72	6.3 %
MiscIRTool	Miscellaneous Iron Tools	3	0.3 %
MiscCPTool	Miscellaneous Copper Tools	10	0.9 %
MiscNMTool	Miscellaneous Non-Metal Tools	27	2.4 %
Rare, Miscellaneous Objects: Utilitarian, Decorative, or Ceremonial			
MiscCPObj	Miscellaneous Copper Objects	21	1.8 %
MiscShellObj	Miscellaneous Shell Objects	33	2.9 %
MiscObsid	Miscellaneous Obsidian Objects	5	0.4 %
MiscStone	Miscellaneous Stone Objects	27	2.4 %
MiscUtilFancyObj	Miscellaneous Utilitarian or Fancy Objects	58	5.1 %
Raw Materials and Manufacturing Debris			
BoneMisc	Miscellaneous Animal Bone	44	3.8 %
CannelRaw	Cannel Coal, Raw	1	0.1 %
CoppRawScrap	Copper, Raw & Scrap	13	1.1 %
FlintRawScrap	Flint, Raw & Scrap	45	3.9 %
GalenRaw	Galena, Raw	25	2.2 %
GoldScrap	Gold Scrap	1	0.1 %
GraphRaw	Graphite, Raw	2	0.2 %
HematRaw	Hematite, Raw	6	0.5 %
IronRaw	Iron, Raw	5	0.4 %
MicaScrap	Mica Scrap	33	2.9 %
PearlRaw	Pearl, Raw	11	1.0 %
PyriteRaw	Pyrite, Raw	2	0.2 %
SilverRaw	Silver, Raw	4	0.3 %
TortShlRaw	Tortoise Shell, Raw	11	1.0 %
QuartzScrap	Quartz Scrap	5	0.4 %
Arifact Location Relative to the Body (Position)			
Variable + P1	Primary Position of Item	n/a	n/a
Variable + P2	Secondary Position of Item	n/a	n/a
Variable + P3	Tertiary Position of Item	n/a	n/a

[1] Represents number of cells in data base with an entry regardless of the number of artifacts. Shared artifacts (those denoted by an asterisk in the data base) are counted more than once if an asterisk appears in more than one cell.
[2] Indicates the relative ubiquity of an entry for an item or characteristic in Ohio Hopewell proveniences.

ARTIFACT CLASSIFICATION

The artifact classification used in the data base distinguishes items most fundamentally by their formal and material qualities, which are directly observable. However, it also aims at capturing the social and ceremonial functions of artifacts, in order to give insight into the social and ceremonial roles of the people who used the items. In other words, artifact classes were designed to help reveal the social and ceremonial actions of past people, thereby personalizing the reconstruction of Scioto Hopewell life (Chapter 4, The Concept of the Social Role).

For example, metallic headplates are divided in the data base into ones that are plain and those that reference different kinds of animals - deer, bears, birds, humans - in order to distinguish social leaders who may have had different social, political, and/or cermonial functions. Smoking pipes are separated into small platform pipes, either plain or decorated with various animal effigies, and much larger and rarer animal effigy smoking pipes. The aim of the division is to separate individually owned pipes, probably used in personal and sodality ceremonies that focused on relationships with personal power animals, from pipes possibly owned by whole communities and used in broader community ceremonies. Cones and hemispheres made of quartz are separated from ones made of non-quartz materials in the data base because items of quartz were almost never buried with individuals and were almost always decommissioned instead in ceremonial deposits. In contrast, cones and hemispheres made of other materials were sometimes placed in the graves of individuals. This distinction probably indicates the greater power attributed by Ohio Hopewell peoples to quartz than to the other materials from which cones and hemispheres were made, thus usually requiring the careful decommissioning of quartz ceremonial items separate from the deceased (Cowan 2005; Turff and Carr 2005:679). The distinction may also define persons with greater and lesser spiritual and/or sociopolitical power, in the case of occasional persons who were buried with quartz cones instead of cones made of other materials.

MUTUAL EXCLUSIVITY OF VARIABLES

The variables in the data base have been defined so as to be mutually exclusive in almost all cases. This logical characteristic of the variables allows their proper statistical analysis for any associations and correlations among them. The exceptions to this rule include redundancies between some or all of the variables within each of the following five sets: Water, MicaSheet, PearlRaw, and Conch; Wand/Baton, Mushroom, and HumanUk; FlyHuman and HumanUk; AnimImage and CPCutout; and Owl relative to each of Weapon, BigPipe, and SmallPipe. For example, in certain instances, a single artifact might be coded as present for both the variables Weapon and Owl, or both Wand/Baton and Mushroom, etc., rather than just one of these variables. The particular redundancies that do occur within each of the six sets are noted below in the definition of the variables and the states they take. These redundancies were allowed to occur among these variables, rather than eliminating some of the variables or some of the variables' states, because each variable is important interpretively and, to be useful, all instances of its occurrence should be coded.

ARTIFACT TERMINOLOGY

The terms used in the data base to refer to artifact classes commonly correspond to the terms used by the excavators of the sites, but sometimes do not. Instances of lack of correspondence arise in part from the long period of time over which the sites were investigated-from the 1830s through the 1990s – and changes over this period in the names given to some artifact classes; at the same time, we needed to use one standard term for each artifact class consistently across sites. For example, the terms, breastplate and boatstone, were used throughout much of the period and we retained these names in the data base. In contrast, many different terms were used for bifacial points (e.g., spear point, spearhead, ceremonial point, blade, knife, instrument), and a standard suite of terms for given formal classes of points had to be devised. An additional reason why our terminology does not always match that of the excavators of sites is because the functions of some artifact classes were not known at the time of excavation, and appropriate functional names were not given to the classes in the excavators' reports (e.g., earspools, metal-jacketed panpipes; Ruhl 2005:697; Turff and Carr 2005:651).

The artifact classes that required the most frequent conversion of their names from those given by site excavators are bifacial points of various forms, and prismatic blades. To standardize the diverse terminology used in the literature, field notes, and museum records, we first surveyed these sources of information for illustrations of bifacial points and prismatic blades recovered from a large number of the Ohio Hopewell sites in the data base. From these illustrations, we then defined in modern archaeological terms six classes of bifacial points and prismatic blades that cover the full range

Table 8.2. Definition of Classes of Bifacial Points and Prismatic Blades Used in the Data Base

Odd, Asymmetrically Shaped Biface
A pointed biface defined by its asymmetrical shape upon visual inspection or written description. Large, small, or unknown in size.

Symmetrically Shaped, Large Biface
A pointed biface defined by its symmetrical shape and being larger than four inches from the tip of its point to the tip of its base upon visual or written description. It is not of the Ross Barbed style (see below). It lacks a Ross Barbed-like narrow stem, and possibly lacks a long Ross Barbed-like flaring blade with strong barbs. Notching and the existence of a stem are unnecessary to this class.

Ross Barbed Biface
A pointed biface that is defined generously, according to Griffin (1965:117) and Seeman (1995:150). It is symmetrically shaped. It generally is large, greater than four inches and usually between six and nine inches from the tip of its point to the tip of its base. Its stem is generally narrow, although a stem is not necessary to this class. It often, but not necessarily, has a flaring blade and strong barbs. "The secondary flaking of the blade is highly stylized, with long, shallow flakes struck at regular intervals perpendicular to the lateral edge, apparently with either a soft hammer or by indirect percussion" (Seeman 1995:150). Bifaces that have traits diagnostic of the Ross Barb type, such as a flaring blade and strong barbs, but that also are asymmetrically shaped are defined here as Odd, Asymmetrically Shaped Bifaces.

Unknown Shaped, Large Biface
A pointed biface defined by its being larger than four inches from the tip of its point to the tip of its base from written descriptions, but of unknown shape.

Projectile Point and/or Knife
A pointed biface defined by its symmetrical shape and its being smaller than four inches from the tip of its point to the tip of its base and of any shape, diagnostic or otherwise.

Prismatic Blade
A long, slender blade, at least twice as long as wide, and removed from a prismatic core.

of illustrated morphological variability of the points and blades and that are used as variable states in the data base (Table 8.2). We then surveyed the literature, field notes, and museum records again for a complete list of the various names given to each of the six classes of bifacial points and prismatic blades by specific excavators and museum personnel for specific sites, to the extent knowable from illustrations. Finally, we created a conversion table (Table 8.3) that links the diverse names given historically to bifacial points and prismatic blades by excavators and museum personnel to the six modern classes. Different mappings are listed between the old and modern terms for different sites, excavators, and curating museums. These different conversions were necessary because, historically, different terminologies were used by the different researchers at different sites, and even by the same researcher at different sites or times. The conversion table was then used to code in the data base the published and unpublished, old-term descriptions of the artifact contents of burials and ceremonial deposits in consistent, modern terms, even when illustrations of the artifacts were lacking.

Note in Table 8.3 that although excavators vary considerably among one another in the names they used to refer to each of the six modern categories of bifacial points and prismatic blades, and although the names used cross over among the six modern categories from excavator to excavator and from site to site, nevertheless for a *given* excavator at a *given* site, one or a few names were used consistently for each specific modern category of artifact. It was thus commonly possible for us to map antiquated verbal descriptions of instances of bifacial points and prismatic blades to their appropriate modern class.

In certain instances, firm equations could not be drawn between historic descriptions of bifacial points or prismatic blades and the six modern categories. Sometimes, an excavator at a site used the same term for several different modern categories of items. For example, in Table 8.2, it can be seen that Moorehead used the term, "blade", for large to small, oddly shaped, ceremonial bifaces, for large,

Table 8.3. Conversion of Terms Used for Bifacial Points and Prismatic Blades

Site	Citation	Oddly Shaped Biface	Symmetric Biface	Ross Barbed Biface	Unknown Biface	Points/Knives	Prismatic Blades
Ater	Baby 1948					leaf-shaped blade	flake knife, knife
Circleville	Atwater 1820				spearheads	arrowheads	
Ginther	Shetrone 1922, 1925					arrow point	flake knives
Harness (Liberty)	Mills 1907					arrowpoints	flint knives, flint knives (flakes), knives
Hopewell	Moorehead 1891, 1897b, 1922	blade, probably knives	blade	blade	spearhead	arrowhead, points	flake knife, knives
Hopewell	Shetrone 1922, 1923, 1924, 1925, 1926	spear point, ceremonial points	spear point	spear point, ceremonial spear point	spear point	blade, arrow point, point	flakes, flake knives
Hopewell	Squier and Davis 1848		instruments		spearhead	instruments	
Kohl	Whitman 1977		large ceremonial blade		large bifacially flaked blade	Snyder's point	unifacial flakes, classic Hopewellian unifacial flakes
Levina Russel	Baby 1963					Hopewell corner-notch projectile pts.	
Liberty	Seeman and Soday 1980					blade pieces, triangular bifaces	prismatic blade
Martin	Mortine and Randles 1978					stemmed pts. Typically Adena, point, late Adena stemmed pt.	prismatic blades

(*Continued*)

(*continued*)

Site	Citation	Oddly Shaped Biface	Symmetric Biface	Ross Barbed Biface	Unknown Biface	Points/Knives	Prismatic Blades
McKenzie	Moorehead 1899				spearhead	arrowhead	
McKenzie Area	Moorehead 1899					arrowhead	
Mound City	Mills 1922	curved knife	spear point	spears, spear point	spear point, spear, spearhead, large spear point	arrow point, spear point	knives, flake knives
Mound City	Squier and Davis 1848		spearhead		spearhead	arrow point, arrowhead	
North Benton	Magrath 1945					arrowhead, arrow point	flake knife
Seip	Shetrone 1925, 1926; Shetrone and Greenman 1931	ceremonial knives, blade	blade			arrow point, arrowhead	flake knives, knives, blades
Tremper	Mills 1916	spear point			spearhead	small spear point, arrowhead	flake knives
Turner	Metz 1882						flaked knives
Turner	Putnam 1886c					point, knives	flaked knives
Turner	Saville 1889, 1890					knife, shipped knife	flaked knives
Turner	Volk 1905						flaked knives

symmetrically shaped ceremonial bifaces, and for Ross Barbed style bifaces when he reported the artifact inventory from his excavations at the Hopewell site. Such ceremonial bifacial points at the site could be assigned to one or the other of these three modern categories in the data base only when they were illustrated. When they were not, they had to be assigned to the catch-all category of "unknown biface".

Within the HOPEBIOARCH data base, the six defined modern categories of pointed bifaces and prismatic blades are not used directly as variables but, rather, as the states taken by broader, culturally significant variables. These broader variables include quartz bifaces, obsidian bifaces, gem bifaces, other translucent bifaces, other flint bifaces, point effigies made of other fancy materials (mica, copper), prismatic blades made of fancy materials (obsidian, gems, other translucent materials), and other flint prismatic blades. For example, the distinction of quartz, obsidian, gem, and other translucent bifaces from ones made of flint distinguishes the activities of shaman-like practitioners in their spiritual practices from utilitarian subsistence and other tasks that might be performed by anyone (Chapter 4, Table 4.2).

PRESENTATION OF INFORMATION ON VARIABLES AND VARIABLE STATES

The remainder of this chapter presents the variables and variable states used in the HOPEBIOARCH data base. The variables in the data base are of several kinds, and depending on their kind, they are defined below, either individually or as groups of similar variables. First are qualitative variables that record each provenience; its intrasite location; whether it is a burial or ceremonial deposit; if a burial, the treatment, age, and sex of the human remains; formal and raw material characteristics of the grave; the forms and/or raw materials of artifact classes; and quantities of raw materials. Each of these variables takes diverse, alternative states. Second are largely quantitative variables that record the counts or approximate numbers of an artifact class that does not vary in raw material and varies little in form (e.g., copper breastplates), or the dimension of a tomb characteristic or artifact (e.g., grave length, celt length, celt weight). Both the first and second kinds of variables and most of the states they take are defined individually, below. Codes of variable states that are common to multiple variables of the first and second kinds are defined below once for all the variables rather than repetitively across them. The common variable states include materials such as copper and mica, counts and measures such as "about 100" items and "large" size, and human demographic states such as female, male, and adult. A third kind of variable, largely quantitative, records the counts or the approximate numbers of artifacts of those classes that are each diverse in their forms and raw materials, that are described for their forms and raw materials, yet that also require count descriptions. These count variables in the data base are coupled with, and follow to the right of, the variables that describe the formal and raw material characteristics of the artifact classes. The count variables are easily recognized in having a name similar or identical to those that describe the formal and raw material traits of the artifact classes, followed by the suffix "NUM". The count variables are not defined below, being self-obvious. A final kind of variable describes the positions of artifacts within a grave. These variables are described as a group in general terms, given their very similar nature.

Descriptions of variables that refer to an artifact class usually include a citation to one or more figures in Chapters 1 through 5 that illustrate the class. Variables that are redundant with others are noted. Functions of historic Woodland and Plains Native American artifacts that are analogous to the Ohio Hopewell ones coded in the data base are listed in Chapter 11, Table 11.3 and Appendix 11.8.

To aid users of the data base, Table 8.1 lists all of the 172 variables that pertain to provenience, age and sex estimates, tomb form, and artifact formal-material classes, the code name of each of these variables in the data base, and the number and percentage of proveniences that contain information on each class.

CODES FOR COMMON VARIABLE STATES

Materials

CP	=	copper
IR	=	iron
SI	=	silver
ST	=	stone
MI	=	mica
MS	=	mica sheet
PE	=	pearl
SH	=	shell
PY	=	pottery
BN	=	bone
WD	=	wood
BK	=	bark
CL	=	clay
SD	=	sand
GR	=	gravel
CH	=	charcoal
FB	=	fabric
SK	=	skins

Counts and Measures

F	=	about fifty
H	=	around one-hundred
LG	=	large amount
HS	=	hundreds
LT	=	a little
M	=	many (approx. 10 to unknown)
S	=	several (approx. 3–9)
TH	=	around one-thousand
TW	=	around twenty

Animal Body Parts

CL	=	real claw or talon
TC	=	real tooth and real claw
TD	=	real tooth, drilled or perforated
TE	=	real tooth or teeth, unmodified or modification unknown
TP	=	real tooth, pearl inset
ECB	=	effigy claw, bone
ECC	=	effigy claw, copper
ECM	=	effigy claw, mica
ECS	=	effigy claw, stone
ETB	=	effigy tooth, bone
ETC	=	effigy tooth, copper
ETM	=	effigy tooth, mica
ETU	=	effigy tooth, unknown material
JW	=	jaws (mandible and/or maxilla)
MX	=	maxilla

Demographic States (Age, Sex)

F	=	female
F?	=	probable female
F??	=	more likely female than male
M	=	male
M?	=	probable male
M??	=	more likely male than female
D	=	designation exists but disagreement among physical anthropologists about sex
AD	=	adult
YA	=	young adult
MA	=	middle-age adult
OA	=	old adult
AA	=	assumed adult (assumed to be an adult when no information is given and the burial represents an inhumation, a partial cremation, or a charred skeleton. Cremations are treated as unknown unless stated otherwise in publications, field notes, site reports, and etc.)
Q	=	questionable (designation exists, but was either performed on cremated remains using unknown techniques, or by a researcher whose results do not correlate well with others)

Blank Cells

In order to make scanning for information in the data base easier, cells were left empty in cases where an artifact was absent or the variable was irrelevant to a particular provenience. Most of the contextual variables, such as Site, Mound, Proven, and ArtPresAbs, contain an entry for every case in the data base. The demographic variables have many empty cells, either because no attempt was ever made to age and sex the human remains, or because the provenience is a non-burial ceremonial deposit. For burial proveniences, a blank cell means that no information is available about age or sex, either because no attempt was made to collect the information, or the results of analyses were inconclusive and not reported. Blank cells under the tomb form variables also indicate either incomplete reporting or non-burial proveniences. Among the qualitative variables relating to artifacts and raw materials, a blank usually means that the item was not described in any of the extant sources about a particular provenience, and thus the item can be treated as absent, with the recognition that a small number of these apparent absences could be due to incomplete reporting. Table 8.4 lists all of these variables and the meaning of blank cells for each.

Artifact count variables associated with a qualitative variable (e.g. ButtonNum) are not listed in Table 8.4, for the purpose of brevity. Blank cells for all of these variables mean that the count variable is not applicable because the item itself is absent from the provenience. Artifact position variables are also absent from Table 8.4, in order to be brief. Blank cells for these variables mean that sources provided no information about the positions of an artifact class relative to the human remains.

VARIABLES AND ASSOCIATED STATES

Listed and defined below are each variable and the states it takes in the data base, with two exceptions. Count variables that record the number or amount of a particular artifact type and that have the suffix NUM in their name are not defined because their meanings are clear. Variables that describe the positions of artifacts

Table 8.4. The Meaning of Blank Cells in the HOPEBIOARCH Data Base[1]

Variable Name	Unabbreviated Name	Meaning of Blank Cell
Site	Site	No Blanks
Mound	Mound	No Blanks
Proven	Provenience	No Blanks
PrimSource	Primary Source	No Blanks
Cluster1	Cluster 1	No Info/Not Applicable
Cluster2	Cluster 2	No Info/Not Applicable
Cluster3	Cluster 3	No Info/Not Applicable
	Overview Information	
BurialDep	Burial/Ceremonial Deposit	No Blanks
Treatment	Body Treatment	Non-Burial
ArtifAccum	Artifact Accumulation	No Blanks
MNI	Minimum Number of Individuals	Non-Burial
IndAssoc	Individuals Associated	No Info/Not Applicable
ArtPresAbs	Artifacts Present or Absent	No Blanks
	Demographic Information	
AgeCode	Age Code	No Info/Not Applicable
SexCode	Sex Code	No Info/Not Applicable
Age1	Age 1	No Info/Not Applicable
Age2	Age 2	No Info/Not Applicable
Age3	Age 3	No Info/Not Applicable
PhysAnthAge	Physical Anthropologist, Age	Not Applicable
Sex1	Sex 1	No Info/Not Applicable
Sex2	Sex 2	No Info/Not Applicable
Sex3	Sex 3	No Info/Not Applicable
PhysAnthSex	Physical Anthropologist, Sex	Not Applicable
PAagree	Physical Anthropologists Who Agree	Not Applicable
PAdisagree	Physical Anthropologists Who Disagree	Not Applicable
	Body Treatment, Tomb Form and Size	
FloorPrep	Floor Preparation	No Info/Non-Burial
WallPrep	Wall Preparation	No Info/Non-Burial

(*Continued*)

Table 8.4. ***(continued)***

Variable Name	Unabbreviated Name	Meaning of Blank Cell
CoverPrep	Cover Preparation	No Info/Non-Burial
BodyWrap	Body Wrapping	No Info/Non-Burial
Platform	Platform	No Info/Absent
Water	Water Barrier	No Info/Absent
WatPosit	Water Position	No Info/Absent
WatShape	Water Shape	No Info/Absent
GraveAreaQL	Grave Area Qualitative	No Info/Non-Burial
GraveAreaQT	Grave Area Quantitative	No Info/Non-Burial
GraveLength	Grave Length	No Info/Non-Burial
GraveWidth	Grave Width	No Info/Non-Burial
GraveOrien	Grave Orientation	No Info/Non-Burial
Shaman-like Practitioner's Paraphernalia, Probable or Possible		
QuartzCryst	Quartz Crystals	Absent
MicaSheet	Mica Sheets	Absent
QuartzDisc	Quartz Discoids	Absent
QuartzCone	Quartz Cones	Absent
ConeHemi	Cones/Hemispheres	Absent
QuartzBoat	Quartz Boatstones	Absent
Boat	Boatstone, Non-Quartz	Absent
QuartzCup	Quartz Cups	Absent
QuarColorPeb	Quartz or Colored Pebbles	Absent
Marble	Marbles	Absent
CopperBall	Copper Balls	Absent
Plummet	Plummets	Absent
FossilConc	Fossils/Concretions	Absent
TubeFuncUnk	Tubes, Function Unknown	Absent
Barracud	Barracuda Jaws	Absent
SharkTeeth	Shark Teeth	Absent
AlligTeeth	Alligator Teeth	Absent
Rattle	Rattlers/Tinklers	Absent
Fan	Fan Effigies	Absent
CPNose	Copper Nostril Inserts	Absent
Mushroom	Mushroom-Shaped Objects	Absent
FlyHuman	Flying Human	Absent
Owl	Owl Effigies	Absent
Supernat	Supernatural Effigies	Absent
GoatHorn	Goat Horn	Absent
Awl	Awls, Bone/Antler	Absent
QuartzBiface	Quartz Bifaces	Absent
GemBiface	Gem Bifaces	Absent
OtherTransBiface	Other Translucent Bifaces	Absent
ObsidBiface	Obsidian Bifaces	Absent
FancyPt	Fancy Points	Absent
Weapon	Weapon Effigies	Absent
FancyPrismBlade	Fancy Prismatic Blades	Absent
QuartzNum	Number of Quartz Object Types	Not Applicable
Other Ceremonial Paraphernalia		
BigPipe	Big Smoking Pipes	Absent
SmallPipe	Small Smoking Pipes	Absent
Panpipe	Panpipes	Absent
Flute	Flutes/Whistles	Absent
PaintEquip	Painting Equipment	Absent
OchrePaint	Ochre or Paint	Absent
StoneTablet	Stone Tablets	Absent
FancyPot	Fancy Pottery Vessels	Absent
TortShellOrn	Tortoise Shell Ornaments	Absent
TrophSkJw	Trophy Skulls/Jaws	Absent

(*Continued*)

Table 8.4. (*continued*)

Variable Name	Unabbreviated Name	Meaning of Blank Cell
TrophFg	Trophy Fingers	Absent
TrophEar	Trophy Ears	Absent
TrophHn	Trophy Hands	Absent
HumanM	Human Figures, Male	Absent
HumanF	Human Figures, Female	Absent
HumanUk	Human Figures, Unknown Sex	Absent
AnimImage	Animal Images	Absent
CarveBone	Carved Bone	Absent
Paraphernalia and Role Markers of Nonshaman-like Leaders, Sodality Leaders and Members, and Other Important Persons		
Headplate	Headplates	Absent
CeltCopp	Celt, Copper	Absent
CeltAreaKnown	Celt Area, Known	No Info/No Copper Celts
CeltAreaAll	Celt Area, All	No Info/No Copper Celts
CeltAreaLgst	Celt Area, Largest	No Info/No Copper Celts
CeltAreaCode	Celt Area Code	No Info/No Copper Celts
TotCeltWeight	Total Celt Weight	No Info/No Copper Celts
CeltWtKnown	Celt Weight, Known	No Info/No Copper Celts
HeavyCelt	Heaviest Celt	No Info/No Copper Celts
LightCelt	Lightest Celt	No Info/No Copper Celts
LongCelt	Longest Celt	No Info/No Copper Celts
ShortCelt	Shortest Celt	No Info/No Copper Celts
CeltIron	Celt, Meteoric Iron	Absent
CeltCoal	Celt, Cannel Coal	Absent
CeltStone	Celt, Stone	Absent
Conch	Conch Shell Vessel	Absent
ShellSpoon	Shell Spoons	Absent
WandBaton	Wands/Batons	Absent
Breastplate	Breastplates	Absent
BPTotalArea	Breastplate Total Area	No Info/No Breastplates
BPTotalNum	Breastplates, Total Number	Not Applicable
BPLongest	Longest Breastplate	Not Applicable
BPShortest	Shortest Breastplate	Not Applicable
BPThickThin	Breastplate, Thick or Thin	No Info/Not Applicable
Earspool	Earspools	Absent
CPCutout	Copper Cutouts	Absent
MicaCutout	Mica Cutouts	Absent
ShellCutout	Shell Cutouts	Absent
Crescent	Crescents	Absent
PendantGorg	Pendants/Gorgets	Absent
Button	Buttons	Absent
	Animal Power Parts that Mark Clans	
RaptorPP	Raptor Power Parts	Absent
WolfDogPP	Wolf/Dog Power Parts	Absent
BigCatPP	Big Cat Power Parts	Absent
FoxPP	Fox Power Parts	Absent
ElkPP	Elk Power Parts	Absent
DeerPP	Deer Power Parts	Absent
RaccoonPP	Raccoon Power Parts	Absent
OpossumPP	Opossum power Parts	Absent
BadgerPP	Badger Power Parts	Absent
MarmotPP	Marmot Power Parts	Absent
GroundhogPP	Groundhog Power Parts	Absent
SmMamPP	Small Mammal Power Parts	Absent
BeaverPP	Beaver Power Parts	Absent

(*Continued*)

Table 8.4. ***(continued)***

Variable Name	Unabbreviated Name	Meaning of Blank Cell
BearPP	Bear Power Parts	Absent
KnSpeciesPPNum	Known Species Power Part Number	Not Applicable
SpeciesUnkPP	Species Unknown Power Parts	Absent
	Personal Decoration and Wealth	
Bead	Beads	Absent
BeadNeck	Bead Necklaces	Absent
BraceAnklet	Bracelets/Anklets	Absent
BeadString	Bead Strings	Absent
HairSkew	Hair Skewers	Absent
	Utilitarian Objects Not Obviously Ceremonial	
Container	Containers	Absent
NeedleBodkin	Needles or Bodkins	Absent
BoneAntPointKnife	Bone/Antler Points/Knives	Absent
CopperRod	Copper Rods	Absent
HornBiface	Hornstone Bifaces	Absent
OtherFlintBiface	Other Flint Bifaces	Absent
OtherFlintPrisBlad	Other Flint Prismatic Blades	Absent
MiscIRTool	Miscellaneous Iron Tools	Absent
MiscCPTool	Miscellaneous Copper Tools	Absent
MiscNMTool	Miscellaneous Non-Metal Tools	Absent
	Rare, Miscellaneous Objects: Utilitarian, Decorative, or Ceremonial	
MiscCPObj	Miscellaneous Copper Objects	Absent
MiscShellObj	Miscellaneous Shell Objects	Absent
MiscObsid	Miscellaneous Obsidian Objects	Absent
MiscStone	Miscellaneous Stone Objects	Absent
MiscUtilFancyObj	Miscellaneous Utilitarian or Fancy Objects	Absent
	Raw Materials and Manufacturing Debris	
BoneMisc	Miscellaneous Animal Bone	Absent
CannelRaw	Cannel Coal, Raw	Absent
CoppRawScrap	Copper, Raw & Scrap	Absent
FlintRawScrap	Flint, Raw & Scrap	Absent
GalenRaw	Galena, Raw	Absent
GoldScrap	Gold Scrap	Absent
GraphRaw	Graphite, Raw	Absent
HematRaw	Hematite, Raw	Absent
IronRaw	Iron, Raw	Absent
MicaScrap	Mica Scrap	Absent
PearlRaw	Pearl, Raw	Absent
PyriteRaw	Pyrite, Raw	Absent
SilverRaw	Silver, Raw	Absent
TortShlRaw	Tortoise Shell, Raw	Absent
QuartzScrap	Quartz Scrap	Absent
	Arifact Location Relative to the Body (Position)	
Variable + P1	Primary Position of Item	No Info/Not Applicable
Variable + P2	Secondary Position of Item	No Info/Not Applicable
Variable + P3	Tertiary Position of Item	No Info/Not Applicable

[1] "Blanks" refers to empty cells in the data base. "No Info" is used when reporting for a particular variable type is believed to have been poor or inconsistent among the various excavators. This designation primarily applies to the demographic variables and many of the tomb form variables. "Not Applicable" is used when a variable is sometimes not relevant for a particular provenience. For example, the name of the physical anthropologist who made an age determination for a particular individual (PhysAnthAge) is not applicable when no such determinations are known to have been made. A variable might also be not applicable because the definition limits the contents to certain sites (e.g. Cluster1) or some subset of the total data base (e.g. BPThickThin). "Absent" is used primarily for artifacts. It indicates that the artifact was not mentioned in records relating to the site. "No Blanks" is used when there is an entry present for every case in the data base. When two terms are used for the same variable (e.g. No Info/Non-Burial) it means that one or the other applies, depending on the case. For the SexCode variable, this would mean that there is either no sex information available, or the case is a non-burial ceremonial deposit.

within a grave are described in only general terms because they are all alike in the states they can take.

Site (Hopewell Site Name)

Description:

Name of site as given in most recent site report(s), field notes, or accession records, or as commonly referred to in the literature.

Variable States:

Ater, Boblett, Bourneville, Campbell, Circleville, Esch, Finney, Fortney, Ginther, Glen Helen, Headquarters, Hazlett, Hopeton, Hopewell, Irvin Coy, John Boyle's Farm, Joseph Dayrs' Farm, Kohl, Lee, Levina Russell, Manring, Marietta, Martin, McKenzie, Melvin Phillips, Miami Fort, Mound City, North Benton, Pence, Perry Township, Purdom, Richard Shumard's Farm, Rockhold, Rutledge, Seip, Shilder, Shinkal, Snake Den, Stone, Stubbs, Tremper, Turner, Twin, West, Wright-Holder, Yant, *plus*

Fort Ancient Area	=	a mound in the vicinity of the Fort Ancient Earthwork
Liberty	=	the Edwin Harness Mound and Russell Brown Mounds of the Liberty Group
Marietta Area	=	a mound in the vicinity of the Marietta Earthwork
Newark	=	Wells Mounds
Old Town	=	Frankfort, an alternate name for the site.

Mound (Mound/Cemetery)

Description:

Mound or cemetery number, letter, or other designation as reported in site report, field notes, or accession records. If no number was assigned and only one mound was excavated at the site, it is called Mound 1. The equivalency of Shetrone's (1926a), Moorehead's (1922), and Squier and Davis' (1848) mound numbers for the Hopewell site are provided in Table 7.6.

Variable States:

Various numeric and alphanumeric codes

Proven (Provenience)

Description:

Burial or ceremonial deposit identifier as described in the site report, field notes, site maps, or accession records. These identifiers are usually numbers or letters, preceded by a descriptive word such as "Burial", "Skeleton", or "Altar". Ceremonial deposit identifiers tend to be more descriptive (e.g. Small Crematory, Central Deposit, Copper Deposit), whereas those for burials tend to be more formulaic (Burial 2, Skeleton 6, Crematory Basin 1, etc.). For sites with only one series of graves excavated by one archaeologist, "Burial" is normally used as the default label unless the excavator consistently applied some other label, such as Cremation, Skeleton, or Feature. For sites with two or more series of graves excavated by two or more archaeologists (e.g., Moorehead and Shetrone at the Hopewell Site; Putnam, Saville, Volk at the Turner site), the multiple series of graves are distinguished. Thus, at Hopewell, one series of graves is labeled using Moorehead's term, "Skeleton", whereas the second series is labeled using Shetrone's term, "Burial". For the Turner site, lowercase letters are appended to the burial number in order to distinguish among the various excavations.

When a long series of burials is described but not labeled in any way in published or unpublished sources, numbers are assigned in the order that they appear in the source. At the Liberty Earthwork, burials excavated by Mills and Moorehead at the Edwin Harness Mound were numbered consecutively by the excavators, but many of the descriptions of individual burials, or of groups of burials with the same attributes, do not include burial numbers. In these cases, burial numbers were assigned consecutively beginning with the last specific burial number mentioned in the source. For example, if Mills (1907) specifically discussed Burial 100, and then later described three skeletons without numbering them, they were assigned numbers 101–103.

In cases where most of the burials are part of a sequence but a few were left out of the numbering scheme, or when only one or two burials exist for a site and were not numbered in any way, a code identifying the burial was assigned. These codes have three parts: (1) the author's name, (2) the publication date followed by a colon, and (3) the page number. For example, "Shetrone 1926:38" would designate an unnumbered burial from Shetrone's 1926 site report, page 38. If there are two unnumbered skeletons in a grave, a lowercase "a" and "b" is affixed to the ends of their codes, identifying the skeletons in the order they are mentioned in the source. For example, "SH1926:38b" would designate the second unnumbered individual mentioned in Shetrone's 1926 site report, on page 38. If an unnumbered skeleton was found in field notes, the code for it includes: (1) the author, (2) the year, and (3) the date in the notes. For example "SH1922:9–2" identifies an unnumbered burial mentioned in Shetrone's 1922 field notes on September 2nd.

When two or more individuals are reported in the same grave in a publication, or in the field notes, but only one burial number is given, a capital letter is affixed after each burial number beginning with the letter A. Thus, Burials 6A and 6B in the same mound would represent a double burial collectively called Burial 6 by the excavator. Furthermore, every attempt was made to assign artifacts in multi-person graves to specific individuals. Artifacts clearly associated with one individual are coded for that skeleton alone, as one would code the grave inclusions in a single burial. For artifacts that could not be assigned to a particular skeleton with a fair degree of certainty, the variable state describing the artifact is followed by an asterisk in the record for the "A" burial, and an asterisk alone appears in place of the variable state describing the artifact under the "B" burial and any additional burials in the grave.

PrimSource (Primary Source)

Description:

Published or unpublished material that served as the primary source of information for the provenience. When a source has multiple authors, only the first author's name is listed. A bibliography listing sources by site can be found at the end of Chapter 7.

Cluster1

Description:

Designation for a cluster of burials sharing a defined space, such as a group surrounded by a ring of postholes, a group under a primary mound within a larger mound, and so on. These clusters are the ones assigned by Greber (1976) and Greber and Ruhl (1989) to Hopewell Mound 25, the Seip-Pricer Mound, and the Ater mound only, with a modification to Burial 276 based on observations by Shetrone (1923) in his August 16th field notes. If cluster membership is somewhat uncertain, the Cluster1 entry denotes the cluster to which a particular burial most likely belongs.

Cluster2

Description:

See Cluster1 description above. Second possible cluster to which a burial belongs if cluster membership is uncertain. In addition to the clusters identified by Greber (1976), Burials 2–7 are included as a likely cluster (Cluster A) based on descriptions in Shetrone and Greenman (1931).

Cluster3

Description:

See Cluster1 description above. Third possible cluster to which a burial belongs if cluster membership is uncertain.

BurialDep (Burial/Ceremonial Deposit)

Description:

Designates whether the provenience listed is best described as a burial, a ceremonial deposit of artifacts outside of a burial context, or a miscellaneous ceremonial feature that did not fit into either of these definitions (e.g., the Horseshoe Feature at the North Benton site). A burial is a provenience containing enough skeletal material to suggest that it was an intentional interment of a human body, the disarticulated skeletal remains of an individual following decomposition, or their equivalent in ashes. A distinction is made between normal burials containing one or a small number of individuals, and commingled burials in which many individuals appear to have been interred together and not treated as discrete burials (e.g. the communal burial areas at the Tremper site). Only burials of Middle Woodland age are included in the data base. Burials that were placed in capping layers of a mound well after its floor had been used, after the Middle Woodland period, are excluded (e.g. “Intrusive Culture” burials, as in Mills 1922:435, 462, 464, 497, 506, 568–582). A ceremonial deposit, often called a “cache” in the early excavation reports on classic Scioto Hopewell sites, is a collection of several artifacts, whether of the same or different type, that appears to have been intentionally placed together and buried without accompanying human remains. Individual skulls or jaws that show evidence of intentional modification (e.g. drilling for suspension, etc.) are treated as artifacts. Thus, the presence of only intentionally modified remains with a deposit of artifacts defines the provenience as a ceremonial deposit rather than a burial. Accumulations or deposits containing only faunal or other organic elements, fragments of a single artifact type that appear to have been utilitarian (e.g. plain pottery), or both are not included in the database. Exceptions are deposits of a single type of utilitarian object that were clearly arranged with purpose (e.g. the Pottery Cache in the Ginther mound). Special deposits, such as fancy pottery found deposited in a crematory basin containing no human bone, were included in the data base as a ceremonial deposit. Artifacts that occurred individually and not as part of a specially prepared deposit were not included in the data base. A borderline case is the Pipe Deposit in Esch Mound 1. This deposit contained a single, large effigy pipe, but its location at the mound center and just above the stone cover for a burial seemed to warrant its inclusion in the data base as a ceremonial deposit.

Variable States:

U, plus

B	=	burial
C	=	ceremonial deposit
CM	=	commingled or mass burial
M	=	miscellaneous

Treatment (Body Treatment)

Description:

Denotes whether the body was inhumed with or without burning, and if burned, the extent of the burning based exclusively on descriptions in the site reports, field notes, or accession lists.

Variable States:

U, plus

C	=	cremation
CH	=	charred skeleton
CH?	=	probably charred skeleton
H	=	inhumation
HC	=	half cremation
PC	=	partial cremation

ArtifAccum (Artifact Accumulation)

Description:

An accumulation of artifacts meeting one or more of the following three criteria: (1) It is a collection of several artifacts, of the same or different type, that appears to have been intentionally placed together and buried without accompanying human remains, fitting the definition of a ceremonial deposit in the BurialDep variable, above; (2) it is a collection of a large diversity of artifact classes (15 or more) placed with a burial; and/or (3) it is a collection of a large number of artifacts that are of a single class and that stand out numerically compared to the numbers found in other burials (e.g., 10 earspools, 10 awls).

Variable States:

P	=	present
A	=	absent

MNI (Minimum Number of Individuals)

Description:

Minimum number of individuals in a particular burial context that appear to be in the same grave, usually because they share the same platform or are lying immediately adjacent to one another. Communal burial within a single large structure (e.g. Fort Ancient Area, Burials 1–15) was not sufficient to treat the burials as belonging to a single grave, as these skeletons could have been interred individually over an extended period of time. The MNI is based on descriptions in site reports and field notes, and not on skeletal analyses done after excavation. The MNI count for a grave where multiple individuals are listed (i.e., multiple rows of the data base) is recorded for the first individual (row), only. An asterisk is recorded for all subsequent individuals (rows) associated with the first. For cremations, the MNI is generally considered to be one individual unless the amount of cremated bone is noted to be large, or to probably contain multiple individuals. For large cremations, the MNI reflects the excavator's estimate of the number of individuals. If the excavator only noted that there appeared to be more than one individual, then two individuals are reported.

Variable States:

Specific numbers, S, M, HS, U

IndAssoc (Individuals Associated)

Description:

Abbreviated provenience designation(s) for other individual(s) in the same grave or burial context as the given skeleton.

Variable States:

Various provenience designations

ArtPresAbs (Artifacts Present/Absent)

Description:

Denotes whether the site report or field notes state that artifacts were definitely present or definitely absent, as opposed to simply no mention being made of artifacts.

Variable States:

P	=	present
AA	=	apparently absent (no artifacts mentioned)
DA	=	definitely absent (explicitly stated in site report, etc.)

AgeCode

Description:

Our summation of the age range for the skeleton, based on analyses done by one or more physical anthropologists, or reported by the excavators in site reports or field notes. When we are confident in the age determinations because of agreement among physical anthropologists or because the techniques used appear to be fairly accurate (see Chapter 9), the skeletons are assigned to the following categories: Child (0–12), Adolescent (13–20), Young Adult (21–35), Middle Adult (36–49), and Old Adult (50+). These are drawn from the numeric age ranges or categorical ages reported under the Age1 and Age2 variables. When we are less confident, because of disagreement among researchers or a lack of knowledge of the techniques used, a less precise variable state, such as "AD" for "adult" is used. All inhumations, except those that are commingled, are assumed to be adults unless otherwise stated by the excavator or later researchers, since non-adults are generally easy to identify in skeletons (see Chapter 9), and excavators appear to have normally mentioned child skeletons when they encountered them. This coding of adult age was used for "charred" skeletons and "partial cremations" as well as unburned inhumations because charring and partial cremation imply that much of the skeleton was not consumed by fire. Cremated individuals were not assumed to be adults. Individuals over the age of 25 with specific age ranges listed under either the AGE2 or AGE3 variables were simply placed in the "adult" category for the AGECODE variable, because of uncertainty about the accuracy of these age estimates.

Variable States:
AA, AD, Q, plus
A = 0–12 years
B = 13–20 years
C = 21–35 years
D = 36–49 years
E = 50+ years

SexCode

Description:

Our summation of the sex of the skeleton, based on analyses done by one or more physical anthropologists, or reported by the excavators in site reports or field notes. When we are confident in the sex determinations because of agreement among physical anthropologists or because the techniques used appear to be fairly accurate (see Chapter 9), the skeletons were assigned to either the male or female category. When we are less confident, because of disagreement among researchers or a lack of knowledge of the techniques used, a less precise variable state (e.g. M? or F??) was used, or the variable was left blank. Individuals listed as female under the SEX2 variable are coded under SEXCODE as "F?" and those listed as male under the SEX2 variable are coded as "M?", to indicate a degree of uncertainty about the sex determination. Individuals listed as "F?" or "M?" under the SEX2 variable are coded respectively as "F??" or "M??" under SEXCODE, because uncertainty about the assessment is felt to be too high to warrant inclusion in some analyses. Assessments under the SEX3 variable are not included under SEXCODE, as the uncertainty about these assessments is probably too great to warrant inclusion in most analyses.

Variable States:
D, F, F?, F??, M, M?, M??, Q

Age1

Description:

Ages determined based on solid criteria, or determined by anthropologists whose results correlate well with those determined by solid criteria (see Chapter 9). Subadult designations are accepted by all investigators except in cases of extreme disagreement because they can be easily aged by developmental indicators. Because many of the best aging techniques are relatively new, many of the older determinations (based mostly on the cranium or dentition, for example) are excluded from this category; they often correlate poorly with determinations made from the pelvis. Those determinations known to have been made from the pelvis (e.g. many of the determinations by Johnston, Cadiente, and Giesen), and any assessments made by physical anthropologists after 1990 when current standards were published, are recorded here. When multiple age ranges are reported, the age range with the greatest agreement among researchers is reported. Cremations are never recorded under Age1 except in the case of subadults.

Variable States:
Various age ranges, numeric or categorical

Age2

Description:

Ages that do not meet the criteria for entry into the Age1 variable but which still appear to have merit. These ages are generally not determined recently, and are sometimes not determined using the pelvis. In other cases, the technique used is simply unknown. These ages are best used as minimum ages, recognizing that the true ages could be older but are probably not much younger (see Chapters 9, 10).

Variable States:
Various age ranges, numeric or categorical

Age3

Description:

Reserved for age information that has been recorded but which is of questionable accuracy. Examples include ages from fully cremated individuals, ages determined by an investigator whose assessments correlate poorly with others, or ages determined by dental wear alone and not as part of a formal dental wear seriation study. These data are included only for the sake of completeness.

Variable States:
Various age ranges, numeric or categorical

PhysAnthAge (Physical Anthropologist, Age)

Description:
Name of the physical anthropologist or excavator whose age determination is considered the most accurate. Names of excavators are used when the information is reported in site reports or field notes and no person is credited with making the determination.

Variable States:
Various researchers' last names

Sex1

Description:
Sexes determined based on solid criteria, or determined by anthropologists whose results correlate well with those determined by anthropologists using solid criteria (see Chapter 9). These include determinations made on inhumations by Johnston, Konigsberg, Pickering, Reichs, Sciulli, Shetrone, and Snow, because of the generally high levels of agreement among these researchers. They also include sexes from the pelvis by Cadiente and Giesen, and sexes determined by Santa Luca using unknown techniques but which correlate well with those of Cadiente and Giesen. In addition, Cadiente's femoral head diameter sexes made using criteria generated from the Turner sample itself are included as they also correlate very well with the pelvic determinations (see Chapter 9).

Variable States:
F, F?, M, M?

Sex2

Description:
Sexes that do not meet the criteria for entry into the SEX1 variable but which still appear to have merit. For example, determinations made by Cadiente and Giesen on the skull, Hooton's laboratory determinations based on unknown criteria, Konigsberg's sexes from cremated material but based minimally on presence or absence of the preauricular sulcus, and the occasional assessments by excavators that could not be correlated with any other researcher's determinations.

Variable States:
F, F?, M, M?

Sex3

Description:
Reserved for sex information that has been recorded by various individuals but which is of questionable accuracy. Examples include sexes from cremated individuals where the techniques used are unknown, sexes determined by an investigator who shows poor correlation with others, or sexes for skeletons on which there is serious disagreement among several researchers. These data are included only for the sake of completeness.

Variable States:
F, F?, M, M?

PhysAnthSex (Physical Anthropologist, Sex)

Description:
Name of the physical anthropologist or excavator whose sex determination is considered most accurate. Names of excavators are used when the information is reported in site reports or field notes and no person is credited with making the determination.

Variable States:
Various researchers' last names

PAagree (Physical Anthropologists Who Agree)

Description:
Number of physical anthropologists or site excavators agreeing with the sex determination made by the physical anthropologist listed under PhysAnthSex.

Variable States:
Specific numbers

PAdisagree (Physical Anthropologists Who Disagree)

Description:

Number of physical anthropologists or site excavators disagreeing with the sex determination made by the physical anthropologist listed under PhysAnthSex.

Variable States:

Specific numbers

FloorPrep (Floor Preparation)

Description:

Description of the materials used to construct/cover the floor of the grave, or the form of the floor of the grave (e.g. a hole dug in the mound body or mound floor). This description excludes burial platforms, which are indicated under a separate variable.

Variable States:

CH, CL, GR, MI, SD, ST, plus

CB	=	crematory basin
GC	=	gravel + charcoal
HL	=	hole or depression
NP	=	no preparation
TS	=	in tree stump
SS	=	some stone
A	=	HL + MI
B	=	SD + ST
C	=	GR + ST
D	=	HL + ST
E	=	HL + CH
F	=	GR + CL

WallPrep (Wall Preparation)

Description:

Description of the materials used to construct the walls of the grave, or the form of the walls of the grave (e.g. three logs high).

Variable States:

CL, ST, plus

2L	=	two logs high
3L	=	three logs high
FL	=	flint enclosure
IW	=	burial cavity in stone wall within a mound
LG	=	logs, at least 1 high
LS	=	LG + SS
MLV	=	multi-burial log vault containing five or more burials
NL	=	no logs (Hopewell Site only)
NP	=	no preparation
SEC	=	stone enclosure for multiple burials
SR	=	stone ring
SS	=	some stone
A	=	3L + ST
B	=	LG + ST
C	=	2L + ST
D	=	2L + SS

CoverPrep (Cover Preparation)

Description:

Description of the materials used to construct the cover over the grave, or the form of the cover of the grave. The term "excavated cave" refers to the appearance of a grave in field photographs that show slumped soil above a collapsed tomb. The particular burials blanketed together under a given primary mound within Hopewell Mound 25 were determined from Shetrone (1926a) and Greber and Ruhl (1989:43, 44, 51–52).

Variable States:

CH, CL, FB, GR, MI, SD, ST, plus

EC	=	excavated cave (only proveniences for which photos are available)
GC	=	GR + CL
NP	=	no preparation
PM	=	individual primary mound
PM1	=	primary mound #1 in Hopewell Mound 25
PM2	=	primary mound #2 in Hopewell Mound 25
PM3	=	primary mound #3 in Hopewell Mound 25
PM4	=	primary mound #4 in Hopewell Mound 25
PM5	=	primary mound #5 in Hopewell Mound 25
SS	=	some stone
A	=	CL + PM2
B	=	ST + FB + PM
C	=	EC + PM5
D	=	EC + PM6
E	=	EC + PM4
F	=	ST + PM
G	=	MI + PM
H	=	ST + GR
I	=	ST + SD
J	=	GR + SD
K	=	PM + GR
L	=	PM + EC
M	=	CL + PM
N	=	FB + PM
O	=	CL + PM + LG
P	=	MI + ST

BodyWrap (Body Wrapping)

Description:

Materials above, below, or surrounding the body that probably were designed as a layer between the body and the floor, walls, or cover of the grave. These include bark above or below the body, skin mats, and so on.

Variable States:

BB	=	bark below body
BC	=	bark cover on body
BK	=	bark, above and/or below
FB	=	fabric above
SB	=	skins below body
SK	=	skins, above and/or below
NP	=	no preparation
NW	=	no wrap visible (only proveniences for which photos available)
A	=	BB + SB + FB

Platform

Description:

Denotes whether a burial platform is mentioned or suggested in the site report, field notes, or field photographs.

Variable States:

P	=	present

Water (Water Barrier)

Description:

An interpretive category that denotes whether any set of artifacts or natural materials placed in a grave may have been so interred as to act as a water barrier, much like the water barriers known to exist around some Adena mounds (Carr 1999; Hall 1976b). Materials that might signify a water barrier are those that come from water or have a color or shine that might represent water, such as mica, shells, pearls, limestone, light colored rocks and sand. Clay might also be associated with water but was excluded from this variable. Sandstone slabs were excluded because of their generally dark color. This variable is not mutually exclusive of Mica Sheet, Pearl Raw, and Conch (see below, MicaSheet, PearlRaw, Conch). (e.g., Figures 5.3A–E)

Variable States:

MI, PE, SH, SD, plus

GA	=	galena
LT	=	light-colored stone
MS	=	mica sheet
OC	=	ocean shell container
P	=	possible water barrier, non-stone
PLT	=	possible light-colored stone water barrier
A	=	LT + SH
B	=	OC + MS
C	=	MI + GA
D	=	MI + PLT
E	=	LT + SD

WatPosit (Water Position)

Description:

Location of the set of water barrier artifacts relative to the remains, such as surrounding the remains, beneath the remains, and so on.

Variable States:

A	=	surrounding human remains
B	=	below human remains
C	=	above human remains
D	=	surrounding human remains and below
E	=	surrounding human remains and above
F	=	surrounding, above, and below human remains
G	=	beside body
H	=	near head
S	=	platform edge

WatShape (Water Shape)

Description:

General shape of the set of water barrier artifacts if a line were to be drawn between adjacent artifacts in a connect-the-dots fashion.

Variable States:

U, plus

L	=	line of objects beside body
O	=	outlining body
R	=	round or oval
S	=	square/rectangular

GraveAreaQL (Grave Area Qualitative)

Description:

Subjective size of the grave relative to others at the same site as stated in the site report or field notes. These entries are most often based on rough visual assessment by the different excavators, with likely differences among them in what constitutes a "large" versus a "small" grave.

Variable States:

LG	=	large
MD	=	normal/average
SM	=	small

GraveAreaQT (Grave Area Quantitative)

Description:

Calculated floor area of the grave, regardless of the number of individuals in the grave, in square feet. The grave areas were calculated from length and width measurements for rectangular graves, and from diameters when graves were more circular. For the Ater site, grave sizes were recorded from Baby's (1948) field notes. The grave areas for Seip were recorded primarily from Shetrone's (1925, 1926) field notes. However, Greber (1976:Table 2) reported additional grave areas for the Seip site. These additional values are recorded in the database and preceded by a "#" sign. There were a few discrepancies between the grave area data reported by Greber (1976:Tables 1–3) and the site field notes for the Ater and Seip sites. In such cases, grave areas from the field notes were used. The grave areas for the Putman proveniences at the Turner site were recorded from Greber (1976:Table 3). All other grave areas came from the relevant field notes or site reports associated with each site.

GraveLength

Description:

Long dimension of rectangular grave, or diameter (di) of circular grave, in feet. Diameters are indicated by a number followed by "di". Where available, these data were used in calculating GraveAreaQT. Graves with length and width data were assumed to be rectangular, while those with diameters were assumed to be circular.

GraveWidth

Description:

Width of rectangular grave in feet. Where available, these data were used in calculating GraveAreaQT. Graves with length and width data were assumed to be rectangular.

GravOrien (Grave Orientation)

Description:

Compass direction in which the head is pointed, based on descriptions in field notes and site reports as well as information taken from site maps. If the burial is a cremation, the state represents the long axis of the grave in which the cremation occurs, if known (e.g., east-west). When a disagreement exists between grave orientations listed in the site report or field notes and the orientations shown on maps, the report or notes were given precedence unless there was good reason to believe the maps were more accurate. Grave orientations for burials excavated by Shetrone from Mound 25 at the Hopewell Site are based on his published field map (Shetrone 1926a). The arrow on Moorehead's field map for Mound 25 is roughly ninety degrees clockwise from Shetrone's (1926a) map arrow, such that a northern orientation on Moorehead's map is equivalent to a western orientation on Shetrone's map. The main mound axis of Shetrone's (1926a) map corresponds with Greber and Ruhl's (1989) map, and is therefore assumed to be the correct one. Also, note that grave orientations depicted in Greber and Ruhl's (1989) map do not always correspond with Shetrone's and Moorehead's field maps.

In the data base, head orientations for the burials that Moorehead excavated in Mound 25 at the Hopewell site are limited to burials for which head orientation is mentioned in the field notes (Moorehead 1891). Head orientations shown on his published map of the mound floor (Moorehead 1922) and his unpublished field maps (Moorehead 1891) are not included because there is, in general, too much inconsistency between them and the orientations described in the field notes. This is the case for the unpublished maps that Moorehead drew of the individual cuts he made through the mound in addition to his unpublished and published overview map. For example, Skeletons 260–261 in Moorehead's Cut No. 3, and Skeleton 248 in Cut No. 2, are depicted on Moorehead's Mound 25 map as having had their heads facing the same direction (northwest). Because of the problem with the north arrow on Moorehead's map, this direction would be southwest on Shetrone's map. However, according to the field notes, Skeletons 260–261 and Skeleton 248 had their heads oriented in different directions: Skeletons 260–261 to the west, compared to Skeleton 248 to the southeast. That would be a difference of approximately 120 degrees between the two burials. Because of a number of such inconsistencies, it would be counterproductive to attempt to integrate into the data base the head orientations that Moorehead drafted on his maps with the head orientations described in the field notes. It should be noted, however, that although the field notes are given precedence, it is possible that the map is actually the more accurate source.

Variable States:

N	=	north
NS	=	north-south
NE	=	northeast
NESW	=	northeast-southwest
NW	=	northwest
NWSE	=	northwest-southeast
S	=	south
SE	=	southeast
SW	=	southwest
E	=	east
EW	=	east-west
W	=	west

QuartzCryst (Quartz Crystals)

Description:

Number of quartz and other translucent stone crystals that have not been worked (e.g., Figure 4.1F).

Variable States:

Specific numbers, S, M

MicaSheet (Mica Sheet)

Description:

Cut or uncut sheets or multi-layered books of mica, including all objects in the site report or field notes described as "mica mirrors". In contrast, smaller pieces of mica that appear to have not been cut or formed into an identifiable object, as well as small fragments of mica that are probably too small to have served as raw material for a mica cutout, are coded below under "Mica Scrap." This variable is not mutually exclusive of Water Barrier (see above, Water) (e.g., Figures 1.9, 4.1G, 4.16).

Variable States:

MB	=	mica book(s) (multi-layer plates of mica)
MC	=	cut mica sheet(s)
MS	=	mica sheet(s)
A	=	MC + MS

QuartzDisc (Quartz Discoid)

Description:

Number of items described in the site report or field notes as being "discoidal-shaped" objects of quartz.

Variable States:

Specific numbers

QuartzCone (Quartz Cone)

Description:

Number of solid, cone-shaped objects made of quartz (e.g., Figure 4.1H).

Variable States:

Specific numbers

ConeHemi (Cone/Hemisphere)

Description:

Number of objects described in the site report or field notes as being shaped like a "cone" or "hemisphere", regardless of size. Cones are actually subconoidal rather than pointed at the top. Cones may be solid or hollow, whereas hemispheres are solid. Excludes quartz cones (see above, QuartzCone) (e.g., Figures 4.1F, 4.1G).

Variable States:
Specific numbers, S, U

QuartzBoat (Quartz Boatstone)

Description:
Number of items in the site report or field notes described as “boat-shaped” or “boatstones,” and made of quartz.

Variable States:
Specific numbers

Boat (Boatstone)

Description:
Items described as “boat-shaped”, “boatstones”, or “hollow effigies” in the site reports and/or field notes, or which have been photographed and resemble other artifacts so described. Excludes quartz boatstones (see above, QuartzBoat). (e.g., Figure 4.1J).

Variable States:

PL	=	plain in form
EB	=	effigy beaver
ED	=	effigy duck
EH	=	effigy hawk
A	=	effigy crow + effigy eagle
B	=	effigy owl + effigy vulture
C	=	horned serpent + U
D	=	effigy salamander? + PL + effigy owl
E	=	PL + EB + effigy beetle

QuartzCup

Description:
Number of cups made of quartz.

Variable States:
Specific numbers

QuarColorPeb (Quartz or Colored Pebble)

Description:
Pebbles of quartz or other colored stone.

Variable States:

C	=	colored pebbles
Q	=	quartz pebbles

Marble

Description:
Small round spheres about the size of a traditional marble, engraved with designs (e.g., Figure 4.1K, L).

Variable States:
Specific numbers

CopperBall

Description:
Number of large, hollow copper balls found in the provenience.

Variable States:
Specific numbers, U

Plummet

Description:
Material of which any “plummets” or “plumb-bobs” found in the provenience are made (e.g., Figure 4.1P).

Variable States:
CP, SH, plus

CH	=	plummet of chlorite
DI	=	plummet of diorite
GR	=	plummet of granite
HE	=	plummet of hematite
JA	=	plummet of jasper
A	=	CP + CH + DI + SH
B	=	JA + SH
C	=	HE + SH

FossilConc (Fossil/Concretion)

Description:
Locally available fossils, concretions, and other stones that have an unusual shape sometimes suggesting the shape of an animal, and that are described in the site report or field notes as a fossil or concretion (e.g., Figure 4.1M, N).

Variable States:

CN	=	concretion(s)
FS	=	fossil(s)
FC	=	FS + CN

TubeFuncUnk (Tube, Function Unknown)

Description:
Wooden and/or copper tubes of unknown function because they lack holes, reeds, or

stops that would suggest a musical function (e.g., Figure 4.1U).

Variable States:
CP, ST, WD, plus
WC = wood with copper cover
WS = wood with silver cover

Barracud (Barracuda Jaw)

Description:
Number of barracuda jaws (e.g., Figure 4.1X).

Variable States:
Specific numbers

SharkTeeth (Shark Teeth)

Description:
Number of shark teeth (real or fossil) that could, on ethnographic grounds, symbolize a shark's power (e.g., Figure 4.1Z).

Variable States:
Specific numbers, S, U

AlligTeeth (Alligator Teeth)

Description:
Alligator teeth (real or effigy) that could, on ethnographic grounds, symbolize an alligator's power.

Variable States:
TD, TE, ETC

Rattle (Rattler/Tinkler)

Description:
An interpretive category. Items described in the site report or field notes as probably being used as a rattle or as an item for making noise (e.g., Figure 4.1EE).

Variable States:
AT = tinkler, antler tip
CT = tinkler, cone-shaped
SC = tinkler, silver & copper
TU = turtle effigy belt (e.g., Figure 4.1EE)
A = SC + CT + AT (e.g., Figure 2.10)

Fan (Fan Effigy)

Description:
An Interpretive category. Effigies probably representing a fan made of bird feathers (e.g., Figure 4.1MM).

Variable States:
CP, ST

CPNose (Copper Nostril Insert)

Description:
Presence of copper, cone-like objects found lodged in the nasal aperture of the skeleton after death (e.g., Figure 4.1I).

Variable States:
P = present

Mushroom

Description:
An interpretive category. Mushroom-shaped objects of stone, copper, etc. This variable is not mutually exclusive of Wand/Baton (see below, WandBaton).

Variable States:
C = copper effigy. Also coded as Wand/Baton (e.g., Figure 4.1HH)
MP = mushroom or penis effigy, stone

FlyHuman (Flying Human)

Description:
An interpretive category. Artifacts that may represent a human in flight. This variable is not mutually exclusive of HumanUk (see below, HumanUk). The reconstructed flying human-insect composite from the Hopewell Earthwork, Mound 25, Burial 35 may instead be reconstructed as a human in an elaborate feather headdress (see caption for Figure 4.9I).

Variable States:
CP

Owl (Owl Effigy)

Description:
Artifacts in forms interpreted to represent owls or owl eyes. Hall (1977:Figure 1, Figure 2 caption) convincingly interprets the latter as

atl-atl effigies, as well. This variable is not mutually exclusive of Weapon, Big Pipes, Small Pipes, or Copper Cutouts (see below, Weapon, BigPipe, SmallPipe, CPCutout). Also, this variable excludes quartz cups (see above, QuartzCup).

Variable States:

EEC	=	effigy owl eyes of copper
EEM	=	effigy owl eyes of mica (same as Weapon [MC]) + boatstone
EFF	=	owl effigy, non-pipe (e.g., Figure 4.1Q)
PIP	=	owl pipe (same as BigPipe [A] and SmalPipe [E]) (e.g., Figure 4.1R)

SuperNat (Supernatural Effigy)

Description:

Type of composite creature depicted in a figurine or carving (e.g., Figures 2.9 J–M).

Variable States:

A	=	fish with rattle tail
H	=	horned serpent (e.g., Figures 2.9H, I)

GoatHorn

Description:

Copper effigy of a goat horn that could, on ethnographic grounds, symbolize the animal's power.

Variable States:

EHC	=	effigy horn, copper

Awl

Description:

Thick, somewhat pointed bone or antler implements, several inches in length and lacking an "eye", probably used to punch holes in fabric and hides. Some appear to have been used as pegs for pinning fabric to the earth (e.g., Figures 4.1V, W).

Variable States:

Specific numbers, S, M, U

QuartzBiface

Description:

Type and number of bifaces made of quartz as specifically mentioned in various sources (quartz, limpid quartz, etc.) (e.g., Figure 4.1A, B). See Table 8.2 for definitions of the codes for objects by their size, shape, and/or production method.

Variable States:

PK	=	points/knives
SB	=	symmetrical biface
UB	=	unknown biface
A	=	SB + PK + UB

GemBiface

Description:

Type and number of bifaces made of a "gem" material, including: manganese garnet, amethyst, chalcedony, agate or specifically mentioned as translucent by various sources. See Table 8.2 for definitions of the codes for objects by their size, shape, and/or production method.

Variable States:

PK	=	points/knives
RB	=	Ross-barbed
SB	=	symmetrical biface
UB	=	unknown biface

OtherTransBiface (Other Translucent Biface)

Description:

Type and number of bifaces made from a translucent material as mentioned in various sources, but not including any of the types listed for "gem". See Table 8.2 for definitions of the codes for objects by their size, shape, and/or production method.

Variable States:

PK	=	points/knives
SB	=	symmetrical biface

ObsidBiface (Obsidian Biface)

Description:

Type and number of bifaces made from obsidian as specifically mentioned in various sources (e.g., Figure 4.1D, E). See Table 8.2 for definitions of the codes for objects by their size, shape, and/or production method.

Variable States:

OB	=	odd biface
PK	=	points/knives
RB	=	Ross-barbed
SB	=	symmetrical biface

UB	=	unknown biface
A	=	RB + SB + OB
B	=	SB + PK
C	=	SB + RB
D	=	PK + OB
E	=	OB + UB

FancyPt (Fancy Point)

Description:

Number of mica, copper, or micaceous schist artifacts fashioned into the shape of a projectile point (e.g., Figure 4.1C).

Variable States:

CP	=	copper
MI	=	mica
MS	=	mica schist

Weapon

Description:

An interpretive category. Effigies fashioned into the shapes of certain weapons such as atl-atls. This variable is not mutually exclusive of Owl (e.g., Figure 4.8H; see also Figure 4.8G).

Variable States:

MC	=	atl-atl shaped mica cutout Same as Owl [A].
TC	=	atl-atl shaped tortoise shell comb

FancyPrismBlade (Fancy Prismatic Blade)

Description:

Type and number of prismatic blades made from a "gem" material, obsidian, or another translucent material. See Table 8.2 for definitions of the codes for objects by their size, shape, and/or production method.

Variable States:

GM	=	gem
OB	=	obsidian
OT	=	other translucent

QuartzNum (Quartz Number)

Description:

Total number of different categories of artifacts made of quartz or other similar translucent stone. These include QuartzCryst, QuartzDisc, QuartzCone, QuartzBoat, QuartzCup, QuarColorPeb, QuartzBiface, GemBiface, OtherTransBiface, and FancyPrismBlade (codes GM and OT only).

Variable States:

Specific numbers

BigPipe

Description:

Type of any large, effigy pipes commonly called "Copena" pipes in the published literature. This variable is not mutually exclusive of Owl (see above, Owl) (e.g., Figure 2.9L–M, 4.1DD, 4.14).

Variable States:

A	=	owl (same as Owl [P]) + misc. bird + dog or wolf + bear
B	=	composite creature (snake, bird, and perhaps caiman/crocodile)

SmallPipe

Description:

Forms of all small platform or elbow-shaped smoking pipes found in the provenience. This variable is not mutually exclusive of Owl (see above, Owl) (e.g., Figures 2.9E, 4.2A–D, 4.5A, 4.19A–D).

Variable States:

U, plus

NP	=	non-platform pipe
PL	=	plain platform pipe
SB	=	short beaked bird
VT	=	various animal and human types
VU	=	various unspecified types
A	=	PL + duck + serpent
B	=	PL + bird on fish's back + roseate spoonbill
C	=	miscellaneous bird + U
D	=	PL + otter + rabbit + frog + miscellaneous bird + pheasant
E	=	bear + mt. lion + wildcat + raccoon + porcupine + opossum + beaver + otter + dog + rabbit + mink + deer + fox + wolf + squirrel + owl (same as Owl [P]) + kingfisher + heron + crane + crow + carolina parakeet + EG + hawk + quail + miscellaneous bird + PL
F	=	PL + U
G	=	PL + frog + crow + miscellaneous bird

Panpipe

Description:

Conjoined copper tubes or a copper band of a form that usually hold tubes judged to be musical instruments by site excavators and/or Turff (1997) in her definitive inventory of Hopewellian panpipes in Eastern North America (e.g., Figure 4.1JJ).

Variable States:

U, plus

1A	=	tubular, long, copper, 3 tubes
1B	=	tubular, probably long, copper, 3 tubes
1C	=	tubular, long, copper-iron, 4 tubes
1D	=	tubular, long, copper-silver, 3 tubes
1E	=	tubular, long, iron, 3 tubes
2	=	copper band
3	=	silver band

Flute

Description:

Single copper, wooden, or bone tubes having holes, reeds, and/or stops, and judged to be flutes or whistles (e.g., Figures 4.1KK, LL).

Variable States:

FL	=	flute
WH	=	whistle

PaintEquip (Painting Equipment)

Description:

Items that bear or sometimes bear pigments such as red ochre, and that may have been used for painting (see also StoneTablet).

Variable States:

CO	=	cup with ochre. Excludes quartz cups (see above, QuartzCup).
CU	=	cup
A	=	pestle + paint grinder

OchrePaint (Ochre or Paint)

Description:

Color of any ochre or paint identified in provenience.

Variable States:

U, plus

R	=	red
Y	=	yellow
A	=	R + Y

StoneTablet

Description:

Flat tablets of stone not clearly associated with pigments.

Variable States:

Specific numbers, S, U

FancyPot (Fancy Pottery Vessel)

Description:

Pottery with considerable decoration on it, excluding pots with simple cord marked decoration. Examples include Hopewell Series vessels incised with birds, Chillicothe Incised, Chillicothe Rocker Stamped, and simple and complex-stamped Southeastern Series vessels (Prufer et al. 1965).

Variable States:

FS	=	fancy sherd(s)
FV	=	fancy vessel(s)

TortShellOrn (Tortoise Shell Ornament)

Description:

Number of ornaments made of tortoise shell found in the provenience. Excludes tortoise shell ornaments in the form of atl-atls (see above, Weapon).

Variable States:

U, plus

BC	=	bird engraving with four-directional and flower petal symbolism, plus a swan cutout.
CB	=	comb
PD	=	pendant-like
SC	=	scroll-shaped
SP	=	spatula-shaped
TB	=	tablet

TrophSkJw (Trophy Skull/Jaw)

Description:

The type of skeletal element interred as a trophy. A "trophy" is defined in the published literature and field notes as a human skull, mandible, and/or maxilla that is found with another skeleton and treated as an artifact. Evidence of such treatment is decoration or manipulation of the element such as drilling, painting, or carving of the item.

Variable States:

JW = jaws (mandible and/or maxilla)
MX = maxilla
SF = skull fragments
SK = skull
A = JW + MX
B = SK + MX

TrophSKNum (Trophy Skull/Jaw Number)

Description:

Number of "trophy" elements interred in the provenience. It is usually unclear in the literature whether the term "jaws" means a single maxilla, a single mandible, or both.

Variable States:

Specific numbers, U

TrophFg (Trophy Finger)

Description:

Number of perforated human digits, or effigy fingers made of stone (e.g., Figure 4.9D).

Variable States:

Specific numbers

TrophEar (Trophy Ear)

Description:

Number of effigy human ears of copper.

Variable States:

Specific numbers

TrophHn (Trophy Hand)

Description:

Number of effigy human hands made of mica or copper.

Variable States:

Specific numbers

HumanM (Human Figurine, Male)

Description:

Number of artistic renditions of male human figures that represent a head and/or body. This variable is mutually exclusive of WandBaton.

Variable States:

Specific numbers

HumanF (Human Figurine, Female)

Description:

Number of artistic renditions of female human figures that represent a head and/or body (e.g., Figure 5.5C). This variable is mutually exclusive of WandBaton.

Variable States:

Specific numbers

HumanUk (Human Figurine, Unknown Sex)

Description:

Number of artistic renditions of human figures of indeterminate sex that represent a head and/or body. This variable is not mutually exclusive of Flying Human (see above, FlyHuman) for one case. The reconstructed human in an elaborate feather headdress from the Hopewell Earthwork, Mound 25, Burial 35 may instead be reconstructed as a flying human-insect composite (see caption for Figure 4.9I). This variable is also not mutually exclusive of WandBaton for one case. (e.g., Figures 1.1, 4.8A, I, 4.9A–C, F, I, 4.21, 5.5A, C).

Variable States:

Specific numbers

AnimImage (Animal Image)

Description:

Type of animal depicted in a figurine, carving, or cutout, other than animals on effigy smoking pipes and headplates (see above, BigPipe, SmallPipe). This variable is not mutually exclusive of CPCutout (e.g., Figures 2.9A, B, D, F, G, 4.1E, O, S).

Variable States:

BR = bear
DE = double eagle head
EG = eagle/falcon
FE = frog or salamander-like animal
FI = fish
IN = insect
MB = miscellaneous bird
RA = raven-like/crow-like bird
SN = snake
TU = turtle or tortoise
A = MB + BR

B	=	SB + MB
C	=	FI + raven + snake head + barracuda (?) teeth in jaw
D	=	RA + BR

CarveBone (Carved Bone)

Description:

Often intricately carved items of bone. This variable does not include a number of carved bone wands and batons, which are recorded in the Wand/Baton variable. Inversely, not all wands and batons reported in the Wand/Baton variable were made of bone and carved. For a complete list of carved bones in the data base, consult the provenience sheets for each provenience listed under the CarveBone *and* Wand/Baton variables.

Variable States:

U, plus

HU	=	human
PH	=	human parietals
A	=	HU + U

Headplate

Description:

Type of metallic headplate/headdress found in provenience; all are copper except for the one class of iron headplates.

Variable States:

U, plus

AS	=	plate with antler stubs (e.g., Figure 4.8E)
CP	=	plate with 4-clawed cat paw cut into it (e.g., Figure 4.8B)
DG	=	plate in form of a dog (e.g., Figure 4.8C)
FL	=	feather-like plate (e.g., Figure 4.8H)
HH	=	headless human plate (e.g., Figure 5.5B)
IR	=	iron plate
PL	=	plain, helmet like (e.g., Figure 4.9J)
PLR	=	plain, helmet-like, with 3 associated copper effigy antler racks (e.g., Figure 4.8D)
RA	=	plate with rack of antlers (e.g., Figure 4.8G)
SP	=	plate with shell and/or pearl attachments
WB	=	winged bird plate (e.g., Figures 4.8J)
A	=	AS + IR

CeltCopp (Celt, Copper)

Description:

Number of copper axe- or adze-shaped celts found in the provenience (e.g., Figures 1.2, 4.8K, 4.9K).

Variable States:

Specific numbers, S, U

CeltAreaKnown

Description:

Total combined area (cm^2) of all celts in the provenience whose length and width dimensions are known.

Variable States:

Specific numbers

CeltAreaAll

Description:

Total combined area (cm^2) of all celts in the provenience if data were available for all celts found in the provenience.

Variable States:

Specific numbers

CeltAreaLgst (Celt Area Largest)

Description:

Area of the largest celt (cm^2) among those found in the provenience.

Variable States:

Specific numbers

CeltAreaCode (Celt Area Code)

Description:

Size category for the largest celt in the provenience based on a histogram of areas for all available Ohio Hopewell celts.

Variable States:

A	=	151–250 cm
B	=	100–150 cm
C	=	100 cm or below

TotCeltWeight (Total Celt Weight)

Description:

Total combined weight (kg) of celts whose length and width dimensions are known or estimated. Weights for each celt, if unknown, were estimated from the length of the celt using the regression equation: weight = 0.06(length) − 0.32 (Bernardini and Carr 2005: Appendix 17.1). Additional celt data were recorded for Hopewell Mound 17 Deposit 2, Mound 25 Burial 260–261, Mound 25 Copper Deposit, Mound 25 Burial 274, and Mound 25 Altar 1. The number of celts recorded for the Crematory Basin under Hopewell Mound 26 differed between Bernardini and Carr (2005: Appendix 17.1) and Shetrone (1926a). Therefore, only the four celts recorded in both sources are included in the database.

Variable States:
Specific numbers

CeltWtKnown (Celt Weight Known)

Description:
Number of celts used to determine the TotalCeltWt value.

Variable States:
Specific numbers

HeavyCelt (Heaviest Celt)

Description:
Weight (kg) of the heaviest celt among those measured from the provenience.

Variable States:
Specific numbers

LightCelt (Lightest Celt)

Description:
Weight (kg) of the lightest celt among those measured from the provenience. If only one celt was measured from the provenience, HeaviestCelt will be the same as LightestCelt.

Variable States:
Specific numbers

LongCelt (Longest Celt)

Description:
Length (cm) of the longest celt among those measured from the provenience.

Variable States:
Specific numbers

ShortCelt (Shortest Celt)

Description:
Length (cm) of the shortest celt among those measured from the provenience. If only one celt was measured from the provenience, LongestCelt will be the same as ShortestCelt.

Variable States:
Specific numbers

CeltIron (Celt, Meteoric Iron)

Description:
Number of iron axe- or adze-shaped celts found in the provenience.

Variable States:
Specific numbers, S

CeltCoal (Celt, Cannel Coal)

Description:
Number of cannel coal axe- or adze-shaped celts found in the provenience.

Variable States:
Specific numbers

CeltStone (Celt, Stone)

Description:
Number of stone axe- or adze-shaped celts found in the provenience (e.g., Figure 4.9L). In rare instances where material is not indicated (e.g. Fort Ancient, East Terrace, Burial 01), the celt is assumed to be stone.

Variable States:
Specific numbers, S

Conch (Conch Shell Vessel)

Description:
Conch shell containers in the shape of a large cup or bowl. This variable is not mutually exclusive of Water Barrier (see above, Water). (e.g., Figures 4.1AA, 5.3A, 15.3E).

Variable States:
Specific numbers, S, U

ShellSpoon

Description:

Shell objects, often associated with an ocean shell container, and described in the site report or field notes as a "spoon".

Variable States:

Specific numbers

WandBaton (Wands, Batons)

Description:

Long, often intricately carved items of bone or antler that may have served as a wand, baton, or scepter, depending on the item's size. This variable is not mutually exclusive of Mushroom (see above, Mushroom). At the Hopewell site, in Mound 25, the human or bear femur incised with a bear claw could have occurred with either Skeleton 278 or 281. The human or bear femur incised with a human skull with deer antlers and a spoonbill duck nose could have occurred with either Skeleton 278 or Skeletons 260-261. The bird bone wand incised with an ocelot was excavated from Skeletons 260-261, and is probably human according to Moorehead (1922:159). The human head carved on antler and depicted in Moorehead (1922:167, figure 66) was excavated from Altar 1. The human head carved on antler and depicted in Moorehead (1922:168, figure 67) was unearthed from Altar 2. The human head carved on "ivory or shell" and shown in Moorehead (1922:169, figure 68) came from either Altar 1 or Altar 2.

Variable States:

BH	=	bird humerus
TD	=	a bone, small in length, triangular in cross-section, dark in color, engraved with cross-hatching, and sometimes mounted with a pearl on top (e.g., Figure 4.1T)
FM	=	carved femur or similar bone, human or bear
FU	=	carved femur or ulna, human
HM	=	horned mammal, copper (Shetrone and Greenman 1931:407 called this form a praying mantis, but this may be an inverted view of the item.)
MU	=	large effigy mushroom wand, copper (same as Mushroom [C])
AH	=	human effigy carved from antler (e.g., Figure 4.1BB)
A	=	TD + ANH
B	=	FM + BH

Wand BatonNum

Description:

Number of long, often intricately carved items of bone or antler that may have served as a wand, baton, or scepter, depending on the item's size.

Variable States:

1, 2, S, Plus

A	=	0 to 1 wand/batons
B	=	0 to 2 wand/batons
C	=	1 to 2 wand/batons
D	=	1 to 2 wand/batons (as in C but for a different reason; see note below)

Ranges A and B express the uncertainty of the locations of two human or bear femur batons, one carved with a bear claw and the other with a human skull with deer antlers and spoonbill duck nose. See Greber and Ruhl (1989:268, footnotes 35–37) for the nature of the uncertainties. Range C expresses the uncertainty of the locations of the three human effigies shown in Moorehead (1922: 167–169, Figures 66–68). Range D expresses the known bird bone carved with an ocelot found with Skeletons 260–261 from the Hopewell site (Moorehead 1922:165, Figure 64) and the uncertain location of the human or bear femur baton carved with a human skull having deer antlers and spoonbill duck nose.

BreastPlate

Description:

Number of rectangular, thin copper plaques, commonly called "breastplates" in site reports (e.g., Figures 1.2, 4.4, 4.17E–G). For one unusual case, a qualitative code was used.

Variable States:

Specific numbers, S, U, plus

FM	=	one breastplate made into a face mask with nose rest and eye holes and placed appropriately over the skull.

BPTotalArea (Breastplate Total Area)

Description:

Total combined area (cm^2) of all breastplates in the provenience whose length and width dimensions are known or estimated. Proveniences with estimated total breastplate areas include Hopewell Mound 23 Burial 213, Mound 25 copper deposit, Mound 25 Burial 260–261, Mound 25 Burial 270, and Seip Mound 1 Burial 59. Estimated dimensions were calculated based on one known length or width measure following a logarithmic trendline based on length and width proportions known for complete specimens. The area of each breastplate was calculated simply as its length times width, assuming rectangular shape.

Variable States:

Specific numbers

BPTotalNum (Breastplate Total Number)

Description:

The total number of breastplates used to determine the TotalAreaBP.

Variable States:

Specific numbers

BPLongest (Breastplate, Longest)

Description:

The length (in cm) of the longest breastplate among those found in the provenience.

Variable States:

Specific numbers

BPShortest (Breastplate, Shortest)

Description:

The length (in cm) of the shortest breastplate among those found in the provenience. If only one breastplate is in the provenience, LongestBP is the same as ShortestBP.

Variable States:

Specific numbers

BPThickThin (Breastplate Thick or Thin)

Description:

Subjective classification of each breastplate as thick or thin, as determined by Carr from his observation of nearly all extant breastplates.

Variable States:

A = thick
B = thin
C = A + B (if two breastplates)
D = mostly thick for three or more breastplates

Earspool

Description:

Material(s) from which any bicymbal earspools present in the provenience are made (e.g., Figures 4.17A–D, 4.18).

Variable States:

CP, U, plus
CI = copper overlaid with iron
CS = copper overlaid with silver
SD = copper with silver in the depression only
SP = stone pulley type
A = earspools composed of copper, silver, and iron
B = CP + PY + CS + CI
C = CP + CI
D = B + SP
E = CP + SP
F = PY + SP

CPCutout (Copper Cutout)

Description:

Type of thin form(s) of copper found in the provenience. Excludes effigy “power parts” of animals, natural human effigies, natural animal effigies, weapon effigies, reel-shaped gorgets, and crescents. This variable is not mutually exclusive of AnimImage (e.g., Figures 2.17B, 3.10, 4.1S, 4.9U), or Owl.

Variable States:

U, plus
AR = four armed shapes (Mills 1922:549)
DK = disk
FE = frog or salamander-like effigy
FH = flying human or natural human in headdress, depending on the reconstruction (Figure 4.9I)
G = G-clef form
GB = grid of bosses

HA = crescent shape extending into arms and hands
SH = shield-shaped
RA = raven-like or crow-like bird
RG = rings, annuli, or pinwheel-like design
ST = star-shaped
STR = strips
V = various forms
A = owl eye-like forms + swastika + three-lobed design + disk + intertwined raptors + flower form + rings + snake-like head + G-clef form + diamond shape + fish + bear paw + eagle + raven + saw-shaped design + spoon shaped + squares + circles and bars + cross and circles + cross + semicircles + various forms + flying human + unknown.
B = rings + flower forms + G-clef form + pear-shaped eyes + grid of holes
C = RG + RA

MicaCutout

Description:

Type of thin, cutout form(s) of mica found in the provenience. Excludes effigy "power parts" of animals, human effigies, animal effigies, weapon effigies, and crescents (e.g., Figure 2.17).

Variable States:

U, plus
CR = circle
G = G-clef form
L = links
P = pear-shaped eye
PP = projectile point
SH = shield-shaped
ST = strip
V = various forms
A = rings + circles + ovals + unknown
B = ST + V
C = beak-like form + circle
D = SH + U
E = PP + U

ShellCutout

Description:

Type of thin, cutout form(s) of shell found in the provenience. Excludes effigy "power parts" of animals and reel-shaped gorgets.

Variable States:

U, plus
DK = circular disk
A = circular disk + rectangular

Crescent

Description:

Material from which any large crescent-shaped ornaments in the provenience are made (e.g., Figure 4.9N).

Variable States:

CP, MI

Pendant Gorg (Pendant or Gorget)

Description: Shape of the pendants and/or gorgets found in the provenience as well as the material from which they are made. Both the term pendant and the term gorget are used interchangeably to describe similar artifacts. This category does not include crescents of copper and mica, tortoise shell pendants, any pendants made from animal power parts (e.g., a drilled tooth or jaw of a bear, cat, wolf, or fox), perforated shell disks, shell ear pendants, or plummets. (e.g., Figures 4.9O–T).

Variable States:

U, plus
BD = bar shape, of cannel coal
BG = bar shape, of chlorite
BP = bar shape, of pipestone
BS = bar shape, of stone
CB = claw shape, of bone
OH = round shape, of marine shell
OC = ovate shape, of copper
PA = pendant/gorget of slate
PB = pendant/gorget of bone
PC = pendant/gorget of copper
PL = pendant/gorget of chlorite
PM = pendant/gorget of marl
PR = pendant/gorget of resin
PS = pendant/gorget of stone
PV = pendant/gorget of silver
RC = reel shape, of copper
RS = reel shape, of stone
RH = reel shape, of shell
RU = reel shape, unknown material
SH = rectangular, of shell
TC = "teaspoon" or "spoon" shape of copper (described as such by Moorehead 1922:106; Shetrone 1926a:79; Shetrone and Greenman 1931:387)

A = PS + PA
B = BG + BP + PL
C = PL + PA
D = PC + PA
E = RH + BS
F = RC + RS + U
G = OH + SH

Button

Description:

Material from which the metal covers of all stone or clay "button-shaped" artifacts found in the provenience are made (e.g., Figure 4.10B).

Variable States:

CP, IR, SI, plus
A = SI + U

RaptorPP (Raptor Power Part)

Description:

Type of a raptorial bird's body part (either real or effigy) that could, on ethnographic grounds, symbolize the animal's power (e.g. claws) (e.g., Figure 2.9C). Power part designations in this data base include those of only local animals that have potential for having been used by Ohio Hopewell peoples as animal-totemic clan markers (contra. Shark teeth, alligator teeth, barracuda jaws, and a goat horn).

Variable States:

CL, ECB, ECC, ECM, ECS

WolfDogPP (Wolf or Dog Power Part)

Description:

Type of a dog's, coyote's, or wolf's body part (either real or effigy) that could, on ethnographic grounds, symbolize the animal's power (e.g. jaws and teeth) (e.g., Figure 1.8A).

Variable States:

CL, JW, TD, TE

BigCatPP (Big Cat Power Part)

Description:

Type of a large cat's body part (either real or effigy) that could, on ethnographic grounds, symbolize the animal's power (e.g. jaws and teeth) (e.g., Figure 1.8A, 4.12H).

Variable States:

ETU, JW, TD, TE

FoxPP (Fox Power Part)

Description:

Type of a fox's body part (either real or effigy) that could, on ethnographic grounds, symbolize the animal's power (e.g. jaws and teeth).

Variable States:

JW, TD

ElkPP (Elk Power Part)

Description:

Type of an elk's body part (either real or effigy) that could, on ethnographic grounds, symbolize the animal's power (e.g. teeth). (e.g., Figure 4.12G).

Variable States:

TD, TE, plus
AS = astragali (ankle bones)
A = TD + ETU

DeerPP (Deer Power Part)

Description:

Type of a deer's body part (either real or effigy) that could, on ethnographic grounds, symbolize the animal's power (e.g., astragali). (e.g., Figure 4.12G).

Variable States:

AS = astragali (ankle bones)
TE = teeth
EAN = effigy antler, copper

RaccoonPP (Raccoon Power Part)

Description:

Type of a raccoon's body part (either real or effigy) that could, on ethnographic grounds, symbolize the animal's power (e.g. teeth and baculums) (e.g., Figure 4.12F).

Variable States:

TD, TE, plus
A = TD + penis bone

OpossumPP (Opossum Power Part)

Description:

Type of an opossum's body part (either real or effigy) that could, on ethnographic grounds, symbolize the animal's power (e.g. teeth).

Variable States:

TD

BadgerPP (Badger Power Part)

Description:

Type of a badger's body part (either real or effigy) that could, on ethnographic grounds, symbolize the animal's power (e.g. jaws and teeth).

Variable States:

TD

MarmotPP (Marmot Power Part)

Description:

Type of a marmot's body part (either real or effigy) that could, on ethnographic grounds, symbolize the animal's power (e.g. jaws and teeth).

Variable States:

JW

GroundhogPP (Groundhog Power Part)

Description:

Type of a groundhog body part (either real or effigy) that could, on ethnographic grounds, symbolize the animal's power (e.g. jaws and teeth).

Variable States:

MX

SmMamPP (Small Mammal Power Part)

Description:

Type of a small mammal body part (either real or effigy) that could, on ethnographic grounds, symbolize the animal's power (e.g. jaws, teeth, claws).

Variable States:

TD, TE, plus

FT	=	foot bones
A	=	TE + FT

BeaverPP (Beaver Power Part)

Description:

Type of a beaver's body part (either real or effigy) that could, on ethnographic grounds, symbolize the animal's power (e.g. jaws and teeth).

Variable States:

JW, MX, TE

BearPP (Bear Power Part)

Description:

Type of a bear's body part (either real or effigy) that could, on ethnographic grounds, symbolize the animal's power (e.g. jaws, teeth, claws) (e.g., Figures 4.1FF, 4.3C, 4.12A–E, 4.13, 4.20).

Variable States:

CL, ECB, ETB, ETC, ETM, JW, TD, TE, TP, plus

EPC	=	effigy paw, copper
ETA	=	effigy tooth, antler
A	=	JW + ETB
B	=	ETB + TP
C	=	TP + ETB + TD + ETS
D	=	CL + ETU
E	=	CL + JW
F	=	JW + CL + TE + TP
G	=	ETA + TE + TP
H	=	CL + TE + ETS
I	=	TP + TE
J	=	TD + TP
K	=	ETN + CL + TD
L	=	EPC + ETC
M	=	TD + CL
N	=	ETU + TD
O	=	TP + TD + TE
P	=	ETB + TD
Q	=	ETB + TE

BearCanNum (Bear Canine Number)

Description:

Number of real bear canines in the provenience. This variable was constructed to identify burials with specific numbers of real bear canines (e.g. 4, 6) which seems to be culturally meaningful.

Variable States:

Specific numbers, S, M, U

KnSpeciesPPNum (Number of Power Parts from Known Species)

Description:

Minimum number of known kinds of animals that are native to Ohio (Raptor, Big Cat, Wolf, Raccoon, Fox, Opossum, Bear, Beaver, Badger, Elk, and Deer) and whose power parts (either real or effigy) are found in the provenience. Excludes SpeciesUnkPP.

Variable States:

Specific numbers

SpeciesUnkPP (Species Unknown Power Part)

Description:

Type of an unknown species' body part (either real or effigy) that could, on ethnographic grounds, symbolize the animal's power (e.g. jaws and teeth).

Variable States:

ETC, JW, TD, TE, plus

MX	=	maxilla
A	=	JW + TE

Bead

Description:

Material from which are made all beads that are found in the provenience and that are not necklaces (BeadNeck), bracelets or anklets (Brace/Anklet), or strings of beads in general (BeadString).

Variable States:

CP, IR, PE, SH, BN, U, plus

CL	=	clay
IV	=	ivory
PS	=	PE + SH
A	=	CP + IR + PE + SH + WD
B	=	ST + SH + CP + PE
C	=	BN + CP
D	=	BN + PE
E	=	PE + SH + IR + BN
F	=	IR + BN + PE + CP + SI + SH
G	=	PE + CP
H	=	CL + SH
I	=	PS + GA
J	=	PS + BN
K	=	SH + BN
L	=	SH + U
M	=	PS + CP

BeadNum (Bead Number)

Description:

Number of individual beads (not known to be from a necklace or bracelet) found in the provenience.

Variable States:

Specific numbers, S, M, TW, F, H, HS, TH, U, plus

20K	=	around 20,000
100K	=	around 100,000

BeadNeck (Bead Necklace)

Description:

Material from which any necklace of beads found in the provenience is made. Coded only if identified as a necklace in the site report, field notes, or accession records, usually found in a string. Other beads found near the neck or on the chest may also represent necklaces, but were not coded as such.

Variable States:

BN, PE, SH, U, plus

A	=	PE + SH
B	=	CP + PE
C	=	PE + SH + CP

BraceAnklet (Bracelet/Anklet)

Description:

Material from which any bracelet or anklet found in the provenience is made, whether bead or otherwise. For bead formed bracelets and anklets, coded only if called such in the site report, field notes, or accession records, usually when found in a string. Other beads found near the wrists, ankles, or hands may also represent bracelets or anklets, but were not coded here.

Variable States:

CP, PE, SH, U, plus

CS	=	copper overlaid with silver
A	=	CP + CS
B	=	CP + PE

BeadString

Description:

Material from which any string of beads found in the provenience is made. Coded only if the site report, field notes, or accession records record a string of beads but give no indication of whether they may have been a necklace, anklet, or bracelet (e.g., Figure 4.10A).

Variable States:
BN, PE, SH, U

HairSkew (Hair Skewer)

Description:
Skewer-like objects of copper apparently associated with the head as determined by their location in some burials and probably worn as a hair decoration.

Variable States:
Specific numbers

Container

Description:
Type of pottery vessels, pottery sherds, or stone vessels found in the provenience. Excludes quartz cups, other stone cups, and cups with ochre pigment (see above, QuartzCup and Paint [CU, CO]).

Variable States:

JR	=	jar
PS	=	pottery sherd(s)
PV	=	pottery vessel(s)
SB	=	stone bowls
SC	=	stone cups
SD	=	stone dish
SBX	=	stone box

NeedleBodkin (Needle or Bodkin)

Description:
Thin, pointed bone implements, often with an "eye".

Variable States:
Specific numbers, S, M, U

BoneAntPointKnife (Bone/Antler Point/ Knife)

Description:
Number of points or knives made of bone and/or antler as specifically mentioned in various sources.

Variable States:
Specific numbers, S

CopperRod

Description:
Number of copper rods (often with bone handles) resembling the modern tool used for sharpening knives, but not used for this purpose.

Variable States:
Specific numbers

HornBiface (Hornstone Biface)

Description:
Number of symmetrical bifaces made from hornstone.

Variable States:
Specific numbers

OtherFlintBiface

Description:
Type and number of bifaces made of flint mentioned in various sources as flint, chert, Mercer, Flint Ridge, Knife River, etc. or there is no specific type mentioned. Excludes bifaces made of quartz, other gemstones, other translucent stones, and obsidian. (See above, QuartzBiface, GemBiface, OtherTranslucentBiface, Obsidian Biface). See Table 8.2 for definitions of the codes for objects by their size, shape, and/or production method.

Variable States:

OB	=	odd biface
PK	=	points/knives
SB	=	symmetrical biface
UB	=	unknown biface
A	=	PK + SB
B	=	PK + SB + UB
C	=	UB + PK

OtherFlintPrisBlad (Other Flint Prismatic Blade)

Description:
Number of prismatic blades made from flint and exclusive of prismatic blades made of obsidian, gemstones, or other translucent stones. (See above, FancyPrismaticBlade). See Table 8.2 for definitions of the codes for objects by their size, shape, and/or production method.

Variable States:
Specific numbers, S, M, U

MiscIRTool (Miscellaneous Iron Tool)

Description:
Types of all iron artifacts that appear to be tools.

Variable States:

DR	=	drill
PF	=	perforator

MiscCPTool (Miscellaneous Copper Tool)

Description:
Types of all copper artifacts that appear to be tools.

Variable States:

AW	=	awl
BL	=	blade
CH	=	chisel
PF	=	perforator

MiscNMTool (Miscellaneous Non-Metal Tool)

Description:
Miscellaneous non-metal tools not coded elsewhere in the database.

Variable States:

ABS	=	abrader, sandstone
CHBT	=	chisel, beaver tooth
CHS	=	chisel, stone
CNB	=	curved needle, bone
CTA	=	chipping tool, antler
CTB	=	chipping tool, bone
DRF	=	drill, flint
HMS	=	hammerstone
HNA	=	handle, antler
HNS	=	handle, stone (atl-atl?)
HOS	=	hoe, slate
KNH	=	knife in handle
MES	=	mealing stone
PFF	=	perforator, flint
PST	=	pestle
SPB	=	spatulas, bone
SCF	=	scraper, flint
A	=	DRF + CTB + SCF + HMS
B	=	HMS + SPB
C	=	CHS + HNS
D	=	CTA + ABS
E	=	MES + PST
F	=	HNA + KNH

MiscCPObj (Miscellaneous Copper Object)

Description:
Type of miscellaneous copper object that does not fit in any other category.

Variable States:
U, plus

FH	=	fishhook-shaped object
FR	=	copper fragments/pieces from unknown object
OR	=	ornament
ORS	=	silver-covered copper ornament
PN	=	pin
RG	=	ring of unknown type/size

MiscShellObj (Miscellaneous Shell Object)

Description:
Worked shell items not in the form of beads, cutouts, or spoons, as well as various forms of unworked shells such as:

Variable States:
U, plus

EM	=	embroidery shells
FS	=	fluviate shells
MS	=	mussel shells
OR	=	ornament
PC	=	piece of shell
PY	=	small pyrula shells
RG	=	ring, shell
RS	=	river shells
SL	=	spool shaped shells
SN	=	snail shells
SP	=	spiral shells
SS	=	miscellaneous sea shells
A	=	RG + EM

MiscObsid (Miscellaneous Obsidian Item)

Description:
Type of miscellaneous obsidian item that does not fit in any other category. Includes artifacts and worked raw material.

Variable States:
U, plus

BTF	=	butterfly-shaped piece
CHK	=	chunks
CHP	=	chips
COR	=	cores
DEB	=	debitage
FLK	=	flakes
FRG	=	fragments
TLS	=	small worked tools
A	=	DEB + COR + FLK + CHP + FRG + TLS
B	=	FLK + CHK

MiscStone (Miscellaneous Stone Objects)

Description:

Type of miscellaneous stone object that does not fit in any other category. Includes artifacts, unworked raw material and production debris.

Variable States:

U, plus

BLS	=	balls, sandstone
BTC	=	beetle-shaped object, chlorite
CL	=	coral pieces
CLS	=	club-shaped sandstone object
CON	=	conical stone object (large)
CRT	=	black crystal, tourmaline
DIA	=	diamond shape
DIH	=	diamond-shaped hematite
DIS	=	discoidals
DSK	=	disk, flint
ELG	=	elongated granite object
FKC	=	flakes, chalcedony
FRG	=	fragments, granite
LID	=	container lid
OBSH	=	object, shale
ORSL	=	ornament, slate
PIP	=	unworked pipestone
SLP	=	slate pieces
STP	=	painted stones, boulders
A	=	ELG + CLS
B	=	STP + OBSH + PIP
C	=	CL + U
D	=	ORSL + CRT
E	=	STP + DIH + BLS
F	=	ORSL + DIA

MiscUtilFancyObj (Miscellaneous Utilitarian or Fancy Object)

Description:

Catch-all category for objects that are typically rare or unique and are not coded elsewhere.

Variable States:

Various text descriptions

BoneMisc (Miscellaneous Animal Bone)

Description:

Type of miscellaneous animal bone not clearly representative of a power part or recognizable artifact form.

Variable States:

U, plus

BR	=	bear
DG	=	dog
DR	=	deer
DS	=	doe skeleton
EKS	=	elk skeleton
FI	=	fish
MB	=	miscellaneous bird
MS	=	muskrat
MM	=	miscellaneous mammal
RH	=	raptor head attached to fabric or bag covering a copper headdress or celt
TY	=	turkey
A	=	DR, MM, FI, BR
B	=	DR, BR, MB
C	=	DG? + U
D	=	MB + MM

CannelRaw (Cannel Coal Raw)

Description:

Relative amount of cannel coal that has not been formed into an identifiable artifact. The category includes unworked or worked items referred to as "pieces".

Variable States:

LG

CoppRawScrap (Copper Raw & Scrap)

Description:

Relative amount of copper that has not been formed, or fully formed, into an identifiable artifact. The category includes items referred to as pieces, nuggets, masses, or fragments.

Variable States:

LT, LG

FlintRawScrap (Flint Raw & Scrap)

Description:

Type of miscellaneous flint (or occasionally chert) item that does not fit in any other category. Includes unworked raw material, cores, and production debris.

Variable States:

U, plus

BLK	=	blank
CHK	=	chunk
CHP	=	chip
COR	=	core
FLK	=	flake
PEC	=	piece
A	=	BLK + U
B	=	FLK + COR

GalenRaw (Galena Raw)

Description:

Relative amount of galena that has not been formed into an identifiable artifact. The category includes worked or unworked items referred to as lumps, ore, pieces, chunks, crystals, and masses.

Variable States:

LT, LG, U

GoldScrap

Description:

Relative amount of gold that has not been formed into an identifiable artifact. The category includes production debris referred to as "sheets".

Variable States:

LG

GraphRaw (Graphite Raw)

Description:

Relative amount of graphite that has not been formed into an identifiable artifact. The category includes unworked items referred to as pieces or chunks.

Variable States:

LT, LG

HematRaw (Hematite Raw)

Description:

Relative amount of hematite that has not been formed into an identifiable artifact. This category includes unworked or worked items referred to as "pieces".

Variable States:

LT, LG

IronRaw

Description:

Relative amount of iron that has not been formed into an identifiable artifact. The category includes unworked items referred to as nuggets and ore.

Variable States:

LT, LG

MicaScrap

Description:

Relative amount of mica that has not been formed into an identifiable artifact, and not in the form of mica sheets or books (see MicaSheet). The category includes items referred to as pieces, fragments, bits, and flakes.

Variable States:

LT, LG, U

PearlRaw

Description:

Relative amount of pearls without holes drilled to make them into beads. This variable is not mutually exclusive of Water Barrier (see above, Water).

Variable States:

Specific numbers, S, M, HS

PyriteRaw (Pyrite Raw)

Description:

Relative amount of pyrite that has not been formed into an identifiable artifact. The category includes unworked items referred to as "pieces".

Variable States:

LT

SilverRaw

Description:

Relative amount of silver that has not been formed into an identifiable artifact. The category includes unworked items referred to as nuggets and masses.

Variable States:

LT, LG

TortShlRaw

Description:

Relative amount of tortoise shell that has not been formed into an identifiable artifact. This category includes unworked items referred to as fragments and pieces, or whole shells. The whole shells may have been used as rattles, though this function could not be verified from written records.

Variable States:
LT = the equivalent of one carapace or less

QuartzScrap

Description:
Relative amount of production debris and undefined forms referred to as bits, cores, and polished fragments of quartz.

Variable States:
LT, LG

ARTIFACT LOCATION RELATIVE TO THE BODY

Positions (P1, P2, P3)

Description:
Each variable in the data base that codes an artifact class has three corresponding variables (columns) that describe the position(s) of each example of the artifact type relative to the deceased's body. Exceptions are those artifact classes for which no information on artifact positioning was available for any of the proveniences containing the item. The Primary Position (P1) indicates the direction or the locations of the artifact relative to the body (e.g., under, over, near, on). The Secondary Position (P2) indicates the particular part of the body to which the direction or location of the artifact is referenced (e.g., head, legs, elbow, ear). The Tertiary Position (P3) indicates the side of the body to which the direction or location of the artifact is referenced (e.g., right side, left side, both sides). Thus, for example, the variable, CeltCopp, which records the number of copper celts in a provenience, has three associated position variables to the right of it: a Primary Position variable, CeltCoppP1; a Secondary Position variable, CeltCoppP2; and a Tertiary Position variable, CeltCoppP3. The one copper celt found with Burial 4, Mound 1, at the Esch site and recorded in the CeltCopp column has the Primary Position code UN, the Secondary Position code HA, and the Tertiary Position code RL in the CeltCoppP1, CeltCoppP2, CeltCoppP3 columns, respectively. These columns indicate that the celt, which was broken in half, was found under both the right and left hands, one half under each hand.

When an artifact class occurs in several locations within a burial, as is common for beads, those multiple locations are recorded in each of the three position variables for that artifact class. For example, the Primary Position variable might record the codes BS, ON, BW; the Secondary Position variable might record in parallel order AR, CH, LE; and the Tertiary Position variable might record in parallel order LT, RT, RL. This coding would mean that the artifact class occurred beside the left arm, on the right side of the chest, and between the legs. The first codes in each column correspond with one another; the second codes in each column with one another, and the third codes in each column with one another. In cases where all items of an artifact class within a grave have the same position and have the same codes (e.g. several objects are present, all on the right side of the body), the code is listed once instead of being repeated three times. In the above example, if all items were on the right side of the body, three codes (BS, ON, BW) would be recorded under CeltCoppP1, three codes (AR, CH, LE) under CeltCoppP2, and only one code (RT) under CeltCoppP3.

In instances where two or more artifact classes were stacked one on top of another, the position of each artifact class is referenced to the body, rather than to other artifact classes. Such instances of close association among artifacts of two or more classes are reported in the provenience sheets in Appendix 6.1 and thereby accessible to researchers. When an artifact class is associated with one body part and that body part in turn is placed next to another body part, then the position of the artifact class is recorded for the first body part, alone. For example, an earspool in a hand that was placed over the chest is coded as having been in the hand of the person. A bracelet on a wrist that was placed over the abdomen is coded as having been on the wrist. Such complex bodily associations of artifacts, like those where two or more artifact classes are closely associated, are recorded in the provenience sheets in Appendix 6.1 and accessible for analysis.

When an artifact is associated with both sides of a body, such as both shoulders, both legs, both hands, the Tertiary Position variable P3, indicating sidedness, is coded as RL, meaning right and left sides. When the human remains are a cremation or a bundle, for which specific body locations do not pertain, the Secondary Position variable, P2, is given the code CB (cremation or bundle) and the Tertiary Position variable, P3, is coded IR, meaning that side information is irrelevant.

Variable States:

Primary Positions (P1)

UN = under (in contact with remains or nearly so)
BN = beneath (below remains and not in contact, could be beneath floor of burial)
ON = on (in contact with remains or with another item in contact with remains)
OV = over (item is stratigraphically above remains but not in contact)
IN = in (within or contained in)
BS = beside (immediately adjacent to body, within a distance of a few inches at most)
NR = near (in vicinity of, but not close to remains)
BW = between
SR = surrounding
BE = burial edge (at periphery of burial and not beside remains)
CR = corner (at corner of burial and not beside remains)
CE = corner and edge (at both one or more corners of burial and at edge, not beside remains)
CN = center (in middle of burial but not beside remains)
ZZ = present instead of the head
AB = above (pertains only to the head) and probably indicates a position near the top of the head, rather than above the face
OI = on/in (particularly when some objects may have fallen in to the chest cavity during decomposition of the deceased)

Secondary Positions (P2)

BD = position for artifacts found in the same provenience with an inhumation but not necessarily in contact with it (e.g. platform edge).
CB = positions for artifacts found with a cremation or bundle burial.
HE = head
LE = leg
LL = leg, lower (near tibia or fibula)
LU = leg, upper (near femur)
KE = knee
FT = foot
AR = arm
AL = arm, lower
AU = arm, upper
EL = elbow
SH = shoulder
HA = hand
WR = wrist
NS = nose (in nose)
AB = abdomen (on the abdomen)
CH = chest
NE = neck
HI = hips
MT = mouth
AN = ankle

Side Position (P3)

RT = right
LT = left
RL = right and left
UK = right or left, unknown
IR = irrelevant (as in the case of a cremated burial)

Chapter **9**

Evaluating the Consistency of Age and Sex Assessments of Ohio Hopewell Human Remains by Previous Investigators

D. TROY CASE

The thick prehistory approach that we suggest for bringing past peoples and their cultures to life from their bioarchaeological remains requires, by definition, the identification of individuals and social groups. It also involves describing these individuals in action through their on-the-ground, sociocultural roles. An essential step in this reconstructive process is to determine the age and sex of each individual for which skeletal remains are extant. The age and sex of an individual at death will have played a part in determining the culture-specific age and gender categories of his or her social personae at the time of death, and the roles associated with those personae. An individual's age and sex may also have been among the culturally-defined criteria necessary for taking on certain other social roles, such as those of a leader of any number of kinds, or of a sodality or clan member. Thus, by identifying the ages and sexes of individuals in a past society, the past is begun to be personalized with active, motivated people.

This chapter presents the thinking and analyses that were done in the course of assigning ages and sexes of the individuals in the HOPEBIOARCH data base and in evaluating the reliability of those assignments. The chapter continues the process of defining variables in the HOPEBIOARCH data base that was begun in Chapter 8, and is followed by further presentation of how age and sex identifications were made for one particular site – the Hopewell site – in Chapter 10.

In Chapter 8, we defined a number of variables (columns) in the HOPEBIOARCH data base that report the probable sexes and estimated ages at death of Ohio Hopewell people. Estimates contributed by sometimes multiple researchers are listed under those variables, along with what were determined from this study to be the most reliable of these estimates. In this chapter, I extend this documentation in several ways. First, I describe the methods that many of the researchers used to make their age and sex estimates. For those researchers who did not report their specific methodologies, I report the methods that were available at the time the assessments were made in order to better understand what range of methods might have been used by researchers who were not explicit about their methodologies. I then assess the consistency of the age and sex estimates made by different researchers with one other, to shed light on the comparability, precision, and likely accuracy of their estimates. The results of this analysis are reported in the HOPEBIOARCH data base as best estimates of the age ranges and sex categories of the individuals encompassed in the data base, coded to indicate their degree of reliability.

The primary goal of determining the methods that various researchers used or likely used and the reliability of their age and sex assessments, as presented here, was to maximize in the data base both the *number* of individuals with age or sex information that might reasonably be included in social analyses, and the *reliability* of these assessments for use in reconstructing individual social personae. For example, because early excavators of many Ohio Hopewell sites commented on the age or sex of some skeletons that were either not removed from the field, or were subsequently lost or mislabeled such that they can no longer be tied to a specific provenience, an important question is the probable reliability of field determinations made by particular excavators. If the field determinations made by an excavator prove to be reasonably reliable for skeletons that were collected and properly labeled, then it can be assumed that field determinations made for other skeletons from the same site that are no longer available for study are also reliable, improving the quantity of age-sex data for the site and the quality of mortuary analyses possible with the data. If, on the other hand, the error rate of field determinations among extant skeletons proves to be high, then the additional age-sex information for individuals not currently curated would have to be left out of mortuary analyses, reducing sample sizes. Subtler variations on this theme include the evaluation of previous laboratory assessments of age and sex for skeletons that are no longer curated or labeled to provenience and therefore cannot be studied by modern osteological and dental anthropological methods.

AGING AND SEXING HOPEWELL HUMAN REMAINS: A HISTORICAL PERSPECTIVE

For more than 100 years, researchers interested in Ohio Hopewell peoples have attempted to determine the ages and sexes of skeletons from Hopewell burial sites (e.g., Putnam 1886a; Moorehead 1891; Shetrone and Greenman 1931). The earliest assessments were made in the field by site excavators, perhaps using recognized indicators and techniques that were available between the 1880s and 1930 (e.g., Schmidt 1888; Pittard 1900; Derry 1909; Todd 1920, 1921; Todd and Lyon 1925a–c), but more likely relying on general observations, such as relative size and robusticity of the skull and postcrania to determine sex, and perhaps dental wear, tooth loss, and joint degeneration to categorize skeletal remains into broad age categories of young, middle, or old adult. Field assessments were typically made on only a few of the skeletons from a given site (e.g., Moorehead 1922; Shetrone 1926a). For some individuals, field determinations are the only ones available, because many skeletons and most cremations were either not collected, or were in such poor condition after removal or transport that they were not saved.

Some early studies of Ohio Hopewell skeletons were undertaken in a laboratory setting using primarily cranial indicators of age and sex (e.g. Snow 1943). More recent age and sex assessments date from the 1970s and after (e.g. Reichs 1975), and have been made using a wide array of indicators (Sciulli n.d.; Cadiente 1998; Johnston 1995, 2002). However, skeletal aging is still a problematic field of inquiry for physical anthropologists, and even today's standard techniques result in rather wide error ranges and a persistent tendency to underestimate ages among the oldest individuals (Jackes, 2000). Comparison of age and sex studies of Ohio Hopewell skeletons made by so many different investigators over such a long period of time is challenging because of a lack of information about which specific techniques were used by a researcher to make age and sex assessments on particular skeletons. This leads to uncertainty about the level of accuracy and the comparability of specific determinations. However, an understanding of when certain techniques were available to researchers may provide some insight into patterned differences in the age and sex determinations of researchers working with the same skeletal materials at different times over the past century.

Sex Assessment in the Twentieth Century and Ohio Hopewell Skeletal Data

Current standards for sexing skeletons from archaeological contexts are based on morphological features of the pelvis and skull (Buikstra and Ubelaker 1994). The pelvis is generally preferred for sexing because accuracy is somewhat higher (see Krogman and Iscan 1986:189), and the relevant features used to sex the pelvis are less variable by population than are those of the skull. However, the most sexually dimorphic region of the pelvis – the pubis – is more easily damaged than are the sexually dimorphic parts of the skull, so both areas of the skeleton are routinely assessed in bioarchaeological studies.

The standard morphological features used to determine sex from the pelvis are the ventral arc, subpubic concavity, ischiopubic ramus ridge, preauricular sulcus, and the greater sciatic notch. The preauricular sulcus was one of the first sexually dimorphic features of the pelvis to be recognized (Derry 1909, 1911). In the 1920s, Straus (1927) mentioned both the preauricular sulcus and the relative size of the greater sciatic notch as useful qualitative traits for sexing from the pelvis. The remaining three standard traits were highlighted several decades later (Phenice 1969).

Standard features of the skull used for sexing are the rugosity of the nuchal crest, volume of the mastoid process relative to nearby structures, thickness of the supraorbital margin, prominence of glabella, and projection of the mental eminence (Buikstra and Ubelaker 1994). Most of these were already recognized by the late 1930s, as were additional features related to the contour of the forehead, the size of the occipital condyles, the size of the teeth, and the size of the zygomatic bones (Krogman 1939). In European literature, traits used in sexing the human skull were published even earlier, near the turn of the twentieth century (Mobius 1907; Pittard 1900).

The earliest sex assessments on Ohio Hopewell skeletons were reported by excavators working in the late nineteenth century, such as Warren Moorehead, who excavated the Hopewell site in the 1890s, and Frederic Putnam, who excavated at the Turner site in 1885 (Table 9.1). These assessments were probably made solely on the basis of relative size differences, as the excavators were not physical anthropologists, and sexually dimorphic traits of the skull and pelvis had not yet been published at the time of their excavations. Given the small proportion of individuals to whom sex was assigned by these excavators, it seems likely that only the very largest and very smallest skeletons were assigned to a particular sex in the field. These would have been the easiest skeletons to sex because they fall at the extremes of the size continuum. If such is indeed the case, one would expect these field assessments to have a fairly high rate of accuracy.

Some traits for sexing from the pelvis and cranium had been published by the time Henry Shetrone carried out his excavations at the Hopewell and Seip sites in the 1920s (Shetrone 1922–1926a). Earnest Hooton was clearly aware of some of these indicators when he made his laboratory assessments of skulls from the Turner site for Charles Willoughby's (1922) publication. Although Hooton's study was focused on measurements and qualitative features of the skull, he did not limit his analysis to that part of the skeleton; he used whatever skeletal material was present to make his sex determinations (Willoughby 1922). Unfortunately, Hooton does not list the traits he used for sexing, but from his recorded observations it is clear

Table 9.1. Age and Sex Information by Site[1]

Site	Researcher	Adult Sex	Adult Age	Subadult Age	Source or Dates
Ater	Johnston	X	X	X	Johnston (1995)
	Baby	X	X	X	Baby (1948–1954)
Esch	Snow	X	X		Snow (1943)
	Greenman	X	X	X	Greenman and Goslin (1930a, b)
Harness	Johnston			X	Johnston (1995)
	Baby	X	X		Baby (1948–1954)
	Mills	X			Mills (1907)
Hopewell	Johnston	X	X	X	Johnston (1995)
	Pickering	X	X		Pickering (1987)
	Reichs	X			Reichs (1975)
	Snow		X		Snow (1943)
	Shetrone	X	X	X	Shetrone (1922–1925, 1926a)
	Moorehead	X	X	X	Moorehead (1891)
Rockhold	Reichs	X			Reichs (1975)
	Johnston		X		Johnston (1995)
Seip	Johnston	X	X	X	Johnston (1995)
	Konigsberg	X		X	Konigsberg (1985)
	Reichs	X			Reichs (1975)
	Baby	X	X	X	Baby (1948–1954)
	Shetrone	X	X	X	Shetrone, Greenman (1931)
	Blosser	X		X	Shetrone (1926b)
	Krogman	X		X	Shetrone (1926b)
Turner	Cadiente	X	X		Cadiente (1998)
	Giesen	X	X		Giesen (1991–1992)
	Santa Luca	X	X	X	Greber (1976)
	Hooton		X		Willoughby (1922)
	Volk			X	Volk (1905)
	Putnam	X			Putnam (1885)
	Metz	X		X	Metz (1882)

[1]Marked boxes indicate that a determination for the listed researcher is used as primary age or sex information in the HOPEBIOARCH data base. Some researchers may have made age and sex determinations that are not marked because they were superceded by later determinations believed to be more reliable.

that he made note of traits such as the size of the mastoid process, supraorbital ridges, size of the mental eminence, and contour of the frontal. Therefore, based on the similarity between the traits he observed in the skull and the standard traits used today, coupled with the fact that he considered other parts of the skeleton as well in his assessments, it would not be surprising if Hooton's assessments were fairly accurate. Hooton's findings concerning sexual dimorphism in the skull (Willoughby 1922), in turn, may have been known to members of Shetrone's teams excavating the Hopewell and Seip sites (Shetrone 1926a; Shetrone and Greenman 1931). These team members included a young anthropologist by the name of Wilton Krogman, who joined the crew for part of the 1926 field season at Seip (Shetrone 1926b), and would later become known for his work on forensic analysis of the skeleton (e.g. Krogman 1939; Krogman and Iscan 1986).

Sex assessments after 1930 were made primarily in a laboratory setting by trained physical anthropologists. Cranial assessments from that point forward would likely rival in accuracy those made today because most of today's standard features were already well known then. Pelvic assessments prior to 1970 would have been fairly good as well, but probably improved with the publication of Phenice's (1969) technique involving the ventral arc, subpubic concavity, and ishiopubic ramus ridge. Of the sex assessments made during the period from 1930 to 1970, only two are of relevance to the study presented below. Charles Snow (1943) assigned sexes to Ohio Hopewell skulls as part of a craniometric study. These data are known to us from data collection forms with no explanation, so the techniques used to determine sex are unclear. However, since the study was focused on skulls, it seems likely that these determinations were made, either primarily or exclusively, using cranial indicators. Raymond Baby also determined the sexes of a number of Ohio Hopewell skeletons sometime between 1948 and 1954 (Greber 1976). Based on the fact that he included cremations in his analysis, it seems likely that he would have used whatever traits were available, whether cranial, pelvic, or other, depending upon the preservation of each individual set of remains. Sex assessments made by researchers working after 1970 would likely have been based on the same general suite of traits used for sexing today, and it should be expected that the results are quite comparable among investigators working after this date.

Age Assessment in the Twentieth Century and Ohio Hopewell Skeletal Data

The expected comparability of age assessments on Ohio Hopewell remains is much more difficult to predict. Although some standard aging methods have been available since the early 1920s, the methods for aging adult skeletons have undergone significant revision since that time, and new methods that are now considered standard were introduced in the late 1980s. On the other hand, techniques for aging subadults have been recognized for a long time, and the landmark work on skeletal development and age dates back to the 1920s (Stevenson 1924). Thus, it can be expected that age estimates on subadults are very comparable among physical anthropologists working after 1930, while age estimates on adults likely vary to some extent over time.

Aging of adults is based on the slow, and highly variable, degeneration of skeletal elements. These may include cranial sutures, sternal rib ends, the pubic symphysis of the pelvis, or the auricular surface of the pelvis (Buikstra and Ubelaker 1994). Aging of subadults, on the other hand, is based on the more regular sequence of skeletal and dental development, measurements of bone size, or some combination of both. Because of the regularity in sequence and timing of skeletal development, accuracy is generally quite high for subadult determinations compared to adult determinations. Subadult assessments based on dental development and eruption are most accurate up to the age of 12 years, with errors ranging from approximately one year on either side of the estimate for young children, to perhaps three years for pre-teens (Buikstra and Ubelaker 1994). After the age of 12, development of skeletal elements becomes the primary means of age assessment (Buikstra and Ubelaker 1994).

Most of the limb bones begin as multi-element structures held together by plates of cartilage. There is typically a long shaft, and one or more growing ends called "epiphyses". These epiphyses are attached to the shaft through a plate of cartilage, and growth in bone length takes place at the junction between each epiphysis and the shaft. Skeletal epiphyses begin fusing to the shafts of long bones as early as nine years of age in females, and 11 years of age in males (Buikstra and Ubelaker 1994). Fusion of the various epiphyses follows a predictable sequence that spans the teenage years. The range of variation in the timing of these fusions is higher than that for dental eruption, however, and the problem is exacerbated by generally earlier fusion of epiphyses in females than in males. Still, the age ranges for epiphyseal fusions are relatively narrow compared to the age ranges of adult age categories. Age ranges produced by applying the epiphyseal fusion approach may span five years or more within each sex, and female epiphyses tend to fuse about two years earlier than the same epiphyses in males. Thus, because it is very difficult to accurately sex adolescents before their late teen years, an additional two years must be added to the age range for the fusion of most epiphyses. Once the limb epiphyses have all fused, usually by the end of the teen years, other developmental indicators continue to be useful into early adulthood. For example, the spheno-occipital synchondrosis in males tends to fuse between the ages of 20 and 25, and the pseudoepiphysis of the medial clavicle at some point between the ages of 20 and 30 (Buikstra and Ubelaker 1994). Thus, age assignments are fairly easily made into 5–10 year categories during the first 30 years of life, if the appropriate parts of the skeleton are available for analysis.

Excavators of Ohio Hopewell sites began reporting the ages of subadults from at least the early 1880s (e.g. Metz 1882). Typical reporting included categories such as "infant", "child", or "adolescent". Such identifications would not have been terribly challenging for anyone with even a passing knowledge of skeletal development. The ability to recognize bones with unfused epiphyses, or dentitions that were not fully erupted, and then to roughly estimate body size from the skeletons uncovered, would have been all the information necessary to make such estimates. For those familiar with seeing adult skeletons at a site, the ability to recognize subadults and to sort them into broad categories would have been easy to acquire. Therefore, it is expected that the accuracy of these assessments by early excavators is quite good at the broad scale of distinguishing children, adolescents, and adults, but that divisions into finer subadult age categories, when attempted, may be somewhat less reliable.

The situation is quite a bit more complex when considering estimates of adult ages. Physical anthropologists have been recognizing over the last two decades that our methods for age estimation are not nearly as accurate as once thought (Jackes, 2000). When different methods are applied to similar samples, the results tend to be different. Accuracy rates may also vary depending on the age of the individual being examined. For example, various methods of assessing age from cranial suture closure have peak accuracy at different ages (Jackes, 2000). When tested on individuals of known age in the Terry Collection sample, Meindl and Lovejoy's (1985) aging method had an error rate of about five years for the 35–40 age range, but that rate increased to around 10 years at age 50, and around 20 years at age 60. Conversely, the method proposed by Masset (1989) has an error rate of about 5 years for individuals between the ages of 55 and 60, while being off by as much as 15 years between the ages of 35–40, and over 10 years at the age of 70. These error rates, while large, may not be so high as to render social analyses unreliable, because most social analyses based on mortuary data tend to use age categories that are quite wide. For example, in the HOPEBIOARCH data base, age categories span 15 year periods, and are divided into young adults (21–35), middle adults (36–49), and old adults (50+). However, there is also a recognized tendency with many age estimation techniques to underestimate ages of individuals over the age of 45 or 50 years (Jackes, 2000). This bias poses a more serious problem in social analyses, because it means that old adults are likely to be misidentified as middle adults, making certain social roles that might be reserved exclusively for old adults actually appear to have been held frequently, or even primarily, by middle adults. These problems with current adult aging methods must be kept in mind when considering the data available from the past century or so of research on Ohio Hopewell skeletons.

The earliest excavators of Ohio Hopewell sites did not have much to say about adult age, except to differentiate adults and subadults (e.g. Metz 1882; Putnam 1886b; Volk 1905). Field assessments of adult age that were made by the teams headed by Shetrone (1926a), Moorehead (1891), and Shetrone and Greenman (1931) were few in number and most likely based on observations of dental wear, antemortem tooth loss, or perhaps degree of osteoarthritis evident in the joints, despite the fact that at least one trait, closure of cranial sutures, had already been recognized as a potential indicator of age (Dwight 1890). Dwight's observations were not standardized, however, until Todd and Lyon (1924, 1925a–c) published a series of articles on the subject in the 1920s. Methods for aging skeletons from the pubic symphysis were also published in the 1920s (Todd 1920, 1921). These methods were available early enough that they could have been used by Shetrone's team prior to publication of his work at the Hopewell site (Shetrone 1926a), and Shetrone and Greenman's team prior to publication of their work on the Seip site (Shetrone and Greenman 1931). However, the relatively small percentage of skeletons that were actually assigned to an age category for these two sites, and the fact that the categories were recorded in the more general format of young, middle, or old adult rather than as an age range, suggests that the methods used by Shetrone's teams were not those presented by Todd and associates.

The only specific information available on methods of age determination used for Hopewell skeletons prior to 1930 is the study of the Turner skeletons published by Hooton (Willoughby 1922). Hooton was able to sort 55 out of 72 adult skeletons into age categories of 21–35 years, 36–50 years, and 51+ years. He does not list the methods used, although he does report dental wear by age category for 29 of these skeletons, as well as cranial suture closure by age category for 33 skeletons. These reports suggest that he recognized that these traits could vary with age; however, they were perhaps not the exclusive indicators he used in making his age assessments.

Since the 1920s, the cranial suture method of age assessment has been updated and expanded by Meindl and Lovejoy (1985) and Mann et al. (1987). These updates would not have been available to Snow in the 1940s, Baby in the early 1950s, Reichs and Santa Luca in the mid-1970s, or Sciulli in the early 1980s, but would likely have been known by all later investigators. A similar situation holds for sexing from the pubic symphysis. Todd's (1921) original method was updated over time by several investigators, beginning with Brooks (1955) and McKern and Stewart (1957) in the 1950s, and continuing through the late 1980s with modifications by Gilbert and McKern (1973) and Meindl and Lovejoy (1985). A new approach called the Suchey-Brooks method was ultimately developed in the late 1980s (Katz and Suchey 1986; Brooks and Suchey 1990), and appears to have become the method of choice for many physical anthropologists.

Yet another method for aging from the pelvis was developed around the same time as the Suchey-Brooks method. This new method used degeneration of the auricular surface of the pelvis to estimate age (Lovejoy et al. 1985b). Thus, researchers working with Ohio Hopewell material after 1990 had new methodologies available for the pubic symphysis and the auricular surface that were not available to researchers previously. The presence of so many different methods, and modifications to earlier methods, right up to the recent past makes it possible that age estimates could differ significantly among investigators working during different decades, or among those working at the same time but employing different methods among several considered to be standard. Current standards favor the original method of Todd, the newer Suchey-Brooks method, and the auricular surface method for age estimation of skeletal remains (Buikstra and Ubelaker 1994), although there is still much concern about the real accuracy of these methods (e.g. Jackes, 2000). Revisions to the auricular surface method are still being suggested (Buckberry and Chamberlain, 2002; Igarashi et al., 2005).

THE COMPARATIVE STUDY

In order to better understand the quality of the age and sex information available for Ohio Hopewell human remains, a compilation was made of the estimated ages and sexes of as many Ohio Hopewell individuals as possible at the time of the study. Skeletons from some sites, such as Esch, Marietta, Rockhold, and Wright-Holder, were excluded from the comparative study because they were only examined by a single researcher. Table 9.1 summarizes the sites from which the individuals came and the researchers who made the assessments. The age-sex data, themselves, are presented in Appendices 9.1–9.11. Only skeletons with a provenience designation or a unique accession number that allowed comparison among the determinations made by different researchers were included in the study.

The data in the eleven appendices were obtained from published site reports, articles, and dissertations, as well as from unpublished field notes and museum inventories.

In addition, fairly recent assessments made by Cheryl Johnston in the 1990s (Western Carolina State University) and Paul Sciulli in the early 1980s (Ohio State University) were also gathered. Together, these sources provided a considerable quantity of information on the estimated ages and/or sexes of individuals (n = 347) buried at the larger sites of Hopewell, Seip,

Table 9.2. Comparison of Johnston's (1995, 2002) Age and Sex Assessments for the Hopewell Site

ID Number	Mound	Burial	2002 Sex	2002 Age (Years)	1995 Sex	1995 Age (Years)	Age Change
150108	2	1	M	30–40	M	40–50	–10
150168	2	2	M	14–19	M	14–19	0
150109	2	3	F	20–25	F	30–40	–12
150112	2	4	F	20–25	F	25–35	–7
150215	2	5	M	35–45	–	35–45	0
150135	4	2 (Skull 1)	F	Adult[1]	–	–	–
150134	4	2 (Mandible)		50+	–	–	–
150133	4	2		20–35	–	–	–
150129	4	3	M	25–35	M	30–45	–8
150143	4	4		40–45	M	35–45	+3
150127	4	9	M	45–55	–	37–47	+8
150137	7	1	F	25–35	F	32–42	–7
150138	7	3	M	20–30	–	–	–
41618	18	181	M	40–50	–	–	–
41617	20	177		30–40	–	–	–
41613	23	205		20–30	–	–	–
41606	23	228	F	20–30	–	–	–
41608	23	234	F	40–50	–	–	–
41607	23	236	F	30–60	–	–	–
150165	25	6	M	20–30	M	34–44	–14
150166	25	7	F	20–30	F	35–45	–15
150123	25	10		36–40	–	–	–
150213	25	11	M	20–30	M	–	–
150124	25	12	F	25–35	–	30–40	–5
150119	25	13	F	–	–	–	–
150132	25	15	F	20–30	F	30–40	–10
150131	25	15	F	20–30	F	30–40	–10
150122	25	16	F	20–30	F	–	–
150061	25	22A	M	35–45	M	40–50	–5
150062	25	22B	F	25–35	F	25–35	0
150210	25	23N	F	40–50	–	40–50	0
150209	25	23S	M	45–55	M	40–50	+5
150128	25	24	M	40–50	–	MAD	+3
150121	25	25	M	30–35	M	30–40	–2
150117	25	34	M	45–55	–	45–55	0
150212	25	35	M	35–45	M	45–55	–10
150058	25	41–1	F	41–45	–	–	–
150057	25	41–3	F	40–50	F	MAD[2]	+3
150053	25	41–2	F	30–40	F	MAD-OAD[3]	–15
150116	25	42	F	25–35	F	35–45	–10
150115	25	45	M	35–45	M	35–45	0
150170	26	5	M	–	M	40–60	–
150164	26	6	M	35–45	M	35–45	0
150107	27	1	F	30–35	M	22–32	+5
Average:				36		40	–4

[1] The "Adult" category indicates a skeleton older than approximately 20 years.
[2] MAD stands for "Middle Adult", which includes the age range of approximately 35–49 years.
[3] OAD stands for "Old Adult", which includes the age range of approximately 50 years and older.

Ater, and parts of Turner, as well as data on a few individuals (n = 7) buried at the smaller sites of Esch, Marietta, Rockhold, and Wright-Holder. Limited data are also available from the relatively large but less well reported Edwin Harness Mound at Liberty Earthwork.

Most of the analyses to follow include only those data on ages and sexes of Hopewell skeletons that were available before 1998. These were the data included in the HOPEBIOARCH data base prior to conducting the mortuary analyses in the *Gathering Hopewell* book (Carr and Case, 2005c). Since the initial study into the reliability of age and sex information from the Hopewell site, additional work by Johnston (2002) has produced new data that were not available at the time the data base was first created. The particulars of Johnston's study are described in Chapter 10 of this volume. These new data are not part of the analyses for the Hopewell site in this chapter. However, Table 9.2 is included to show how these determinations have impacted the original determinations from the study reported here.

METHODS

The various age and sex assessments tabulated for each of the larger sites of Hopewell, Turner, and Seip (Appendices 9.1–9.10) were compared to determine the degree of consistency among all researchers on a site-by-site basis. Comparisons were generally made between pairs of investigators to maximize the number of skeletons included in each component of the study. The same approach was used to compare the smaller data sets from Ater, Esch, Edwin Harness, Marietta, Rockhold, and Wright-Holder, in cases where comparative data were available (see "Other Sites", below).s

Inter-investigator comparisons were occasionally hampered by difficulties in identifying which skeletons had been studied by each researcher. Particularly in cases of double burial, there was often confusion about which skeleton(s) had actually been analyzed and which estimate(s) went with which skeleton(s).[1] In order to indicate that determinations were made by multiple researchers for the skeletons in a double burial, but that the determinations cannot be assigned to a specific skeleton, such sex assessments in the appendices are followed by the entry "which?" for both skeletons. In these cases, the information is not used in comparing the degree of correspondence among researcher's assessments.

Comparison of sex determinations among the various researchers is a fairly straightforward process. The only adjustments made to the reported data involve disagreements about the certainty with which a particular sex was assigned. Many researchers reported the relative certainty of their sex assessments by designating skeletons as male or female when certainty was high, and "M?" (probable male) or "F?" (probable female) when there was some degree of uncertainty. For the analyses that follow, both male categories (male, probable male) and both female categories (female, probable female) were collapsed into "male" and "female" respectively. Thus, in each analysis, the sex determinations for each pair of researchers are reported as either matches or mismatches.

Age determinations for each site were compared in at least one of the following two ways, depending on the amount of data available. Method 1 is an integer-scale approach. When a pair of researchers tended to place skeletons into individual age ranges (e.g., 25–35 years), the midpoint of each age range was selected as the most probable age, and the numeric difference between the estimates of the two researchers was determined. A mean difference in years between the ages estimated by each investigator was then calculated. In cases where the data were primarily categorical (e.g., young adult, middle adult, etc.), assumed age ranges were assigned to the categories, and the midpoints of those age ranges were used in the numeric comparisons. These assumed age ranges are very similar to those reported by Hooton for skeletons from the Turner site, and probably represent categories that were commonly recognized from at least the early 1920s onward (Willoughby 1922). These categories are: infant (0–2), child (3–12), teen (13–20), young adult (21–35), middle adult (36–49) or old adult (50+).

Method 2 for comparing age estimates is a categorical-scale approach. The method determines whether individuals studied by two different investigators were assigned to essentially the same broad age categories of young adult, middle adult, old adult, and etc. Numeric data were converted to categorical data for these comparisons by identifying the midpoint of each numeric age range, and then assigning the individual to one of the following categories: infant (0–2), child (3–12), teen (13–20), young adult (21–34), middle adult (35–49) or old adult (50+). Because these categories are more relevant to social analyses than quantitative ages, it is important to know how consistently different researchers tended to assign skeletons to the same category. Categorical determinations were used for the analyses in *Gathering Hopewell*.

ANALYSES

The Hopewell Site

The greatest amount of information on age and sex is available for human remains from the Hopewell site. The earliest assessments were done in the field by members of Warren Moorehead's excavation team in the early 1890s (Moorehead 1891; Moorehead 1922), and 30 years later by Henry Shetrone's excavation team (Shetrone 1922–1925; Shetrone 1926a). In the 1940s, Charles Snow collected metric data on Ohio Hopewell crania and recorded his assessments of age and sex on unpublished data collection forms (Snow 1943). More recently, Kathleen Reichs (1975) reported sex information for individuals from several sites including Hopewell, and Robert Pickering (1987) conducted an inventory of the Moorehead skeletons housed at the Field Museum in Chicago. Pickering assessed age and sex where possible, and tried to sort out some of the confusion caused by multiple individuals being assigned the same burial number. In the early 1980s and mid 1990s, respectively, Paul Sciulli (n.d.) and Cheryl Johnston (1995) each reassessed age and sex for many of the skeletons from the Shetrone excavations, which are currently housed at the Ohio Historical Center in Columbus. A more comprehensive study of the ages and sexes of Hopewell site individuals curated at the Ohio Historical Society and the Field Museum of Natural History has since been reported by Johnston (Chapter 10; 2002). The study includes estimates made by seriations and multivariate statistical approaches. As noted above, these latter determinations were not included in the pairwise analyses between researchers presented here.

Appendices 9.2A and 9.2B contain all of the 1995 and earlier data on age and sex available from the various researchers for the Hopewell site. Comparisons of the age and sex assessments made by various researchers are reported in Tables 9.3A and 9.3B. For the Hopewell site, the assessments by Johnston (1995) are used as the baseline for comparison,

Table 9.3A. Sex Correspondence for Ohio Hopewell Sites: Number of Individuals Placed in the Same Sex Categories

	Comparisons				
Reasearcher and Site	**1**	**2**	**3**	**4**	**5**
Johnston	**Scuilli**	**Reichs**	**Snow**	**Shetrone**	**Baby**
Ater	–	3/4	0/1	–	5/6
Hopewell	14/16	16/18	16/18	11/12	–
Harness	–	1/1	1/1	–	–
Konigsberg	**Johnston**	**Reichs**	**Baby**	**Snow**	**Shetrone**
Seip-Pricer	1/1	2/2	7/7	2/2	6/7
Cadiente[1]	**Giesen**	**Santa Luca**	**Hooton**		
Turner	8/11	6/6	9/10		

[1]Comparisons are between Cadiente's pelvic and cranial assessments and all assessments by other researchers.

Table 9.3B. Age Correspondence for Ohio Hopewell Sites: Number of Adults Placed in the Same Age Categories

	Comparisons				
Reasearcher and Site	**1**	**2**	**3**	**4**	**5**
Johnston	**Scuilli**	**Snow**	**Shetrone**	**Baby**	
Ater	–	1/1	–	2/2	
Hopewell	8/20	5/23	9/25	–	
Harness	–	0/1	–	–	
Cadiente	**Giesen**	**Santa Luca**	**Hooton**		
Turner	5/7	–	10/12		

because they are the most recent and probably used the most standard techniques.

Comparison of C. Johnston and P. Sciulli

Johnston's (1995) data on age and sex were used to find all skeletons that had an associated provenience or a catalog number and that had age or sex information recorded. Johnston's assessments were the most recent available in 1998, at the time this study was made, and use many of the newest techniques (e.g., the Suchey-Brooks pubic symphysis method and the auricular surface method for aging), which had not yet been developed when many of the earlier assessments were done, including those by Sciulli (n.d.). Table 9.3A contains a summary of the results of these comparisons.

Sixteen skeletons sexed by both Johnston and Sciulli could be directly compared (Appendix 9.3). It is not certain that the sex designations assigned by Johnston and Sciulli for skeleton M25 B23 were made on the same individual because this provenience contained two skeletons. If these two researchers both looked at the "South" skeleton, then their assessments are a match. However, because of the uncertainty, this skeleton was not included in the comparison. Fourteen out of sixteen (14/16) assigned sexes matched (88%). One of the two skeletons disagreed upon by Johnston and Sciulli (M25 B42: 283/400) was also evaluated by K. Reichs and C. Snow. Snow agreed with Sciulli that it was a male and Reichs agreed with Johnston that it was a female. It appears that this particular skeleton shows some characteristics of both sexes.

Twenty skeletons aged by both Johnston and Sciulli were compared using Methods 1 and 2 (Table 9.3B). Johnston (1995) recorded quantitative ages for 19 of the skeletons and a categorical age for only one. This individual was called a "middle adult". Johnston's age assessments proved to be older than Sciulli's, and averaged eight years older for all 20 skeletons. Exclusion of the one child and the "middle adult" individual did not change the average difference in estimates. For Method 2, Johnston and Sciulli agreed on age category for 8/20 (40%) individuals. In all cases of mismatch, Sciulli's assessment fell into a younger age range category.

Comparison of C. Johnston Lab Assessments and H. Shetrone Field Assessments

Age and sex data from Shetrone's (1926a) published report and field notes (Shetrone 1922–1925) on the Hopewell site were compared with Johnston's (1995) data (Appendix 9.4). Twelve skeletons sexed both by Johnston and by Shetrone's team could be compared directly. Eleven of twelve sexes (92%) were found to match in this comparison. The only mismatch is the skeleton from M2 B2, which Johnston determined to be "probable male" and Shetrone determined to be "probable female". Looking to other researchers for confirmation of one sex or the other, one finds that Snow agreed with Johnston, while Reichs agreed with Shetrone. No sex was recorded for this individual by Sciulli. Thus, the case appears to have been ambiguous.

All of these results suggest that there is very little difference in sex determination between Johnston and Shetrone's team for skeletons from the Hopewell site.

Nearly all of Shetrone's age data from the site report and field notes are categorical. Applying Method 2 to the data, Shetrone's age categories exceeded Johnston's in only one case, and the two researchers assigned skeletons to the same category 9/25 times (36%). Using Method 1 for individuals over 20 years of age, Shetrone's estimates average 33 years whereas Johnston's average for the same set of skeletons is 41. Thus, results of the age comparison show nearly the same degree of difference between the estimates as was found between Johnston and Sciulli.

Comparison of C. Johnston and C. Snow

Age and sex data from Snow's (1943) raw data sheets were compared with Johnston's (1995) data (Appendix 9.5). Snow and Johnston agreed on the sex of 16/18 (89%) individuals. The two skeletons on which Snow and Johnston disagreed were each studied by four researchers. In both cases, two researchers said they were males and two said they were females, suggesting that both skeletons were difficult to evaluate. It would appear that Snow and Johnston are quite consistent in their sex assessments – somewhat surprisingly so when one considers that Snow was likely using the skull, alone.

Snow's age assessments were also apparently made from the skull. Since aging from the cranial sutures has proven to have a very high error component (Krogman and Iscan 1986), Snow's assessments would be expected to differ markedly from Johnston's. It is not surprising, then, that the average age difference between Johnston's and Snow's assessments is 12 years, with Johnston's determinations being older in most cases. The greatest difference is 20 years, and the smallest is zero years. In only one case did Snow suggest an age greater than Johnston, and most of Snow's assessments appear to be substantially younger, again reiterating the comparisons of Johnston's age estimates with those of Sciulli and Shetrone. Only 5/23 (22%) ages were in the same category, and three of the similar assessments were for individuals under age 25, when indicators of skeletal development can still be used for more accurate aging.

Comparison of C. Johnston and K. Reichs

Eighteen skeletons sexed by both Johnston (1995) and Reichs (1975) could be compared (Appendix 9.6). Johnston and Reichs agreed on 16/18 (89%) individuals. The two cases of disagreement were problematic for other researchers as well, suggesting that these two skeletons were difficult to assess for sex.

Comparison of W. Moorehead Field Assessments and R. Pickering Lab Assessments

The skeletal material currently extant from Moorehead's excavations is curated at the Field Museum of Natural History in Chicago. There are several problems with the sample. First, many of the proveniences that were purported to contain a single skeleton have elements of two or more individuals assigned to them. In some cases, this problem makes it difficult to determine with certainty which of the two or more skeletons is actually the one referred to in Moorehead's notes and site report. In several of these instances, the bulk of the skeletal material belongs to a single skeleton (Pickering 1987), and only a few elements belong to one or more others. When such was the case, the primary skeleton was assumed to be the one referred to in the field notes or site report. In addition, Moorehead did not save all of the skeletal material he excavated. Rather, he apparently chose skeletons that were better preserved or individual elements that exhibit interesting pathologies or anomalies, such as humeri with septal apertures (Pickering 1987).[2]

No comparison is possible between Moorehead's field assessments and Pickering's lab assessments, because none of the skeletons aged or sexed by Moorehead in the field were the same as those aged and sexed by Pickering at the Field Museum (Appendix 9.7). It should be noted that Moorehead assigned only one skeleton to any age category other than "adult" or "child". Furthermore, Moorehead seems to have noted only that a skeleton was an adult when the skeleton was so badly decayed that its status as an adult versus juvenile was not readily visible. When a skeleton was obviously an adult, nothing was said about it. When a skeleton was obviously a child, it was noted as such. Appendix 9.7 contains information only about ages that were explicitly stated in Moorehead's site report or field notes, whereas the HOPEBIOARCH data base has an "assumed adult" category to account for individuals not explicitly described as adults by Moorehead.

Comparison of C. Snow to C. Johnston, P. Sciulli, and R. Pickering Combined

A combined dataset was created from the age and sex assessments by Johnston (1995), Sciulli (n.d.), and Pickering (1987) for comparison with the determinations by Snow (1943). Such combination seems reasonable since the sex determination methods used by all of these investigators were likely very similar, and all of the investigators except for Snow would likely have used age assessment techniques that included the pelvis where available. These age data will provide an interesting contrast to those from Snow based on the skull. In all cases, Johnston's determinations were used when present, and those of other investigators when not, to compare to Snow's estimates.

Twenty-two sexed skeletons could be compared, versus 18 in the comparison with Johnston's estimates alone. There was agreement between Snow and the other three researchers on 20/22 (91%) skeletons. This suggests a very good match between the sex assessments of Snow using only skulls, and those by later researchers who may have relied more heavily on the pelvis.

Twenty-six aged skeletons could be compared. The age results are very similar to those found when only Johnston and Snow are compared, which isn't surprising since the bulk of the data used for comparison with Snow are from Johnston's determinations (Appendix 9.8). Applying Method 1, Snow's assessments were 11 years younger than those of the other three researchers. When Method 2 was applied, only 7/26 (27%) assessments matched the same age category.

The Turner Site

Comparison of T. Cadiente with M. Giesen, E. Hooton, and Santa Luca

Data on age and sex from the Turner site are available from seven different sources. The primary source is a Master's thesis by Teresa Cadiente (1998). Other data collected after 1970 are available from Myra Giesen (1991–1992), who made her unpublished assessments in the early 1990s, and Santa Luca, a physical anthropologist hired to provide age and sex assessments for Greber's (1976) dissertation. Earnest Hooton (Willoughby 1922) supplied age and sex information in the 1920s for a number of Turner skeletons, and more limited information is available from excavators of the Turner site, including Metz (1882), Putnam (1885) and Volk (1905).

Data on sex and age for all provenienced skeletons used by Cadiente (1998) from the Turner and associated Marriot sites were entered into tables (Appendices 9.9A and 9.9B). These data are derived from Appendix 3 of a draft of Cadiente's thesis. Appendices were ultimately not included in the thesis. Provenience information for each catalog number is given in Cadiente's Appendix 2. Hooton has additional data for skeletons from the Turner site, but these data are reported by catalog number, and there is no readily available list at the Peabody Museum that cross-references the catalog numbers with the burial numbers. The only way to determine which burial number goes with which catalog number would be to go through the accession ledger and record the association by hand. Therefore, 11 individuals with age and/or sex information reported by Hooton could not be included in the data base. This problem did not affect the comparative study, however, because these were individuals that were not examined by Cadiente or Giesen. The catalog numbers of burials without associated provenience designations are reported in the last part of Appendices 9.9A and 9.9B.

Due to the often fragmentary nature of the Turner skeletons, Cadiente's sex assessments were made using pelvic indicators in some cases, cranial and mandibular indicators in others, and occasionally by measuring the femoral, humeral, or radial head and comparing with metric values from other populations. These different methods are reported in separate columns of the appendix tables to indicate the different levels of confidence in each technique (eg. TC Pelvic Sex, TC Cranial Sex, TC Other Sex). Data from Giesen were also reported in two columns, one listing designations based on pelvic indicators, and the other listing designations based on the rest of the skeleton. Giesen sometimes reported a sex with a question mark following (eg., F?). The question mark indicates that sex was determined based on size and shape extremes. Data from Hooton and Santa Luca are recorded in single columns simply for comparison. The specific methods they used are unknown.

The data on skeletal age are handled in a similar way. For Cadiente's information, pelvic techniques such as pubic symphysis degeneration and auricular surface remodeling are recorded in one column (TC Pelvic Age), cranial suture closure results in a second column (TC Cranial Age), and techniques based on dental wear, osteoarthritic stage, and so on are found in a third column (TC Other Age). Ages were reported by Giesen only when they were determined using either the pubic symphysis or the auricular surface, and should therefore be quite comparable to Cadiente's "Pelvic Age" determinations. Data from the other physical anthropologists were recorded in single columns (Hooton Age, and Santa Luca Age) simply for comparison.

Further information about the sex of several skeletons could be determined through the use of osteometric techniques. Cadiente actually studied two different prehistoric Native American samples for her thesis: Ohio Hopewell skeletons from the Turner site, and a portion of the skeletons from the nearby Fort Ancient period site of Madisonville, which had been mislabeled as belonging to the Turner site. Fifteen of the skeletons from these two sites could be sexed using pelvic indicators, and also had femora that were present and well enough preserved to allow the femoral head diameter to be measured (10 individuals from Madisonville, 5 from Turner). The Turner individuals had femoral head diameters within the range of those of the Madisonville individuals, suggesting that combining the samples from two sites for this study is reasonable. The female femoral head diameters (N=10) have a mean of 41.9 mm, a median of 41.2 mm, and a standard deviation of 1.4 mm. The range is 40.6–44.3 mm. At three standard deviations above the mean, the femoral head diameter would be 46.0 mm. The male femoral head diameters (N=5) have a mean of 49.4 mm, a median of 48.9, and a standard deviation of 1.5 mm. The range is 47.6–51.2 mm. At three standard deviations below the mean, the femoral head diameter would be 45.1 mm. Using three standard deviations above the female mean as a minimal size for all male femoral heads, and three standard deviations below the male mean as a maximal size for all female femoral heads, these data suggest that any femoral head diameter greater than 46 mm can be considered that of a male and any diameter less than 45 mm can be considered that of a female. Those falling in the region of overlap between 45 and 46 mm are considered indeterminate.

Using these criteria, it was possible to determine sex with what should be a reasonable degree of confidence for several individuals who could not be sexed using pelvic or cranial traits. These skeletons are: Enclosure B1a-A (#A-534), Enclosure B3a (#A-541), M1 B1-A (#A-612), M1 B9 (#A-622), and M12 Bc-A (#30119). Femoral head measurements for all of the Turner skeletons that could be measured are reported in the column titled Femur Sex (Appendix 9.9A). Those that could be sexed based on their femoral head diameters (excluding those used to develop the distribution) have a sex designation in the Femur Sex column, followed by the femoral head diameter measurement in parentheses.

All of the physical anthropologists seem to agree on the sex of individuals who had pelves available for study. Cadiente assigned sex based on pelvic characteristics to ten individuals.

None of the other physical anthropologists disagreed except in the case of catalog number A-4, where Hooton and Giesen disagreed with Cadiente and Santa Luca, who thought A-4 was a female. In this case, the femoral head diameter (41.3 mm) is slightly below the female mean and well below the boundary point of 45 mm, suggesting that the individual was most likely a female.

Cadiente also sexed four individuals using cranial and mandibular indicators. All four were sexed by at least one of the other physical anthropologists. Cadiente agreed with Hooton on the three skeletons that they both observed, but disagreed with Giesen on two of the three individuals (catalog numbers A-560 and A-612). Hooton supported Cadiente's assessment that skeleton A-612 was a female. Femoral head measurements also suggest that A-612 is female, although at 44.4 mm, the diameter is near the upper end of the female range.

For six individuals, Cadiente relied on criteria such as femoral, radial, and humeral head measurements, using cut-off points determined from other populations for the radial and humeral head measurements, and in one case, using overall robusticity as a sex indicator. Four of these six individuals were also sexed by others, and in each case, Cadiente disagreed with the other investigator. In two of these cases Cadiente disagreed with both Hooton and Giesen. It is difficult to know which assessments are most reliable in such cases, since all of the assessments were probably based on criteria other than the standard traits of the pelvis and skull. Furthermore, metric techniques often perform poorly when applied to populations other than those on which the technique was developed. However, in each case of disagreement between Cadiente and others, the femoral head analysis that was developed for use with this particular population confirmed Cadiente's designation of female. Furthermore, the stature of one of these individuals (M12 Bc-A), as measured during excavation, proved to be only 5 feet 0 inches, further supporting Cadiente's contention that this individual was female.

Overall, it would appear that sex assessments on the Turner series using pelvic characteristics are quite reliable. Sexing by cranial traits appears to have led to some disagreement among the three physical anthropologists, suggesting that these traits are less reliable indicators of sex in this skeletal series. It is interesting to note that at the Hopewell site, Johnston (Chapter 10) found only three cranial traits to be good sex indicators. These were supraorbital tori, nuchal crest, and mastoid process. Assuming that the femoral head diameters of the Madisonville people are similar to those of the Turner skeletons, sexes based on femoral head diameters appear to be fairly robust as well. Thus, sex determinations based on pelvic characters can probably be considered most reliable, those based on femoral head diameter perhaps second most reliable, and those based on cranial/mandibular traits and other techniques least reliable in this skeletal series.

Age designations are remarkably consistent across researchers at the Turner site. Applying Method 2, Cadiente agreed with Giesen on age categories in five of seven cases (71%). In one of the cases of disagreement, Cadiente and Hooton were in agreement that the individual was middle aged (36–49), whereas Giesen reported an age of 30–34. Cadiente and Hooton agreed more often, having 10/12 (83%) assessments in common. In one of these two disagreements, Giesen agreed with Cadiente that the individual was a young adult rather than a middle adult as assessed by Hooton. The other individual (A-16) was disagreed on by all three investigators, with Giesen assigning an age in the late teens, Cadiente an age in the young adult range, and Hooton an age in the middle adult range. However, Cadiente notes in her appendices that there were two skeletons with the label A-16, suggesting the possibility that either Hooton or Giesen might have assessed a different skeleton from that studied by Cadiente.

Comparison of M. Giesen and E. Hooton

Fourteen skeletons were sexed by both Giesen and Hooton. They agreed on 10 of 14 (71%) skeletons. There were no disagreements in the five cases where Giesen used pelvic indicators to determine sex. Once again, the evidence suggests that sex assessments based upon the pelvis have provided the greatest consistency among physical anthropologists for the Turner site.

The Seip-Pricer Mound

C. Johnston, L. Konigsberg, K. Reichs, C. Snow, R. Baby, and Blosser/Krogman's Data

Johnston's (1997c) data base on age and sex was used to find all skeletons with an associated provenience or a unique catalog number that had age or sex information recorded (Appendices 9.10A and 9.10B). Lyle Konigsberg's data on these same skeletons as well as a number of others were then added to the tables (Konigsberg 1985).

The fact that most of the Seip burials were cremations poses technical problems for assessing age and sex. Konigsberg's sex designations were determined primarily by presence or absence of a preauricular sulcus, suggesting a possible bias toward designations of female, since a small proportion of males will also exhibit a preauricular sulcus (Buikstra and Ubelaker 1994). Konigsberg also used Phenice's (1969) technique and cranial features when possible, but does not report which features were used on which skeletons. Because Konigsberg also did not report catalog numbers, skeletons were matched by burial number to the extent possible. There were often multiple individuals from the same provenience, causing occasional problems matching up the skeletons analyzed by Johnston and Konigsberg. Ages were used to solve some of these problems, since it is unlikely that an adult, for example, would be mistaken for a young child due to the ease of recognizing unfused epiphyses in children, even in cremated material. The catalog numbers in Appendices 9.10A and 9.10B come primarily from Johnston's data base, as do most of the notes. Provenience numbers come primarily from Shetrone and Greenman's (1931) site report. When an adult and a subadult skeleton are reported from the same provenience, the adult is given the designation "A" and the subadult "B". In other multiple burials involving only adults, the same burial number is given to all individuals with an available age or sex assessment.

Age comparisons between Konigsberg and Johnston were restricted to the subadults, because Konigsberg did not report any specific ages for individuals over 20 years old, given the cremated nature of most of the sample. Individuals over 20 years old were identified simply as "adult" by Konigsberg. Johnston and Konigsberg agreed on the adult category in six of eight cases. The only disagreements were over Burial 77, which Johnston called an adult while Konigsberg gave an age range of 15–19 years, and Burial 76, where Konigsberg gave an age of 20+ whereas Johnston gave an age range of 13–19 years. The fact that these two burials are numerically adjacent to each other, and that the directions of the difference in age assessment between the investigators are opposite in the two cases, suggests the possibility that one or the other of the two investigators made an error when reporting the ages and skeleton numbers, and that in reality there was full agreement on all adult skeletons. Among the subadults, Johnston and Konigsberg had overlapping age-ranges for two out of three individuals. They disagreed only on the postcrania from Burial 48, which Johnston thought was 5.5–7.5 years and Konigsberg thought was 2.5–3 years.

As noted earlier, Reichs' (1975) dissertation included data on sex alone. She reported on only two skeletons (41A and 41B) not reported by Konigsberg. Her numbering system was a mixture of burial proveniences and catalog numbers, and the two additional skeletons were reported as 0041A and 0041B. The Seip site report lists Burial 41 as being a single, cremated skeleton. Thus, it is likely that these numbers are actually an abbreviation of the catalog number 957/041 (the 957 represents the Seip site), and that there were two individuals with this same number, which Reichs labeled A and B. Four of Reichs' five sexes can be compared to those from Baby. They disagree on 2/4 comparisons (50%). Shetrone and Greenman agree with Reichs on one of the disputed individuals (Appendix 9.10A).

Snow's limited data on Seip were also added to Appendices 9.10A and 9.10B. One burial, number 48, was said by Snow to be a cut trophy. Konigsberg also calls one of his Burial 48 individuals an "unburned trophy skull". The site report notes a skull lying atop a cremation pile that showed evidence of having been painted but not having been drilled – probably the same skull. Johnston doesn't mention a trophy among the Burial 48 skeletons, but since she has only one individual who is an adult labeled Burial 48, it is assumed that the same skeleton was observed by all three researchers. Only two sexes determined by Snow could be compared to other determinations. In both cases, Snow agreed with all other investigators who attempted to sex the same individuals.

Baby's data for skeletons from the Seip site are the most extensive (Appendices 9.10A and 9.10B). These assessments were taken from a data table in Greber's (1976) dissertation, which does not report the techniques used to age and sex the skeletons. These determinations were apparently made between 1948 and 1954. For those assessments that could be compared to one or more other investigators, Baby agreed with the others 8/10 times (80%). However, without knowing what features were observed by Baby on the rest of the skeletons from Seip, and given the fact that most of the sample was cremated, it is difficult to assess how accurate his other determinations might be.

There are quite a few assessments noted in Shetrone and Greenman's (1931) site report. These are also reported in Appendices 9.10A and 9.10B. It is not clear what techniques were used to determine sex or age, although they would have had the advantage of observing any cremations before they were disturbed by collection and transport. Shetrone and Greenman agree with the sex assessments of other investigators in 7/9 cases (78%). They disagree with Konigsberg on Burial 31, and with Baby on Burial 4. On Burial 2, Shetrone and Greenman agree with Reichs but disagree with Baby. Shetrone and Greenman's age data for adults are the most extensive next to the data from Baby. Seven ages could be compared to determine whether they fell in to the same range. The two data sets only agreed for 2/7 individuals (29%)

Blosser's and Krogman's data come from Greber's (1976) dissertation, and were apparently drawn originally from the excavation field notes. The data are quite limited, with only three skeletons having been assessed for sex, and only five for age (Appendices 9.10A and 9.10B). Sex could only be compared among Johnston, Reichs, Konigsberg, and Snow in two cases (Burial 48 "trophy skull", and Burial 52). There was no disagreement in either case, the first being assigned female, the second male.

Because so many of the Seip skeletons are cremations, and since the techniques used are not clearly outlined for several of the investigators, it would seem prudent to give precedence to assessments made on the inhumations first, followed by assessments on cremations that are agreed upon by more than one investigator. For those skeletons assessed by only one investigator, Konigsberg's assessments should be given greatest weight, because the technique he used is explicit, and included standard traits such as the preauricular sulcus, ventral arc, subpubic concavity, and ischiopubic ramus ridge.

Other Sites

Sex and/or age information from these same researchers is also available for the sites of Ater, Esch, Edwin Harness, Marietta, Rockhold, and Wright-Holder. Sources of this information are Johnston (1995), Reichs (1975), Snow (1943), and Baby (Greber 1976). All skeletons that have an associated provenience or a unique catalog number and that have age or sex information recorded were entered into Appendix 9.11. Most of the notes in the appendix come from Johnston's data base, and most of the catalog numbers come from Johnston or Snow. As mentioned earlier, the skeleton numbers recorded in Reichs' dissertation were based on a numbering system that used either the burial number or the catalog number, whichever best described the number on the skeleton or the box containing it. Because Reichs' results were recorded in a table with no indication of whether the number was a catalog or a burial number, large numbers on skeletons from small sites are assumed to indicate a catalog rather than a burial number, and small numbers are assumed to represent a burial number.

Five skeletons were sexed by both Johnston and Reichs. There is agreement on four (80%) of these. The only disagreement is over Ater Burial 50, which Johnston designated a "probable female" and Reichs called a male. Reichs did not report the certainty of her sex assessments in her dissertation tables through the use of question marks. Johnston and Snow only sexed two of the same skeletons. They agreed on one and disagreed on the other, with Snow calling Burial 51 a female, and both Johnston and Reichs calling it male. Burial 51 was the only skeleton assessed by both Reichs and Snow, and they also disagreed on the sex.

CONCLUSIONS

The age and sex comparisons presented above provide insight into both the relative usefulness of various age and sex assessment methods generally, and the degree to which specific researchers tended to agree on age and sex determinations. Both kinds of information are helpful in determining which age and sex determinations, of the many that have been made on Ohio Hopewell human remains and that are recorded in the HOPEBIOARCH data base, are useful for biological and sociological analysis.

As was expected, sex assessments on non-cremated skeletons are quite consistent among the various researchers, regardless of the traits used to make the determinations. For skeletons from the Hopewell site, agreement was on the order of 90%, whether the researcher relied heavily on pelvic traits or used only cranial indicators. What is particularly surprising is the consistency between very old data from Snow and Shetrone's excavation team and recent data from Johnston and Sciulli.

In sharp contrast to these encouraging results, there was considerable inconsistency in age assessments for the Hopewell site skeletal series, particularly between Johnston, who relied heavily on the Suchey-Brooks system for determining age from the pelvis, and the other researchers who did not use this system. Johnston's assessments tend to be older than those of the other researchers, averaging approximately eight years older than Sciulli's lab assessments (n = 16) and the field assessments of Shetrone's team (n = 23), and 12 years older than Snow's assessments (n = 18). Using the information from Appendix 9.3, Johnston's assessments suggest an average age at death of 39 years (excluding children) for individuals at the Hopewell site, whereas Shetrone's, Sciulli's and Snow's assessments for essentially the same set of skeletons suggest ages of 33 years, 31 years, and 27 years respectively. It would seem improbable that a local population with an average adult age at death of 27–33 years would be able to sustain itself through time. Thus, despite being substantially older, Johnston's assessments are by no means surprisingly old, and were selected as probably representing the best estimates for the Hopewell site. The difference between her assessments and those of the other researchers are likely due in great part to her having used the Suchey-Brooks and auricular surface systems of age determination. Caution is necessary, here, however. It may be significant that when Johnston revised her ages using additional information from seriating the dentition, the auricular surface, and the pubic symphysis, and in some cases using these data in a multivariate principal components approach, the new age estimates for the same sample averaged four years younger than previously calculated (Table 9.2).

Age differences seem to be less pronounced among researchers who studied the skeletons from the Turner site. However, the size of the sample that could be compared among researchers is somewhat smaller. Significantly, the assessments of Cadiente, Giesen, and Hooton all suggest an average age at death in the middle adult category (35–49 years), which is similar to Johnston's results for the Hopewell site. It is also interesting that Hooton's age assessments from the early 1920s tend to be slightly older than those made by Cadiente and Giesen, who used primarily pelvic indicators. As noted above, it is unclear what indicators Hooton used to make his age assessments, although it does appear that he did not rely exclusively on either cranial sutures or dental wear. It may be that Hooton used a suite of different indicators to determine age, a practice that is more recently being recommended as optimal for age assessment (Ubelaker 1989; Schwartz 1995).

Practical Results for the Use of Age and Sex Determinations in Analyses

The final question that must be addressed is which data can be used with confidence in biological and social analyses of Ohio Hopewell sites, and which must be used with caution. For the Hopewell site, the assessments of Johnston, Sciulli, Reichs, Snow, and Shetrone all show good concordance for sex. Pickering's assessments could not be tested for concordance with other researchers, but because they are based on similar standard techniques, they are probably as reliable as those of Johnston, Sciulli, and Reichs. Skeletons that were sexed by several researchers who disagreed in their assessements, however, should probably be considered ambiguous and excluded from all analyses.

Among the sex assessments from the Turner site, the most reliable appear to be those made from the pelves by Cadiente and Giesen**.** As with the sex assessments for the Hopewell site, those on which researchers disagreed should be used with caution. The assessments of Santa Luca, despite the lack of explicit statement of the techniques used, show good concordance with the others and therefore can probably also be considered reliable. Sex assessments made by Cadiente, Giesen, and Hooton for the Turner individuals using cranial and other indicators should be considered less reliable. However, femoral head diameter data provided in Appendix 9.9A, in addition to cranial or other indicators, appear useful for bolstering an assessment's reliability for some of the Turner skeletons.

Sex assessments made on cremated remains from Seip and Ater should probably be used with caution. Konigsberg's estimates are the only ones for which the techniques used are explicit, and therefore should be given the greatest confidence**.** The assessments made by Baby and Shetrone have an unknown degree of reliability because it is not clear what techniques were used to make the determinations. Caution is particularly warranted in the case of Baby's assessments, because he seems to have assigned both age and sex to a surprisingly large number of skeletons from both the Ater and Seip sites, considering that they were mostly cremated.

The question of which age estimates can be used with confidence in biological and social analyses can be approached similarly. Age assessments on subadults probably have fairly equal reliability regardless of the researcher, since the order of epiphyseal union and the pattern of dental eruption have been well understood for a long time. The only caveat is that assessments made on inhumations, on the average, will be more accurate than those made on cremations because of loss of information during the cremation process. For adults, age estimates for inhumations based on pelvic indicators should be considered more reliable than those made from the skull. Those that include the Suchey-Brooks system should be considered most reliable, because they appear to produce a more reasonable average age at death. Thus, the assessments of Johnston and Giesen, as well as those of Cadiente made from the pelvis, can be used with the greatest confidence. The other assessments made by Sciulli, Pickering, Snow, Shetrone, Moorehead, Hooton, Santa Luca, Baby, and Shetrone and Greenman also supply information, but might better be viewed as marking a lower boundary for the age of the individual, because many of these assessments are quite a bit younger than those made using the Suchey-Brooks system, and only rarely are they equal to or older than assessments made using this system. Specific age assessments made on adult cremations from Ater and Seip are probably not very reliable, when one considers the variability in age estimates encountered even when skeletons are fairly well preserved. Perhaps the best approach for the cremated individuals from these two sites is to simply note that any skeleton determined by Baby or Shetrone and Greenman to be over age 20 is an adult.

All of the above rules of thumb and particular conclusions are used in the HOPEBIOARCH data base to record, for each assessed individual, the reliability of the estimates made by researchers and a summary of the most likely best age and best sex estimate. Within the data base, age and sex information are coded under a number of variables to indicate the relative reliability of the estimates. For a given individual, only the most reliable estimates of age and sex are recorded. High reliability estimates are reported under the "SEX1" and "AGE1" variables. When a high reliability estimate is not available and an estimate thought to be moderate in reliability is, it is reported under the "SEX2" and "AGE2" variables. When neither a highly nor moderately reliable estimate is available, but a poor or uncertain one is, it is given under the "SEX3" and "AGE3" variables. The physical anthropologist responsible for the reported estimate is indicated by last name under the "PHYSANTHAGE" and "PHYSANTHSEX" variables. A summary estimate that is based on the best available data and that is sensitive to the level of precision reasonable in stating an age or sex is then recorded under the "AGECODE" and "SEXCODE" variables. For sex information, mild uncertainty about the estimate is indicated by following the "M" for male, or the "F" for female with a question mark (e.g. F?). Slightly greater uncertainty is indicated by an additional question mark (e.g. F??). For age information, all assessments concluded to be highly reliable are reported into the age categories of child (0–12), adolescent (13–20), young adult (21–34), middle adult (35–49), or old adult (50+). A less reliable age results in a simple indication that the individual is an adult (AD), or has been assumed to be an adult (AA) based on our understanding of the way an early excavator reported information about the skeletons they encountered.

NOTES

1. For example, Mound 25 Burial 23 from the Hopewell site was a double burial, and both skeletons were given the same accession number. Johnston noted in her data base that one of the two skeletons was the "north" skeleton described in Shetrone's (1926a) site report, and that the other was the "south" skeleton. See Appendix 10.4 for an explanation of her rationale. Sciulli (n.d.), Reichs (1975), and Snow (1943–1944) do not report this information in their data tables, although since the "south" skeleton had a more complete cranium and skeleton, it seems likely that all would have sexed this skeleton.
2. Burial 248 poses a different kind of problem. This is Moorehead's burial of the "King", but the currently curated remains contain most of two skeletons plus a skull and hand of what appears to be a third individual. The "King" is readily identifiable among these three skeletons because the pattern of copper staining on one individual is extensive and matches fairly closely the locations of copper artifacts described in the field notes. Associated skeleton S249 is also problematic. Moorehead's field notes mention that a skeleton "lay to the west of [S248], being a small one with head in the same direction". Plate XLIX of the site report shows a photo of Burial 248, just to the west of which appears to be the cranial fragments of another skeleton. Moorehead's excavation team tended to number skeletons as they came to them, and since another skeleton was already visible when 248 was being excavated, it is reasonable to assume that it would have been given the number S249. Pickering describes the second skeleton labeled S248 as exhibiting copper staining of the cranial vault and left hand, suggesting that it was associated with copper artifacts. Greber and Ruhl (1989) note in *The Hopewell Site* that an artifact label found with a set of copper panpipes stated that the panpipes were found with Burial S249. The copper staining of the left hand of the second skeleton labeled S248 might suggest that the panpipes were in this individual's hand, as has been seen at other Ohio Hopewell sites (e.g. North Benton, Burial 4). Finally, the field notes also mention (after describing Burial 248) that ten more skeletons were found in cut #2 without objects or ornaments. However, 11 more numbers are given after 248, suggesting that perhaps one of the last 11 skeletons excavated from cut #2 was found with artifacts. This single skeleton with artifacts present may have been S249. Taken together, all of this information seems to suggest that the individual immediately adjacent to S248 was S249, and that this individual is the same individual labeled 248b by Pickering. Therefore, in Appendix 9.7, the sex of S249 is assigned as female, following Pickering's identification of the second skeleton with S248, but with a double asterisk after it to denote the uncertainty about the provenience.

Chapter **10**

Aging and Sexing Human Remains from the Hopewell Site

Cheryl A. Johnston

Accurate aging and sexing of individual skeletons is fundamental to bioarchaeological analysis. Without these basic data, a mortuary site is limited in its potential to inform us about social organization, gender roles, the functions of ceremonial artifacts, and the demographic structure of the local community. The need for reliable age and sex information is particularly acute within Ohio Hopewell mound and earthwork sites, because extant collections of the individuals buried at the sites are spotty in coverage, putting a premium on the study of the individuals that are available. Most Ohio Hopewell sites were excavated in the late nineteenth and early twentieth centuries (Chapter 7), prior to the development of modern archaeological methods. Recovery of burial goods and description of mound architecture was of primary concern during this period, whereas the recovery and analysis of skeletons was, at best, of secondary importance. Most early excavators left many skeletons behind, retrieving only the better preserved or more "interesting" specimens they encountered. Among the already limited skeletal samples sent to museums for curation, poor labeling in the field further reduced the number of individuals who could be tied to particular proveniences within a site. Issues such as these have left bioarchaeologists with a restricted osteological record from which to conduct mortuary analyses of Ohio Hopewell cemeteries.

This chapter continues efforts made in the previous to maximize in the HOPEBIOARCH data base the number of individuals with age and sex information that can be reasonably used in the study of Hopewell social life and the reliability of that information. The chapter focuses on identifying the ages and sexes of individuals exhumed from the Hopewell site, Ohio (Moorehead 1922; Shetrone 1926a). A large number of general methodological issues that are involved in aging and sexing skeletons and that are relevant to human remains from the Hopewell site are reviewed. The review leads to the selection of particular standard aging and sexing techniques and their application to the Hopewell site materials. The review also suggests the usefulness of some less commonly used methods that employ contextualized, population-specific strategies for aging and sex. These methods include seriation of individuals based on select criteria, and the multifactorial methods of discriminant function analysis and principal components analysis. The standard and nonstandard methods are applied to the skeletal series from the Hopewell site and the resulting ages and sexes of individuals are reported.

In addition to assigning refined ages and sexes to individuals from the Hopewell site, this chapter also provides a very detailed description of each burial from the site, based on laboratory study and a compilation of descriptions and inventories in field notes, publications, and museum records. Each description of an individual, to the extent known, considers whether the skeleton was removed from the field, the parts of the body currently present and missing; the preservation conditions of the remains; whether the remains are cremations, inhumations, or inhumations with charring; body position and orientation in the field; cut marks; locations of copper staining by associated copper artifacts; the pages in field notes and publications that describe and make reference to the individual; and any confusion about the identity of the individual, such as burial and catalog numbers that do not match, or burial numbers for remains that do not match their description in field notes or publications. Confusions are resolved where possible. Also presented is a full list of the human remains excavated by Moorehead and Shetrone, and which remains could and could not be located in the archives of the Field Museum of Natural History and the Ohio Historical Society. The age assigned to each individual in the field, when stated, the age and sex determined by this author for each curated individual, and the suite of methods used to do so, are tabularized. All of this information is presented in Appendices 10.1–10.4. They will be very useful to other researchers who wish to work with the collections of human remains from the Hopewell site.

THE HOPEWELL SITE

Among the many Middle Woodland sites excavated in Ohio during this period, the Hopewell site provides perhaps the greatest potential for bioarchaeological investigation. Rich in grave goods made from exotic materials, it is also the site with the greatest number of excavated individuals for which information is available by individual (Chapter 7, Table 7.2). The Hopewell site was excavated over a period of 2 years by Moorehead (1891, 1897a, 1922) and then over 4 years by Shetrone (1922–1925, 1926), producing skeletal remains from at least 230 individuals. Shetrone reports encountering 71 individual burials, eight double burials, one triple burial, one bundle burial, and a cache that included human remains. Sixty of these individuals were inhumations, 32 were cremations, and six were partially cremated. Moorehead reports encountering 105 individual burials, 12 double burials, and one triple burial, of which 124 were inhumations, five were cremations, and three were partially cremated. Unfortunately, not all of the individuals from the Hopewell site are available for study. Although 184 inhumations were reportedly excavated, many were not saved. Of those that were collected, only 74 (40 %) can be tied to a particular provenience (Appendix 10.1).

IMPROVING AGE AND SEX DATA FROM THE HOPEWELL SITE

Age estimates can be produced for many of the individuals from the Hopewell site using various standard morphological techniques developed from modern populations. However, in order to overcome the error introduced by biological variation in the skeletal aging process, Lovejoy et al. (1997) advocate methods that rely upon an understanding of the biology of skeletal growth, maturation and senescence at the individual level. The goal of such methods is to evaluate the skeletal age of the individual via multiple age indicators considered together and in the context of the individual skeleton and population rather than via individual indicators considered separately and correlated with the chronological age of individuals from another population. Similarly, there are numerous methods, both qualitative and quantitative, by which sex can be determined from human skeletal remains. The degree to which males and females differ for any given trait or measurement varies from population to population; hence, some means of distinguishing the sexes may perform with greater accuracy in one human group than in another. Sex estimates, like those of age, are best made in the context of the population.

Aging and sexing techniques that involve population-specific analyses can be applied to increase the demographic data available for Hopewell skeletons. The reason that many of these techniques are not commonly used, and have not been used for the Hopewell skeletal series, is that they tend to be time-intensive. They require comparative analysis of a large number of individuals from the same site or area.

Because data on age and sex for the Hopewell site skeletons were not likely to be as reliable when applying only standardized techniques to the available material, some less common methods of aging and sexing are used here with the goal of increasing the amount of reliable information available for the skeletons. This analysis was originally part of a larger study designed to better understand the significance of culturally modified human remains at the Hopewell site by analyzing the age and sex distributions of the remains, themselves, as well as of those individuals buried with the remains (Johnston 2002). Supplementary age and sex information for both projects was obtained by

Table 10.1. Sexing Methods Used in this Study

Method Number	Description	Source
1	Presence/absence of ventral arc: present = F; absent = M	Phenice (1969)
2	Presence/absence of subpubic concavity: present = F; absent = M	Phenice (1969)
3	Breadth of ischiopubic ramus: narrow = F; broad = M	Phenice (1969)
4	Width of greater sciatic notch: 1 = F; 2–5 = M	Buikstra and Ubelaker (1994)
5	Condition of sacroiliac articulation: raised = F; flat = M	Bass (1995)
6	Presence/absence of preauricular sulcus: present = F; absent = M	Buikstra and Ubelaker (1994)
7	Breadth of subpubic angle: broad = F; narrow = M	Bass (1995)
8	Robusticity of supraorbital tori: 1 or 2 = F; 4 or 5 = M	Buikstra and Ubelaker (1994)
9	Robusticity of mastoid process: 1 or 2 = F; 4 or 5 = M	Buikstra and Ubelaker (1994)
10	Robusticity of nuchal crest: 1 or 2 = F; 4 or 5 = M	Buikstra and Ubelaker (1994)
11	Diameter of femoral head: < 43.5 mm = F; > 46.5 mm = M	Bass (1995)
12	Diameter of humeral head: < 43 mm = F; > 47 mm = M	Bass (1995)
13	Seriation of cranial robusticity	See text
14	Discriminant function calculated using dental metrics	See text

Table 10.2. Aging Methods Used in this Study

Method Number	Description	Source
1	Seriation of maxillary dentition	See text
2	Seriation of mandibular dentition	See text
3	Seriation of auricular surface of the ilium	See text
4	Metamorphosis of auricular surface of the ilium	Lovejoy et al. (1985b)
5	Seriation of pubic symphysis	See text
6	Metamorphosis of pubic symphysis	Brooks and Suchey (1990)
7	Degree of ectocranial suture closure	Meindl and Lovejoy (1985)
8	Skeletal maturation (epiphyseal fusion)	Buikstra and Ubelaker (1994)
9	Dental development	Buikstra and Ubelaker (1994)
10	Size or robusticity to distinguish adults and subadults	Personal Experience
11	Diaphyseal length	Ubelaker (1989)
PC	Denotes that age was estimated via principal components analysis of the listed indicators	See text

applying a number of different aging and sexing techniques to the Hopewell sample. In addition to the more standard morphological techniques for sexing the skull and pelvis (e.g., Phenice 1969; Buikstra and Ubelaker 1994; Bass 1995), skulls were also seriated by overall robusticity, and metric sexing techniques were applied to the humerus, femur, and dentition (Table 10.1). Standard aging techniques such as dental development and epiphyseal fusion in subadults, and cranial suture closure, pubic symphysis, and auricular surface morphology in adults, were supplemented with measurements of diaphyseal length in subadults and seriation of dentitions, auricular surfaces, and pubic symphyses in adults (Table 10.2). In addition to these single technique approaches, multifactorial methods were also applied to the sample. Discriminant functions were created from dental measurements as a multifactorial sexing method, and principal components analysis was used as a multifactorial approach to aging skeletal remains.

ISSUES IN AGING AND SEXING SKELETONS

Age Estimation for Adults

Skeletal age is determined by assessing the degree to which a skeleton has grown, matured, or deteriorated at the time of death (Stewart 1979). Because of variations in individual biology and environmental stresses over a person's lifespan, people of the same chronological age will not necessarily exhibit an identical skeletal age. Yet it is chronological age that is of greatest interest to bioarchaeologists. Chronological age is important in demography because it is a measure of the length of time an individual was exposed to various factors that contribute to death (Lovejoy et al. 1997). It is also important in social analyses, where prestige and leadership roles within a community are more likely to be influenced by how *long* a person has lived, than by how *well* a person has aged. However, in order to estimate chronological age, it is necessary to compare the skeletal age of an unknown individual to the skeletal age of individuals who are known to have lived to a certain age (Lovejoy et al. 1997).

There are numerous methods available for the estimation of skeletal age at death from human remains, and for correlating these estimates with chronological age. These approaches provide estimates of age at death within a statistically defined margin of error. However, each method is only as good as the degree to which skeletal and chronological age are correlated for a particular indicator in the population under study. The degree of correlation is affected by individual variation in biological processes that occur throughout life, and by variation in the skill of the researcher performing the assessment.

Age estimation methods can be organized into two categories: those that measure skeletal or dental deterioration, which are applicable to adults, and those that trace skeletal or dental development, which are applicable to subadults. Methods that apply to adults generally include standardized approaches such as degree and pattern of cranial suture closure, and metamorphosis of the auricular surface of the ilium, the pubic symphysis, and the sternal rib ends (Buikstra and Ubelaker 1994). Although these are the methods that tend to be used by bioarchaeologists working all over the world, all methods may suffer from reduced accuracy when applied to populations other than the one from which they were developed (Masset 1989). This is the case because the resulting ages tend to reflect the age distribution of the populations from which the techniques were derived (Jackes 1992).

Biased adult age standards often result in incorrect assignment of individuals from older age categories into younger categories (Bocquet-Appel and Masset 1982; Konigsberg 1985; Buikstra, et al. 1986; Konigsberg and Frankenberg 1994). Whereas subadult individuals are most likely to be placed into their correct age categories, middle aged or old adults are least likely to be correctly categorized (Aykroyd et al. 1999). This is due to the fact that subadults are in the process of growing and maturing, and these processes leave numerous skeletal and dental age indicators that are closely spaced in time.

Standards used to estimate the age of adult individuals suffer from several deficiencies. Among these are calibration problems (Konigsberg et al. 1997) and inaccuracies that arise in standards because reference populations do not contain similar and sufficient numbers of individuals from each age category. The latter deficiency often explains the misplacement of older adults into younger adult age categories. For example, in the case of the popular pubic symphysis technique, aging of older adults as younger ones results from the standards for the technique having been derived from a medical examiner's office population that was biased against elderly individuals (Brooks and Suchey 1990).

Another means of estimating age at death in adults is by analysis of dental wear. The occlusal surfaces of teeth tend to wear over the lifespan of an individual at a rate dependent upon the composition of the diet and the hardness of the enamel and dentin of the tooth. Since both composition of diet and quality of tooth enamel tend to vary by population, development of broadly applicable age standards from the dentition is difficult. However, within a given population, the relative degree of wear tends to correlate well with relative differences in age (Miles 1963), providing the basis for dental wear seriation approaches to estimating age at death. The approach requires that enough subadult skeletons be available for a sample that rates of wear can be scaled to chronological time (see below). If this is the case, then it is possible to estimate the age of the remaining individuals by seriating their dentitions based on relative wear. However, it should be kept in mind that confounding factors such as the use of teeth as tools can alter the rate of wear in some individuals.

Because biological variation introduces error into the skeletal aging process, many researchers advocate using a combination of age indicators taken together. Also recommended is considering multiple indicators in the context of the individual skeleton and its population, rather than considering individual indicators separately and correlated with the chronological age of individuals from another population (Lovejoy et al. 1985a; Mensforth and Lovejoy 1985; Jackes 1992; Lovejoy et al. 1997). Although most summary studies of age estimation techniques recommend using multiple indicators if enough of the skeleton is present (Shipman et al. 1985; Işcan 1989; Ubelaker 1989; Schwartz 1995), very few authorities on the subject contribute methodology for compiling ages derived from multiple approaches into a meaningful estimate of age. An exception is the work of Lovejoy et al. (1985a), who advocate the use of principal components analysis to produce a summary age from the various age ranges derived from multiple indicators on a series of skeletons. The advantage of this approach is that it has been tested and found to produce more accurate and less biased age estimates than ages based on a single indicator (Lovejoy et al. 1985a; Bedford et al. 1993).

Age Estimation for Subadults

Estimation of age based on the skeletal remains of subadults is somewhat less problematic than estimation of age from adult skeletons. Bioarchaeologists have growth and development markers to guide their estimates of skeletal age in the immature, including development of both the skeleton and the dentition. Because dental and skeletal development are not perfectly correlated, each approach can be used to produce an age estimate based on multiple indicators. Dental calcification patterns, dental eruption sequences, and loss of deciduous teeth can all be used to estimate the age at death of subadults. Among these, the loss of deciduous teeth is the least reliable (Hillson 1996) because environmental factors may play a role in the timing of tooth loss. Furthermore, dental eruption is less correlated with chronological age than dental calcification (Smith 1991).

Despite these minor differences in accuracy among the various methods, skeletal age estimates for subadults are generally better than those for adults. Subadult methods are accompanied by smaller margins of error because the developing skeleton and dentition are marked by so many age-related changes that occur in a predictable sequence. In general, the older the individual, the more skeletal variability should be expected, and the greater the error in estimating age (Krogman and Işcan 1986). It is much easier, for example, to distinguish a 2 year old from a 12 year old than it is to distinguish a 30 year old from a 40 year old.

Error is, however, introduced into subadult age estimates in several ways (Ubelaker 1989). First, variation in the growth rates of children contributes error to estimates. Growth rates are affected by both genetics and overall health, including diet and disease (Krogman and Işcan 1986; Johnston and Zimmer 1989; Saunders 2000). In addition, much of the data used to formulate skeletal age estimation techniques in children were collected using radiographic observations of living children. This is problematic for several reasons. First, many children who are buried in an archaeological site may have died from malnutrition or chronic illness, which could easily have slowed their rate of growth compared to healthy children who were radiographed to create the comparative standards. Second, degree of dental calcification may be underestimated from radiographic observations, and the lightly mineralized bones of subadults tend not to show up as well on radiographs. Since bones and teeth of deceased children tend to be irradiated longer than those of the living, the age resulting from skeletons may appear older relative to the standards than is actually the case. Furthermore, dry bone observations of recently fused epiphyses are more accurate than those from radiographs because the line of fusion remains observable for a period of time on the dry bone, but not in a radiograph. However, Krogman and Işcan (1986) estimate that this last factor only causes age estimates to be off by about 6 months. Other osteological methods have been worked out on archaeological populations for which age at death was estimated from dental events and thus depend on the accuracy with which the dental indicators were derived and the applicability of them to populations other than the one from which they were derived (Ubelaker 1989). All of these issues argue for the use of multiple methods, where possible, to obtain the most accurate ages for subadults.

Not all methods for aging subadults work equally well at all stages of immaturity. Epiphyseal union is most useful for aging adolescents because this is the period during which such unions take place. The *pattern* of epiphyseal union is very regular and predictable (McKern and Stewart 1957); however the *age* at which union occurs varies by sex and population (White and Folkens 1991). The range of variation in timing of union is large for a single bone, but if a number of bones are used to estimate age, the range can be narrowed to acceptable levels. A problem with age standards based on epiphyseal union is that the mean age of union is often reported without a range of variation. Also, multiple years can elapse between the initiation of union and complete union of an epiphysis, yet the standards may not reflect this delay. Furthermore, not all epiphyses are equally good indicators of age. The best indicators are the epiphysis for the proximal humerus, the medial epicondyle of the humerus, the distal radius, the femoral head, the distal femur, the iliac crest, the medial clavicle, and the sacrum (Ubelaker 1989).

For poorly preserved skeletons with a limited number of bones available for study, diaphyseal length can be used to estimate the age of fetuses, neonates, children, and young adolescents. Once epiphyseal fusion begins, however, diaphysis length is hard to measure. The diaphyseal length approach requires comparison to a standardized population, or to individuals within the population of interest who have been aged by other means. The range of variation in the resulting ages is affected by sex, ancestry, and socioeconomic factors (Ubelaker 1989). Again, results are best when based on estimates from multiple limb bones.

Commonly, if remains have not been carefully excavated and recovered, very young subadults are likely to be under-enumerated. Infant skeletons are easy to miss in the field and are not as likely as more mature skeletons to survive postmortem degradation from taphonomic effects (Walker et al. 1988). In addition, these remains may be only partially collected if the excavator is unfamiliar with human skeletal biology and the number of small epiphyses and developing teeth to expect in an infant. However, if a skeletal sample contains even one reasonably complete infant skeleton, an assumption of recovery bias may not be warranted.

Cultural practices of the group under study may also result in poor recovery of skeletal remains. Ohio Hopewell individuals, for example, are represented in museum collections almost exclusively by skeletons and cremations from mound or earthwork contexts. We assume that these remains are not necessarily representative of the entire population for two reasons. First, the very young and the very old are seemingly under represented (although certain types of populations—those with a high mortality rate in youth that steadily declines but remains relatively high in the adult and old adult categories—might have the same age structure). Second, it does not seem as though enough individuals are present in Hopewell skeletal collections to account for even small populations over the period of time that various mounds in some of the larger sites were used (see also Prufer 1964a:74). If the entire population is not represented in the sample, paleodemographic analysis of population structure is not possible. Also, care must be taken when making mortuary analyses to take into account the absence of certain ages, sexes, or social groups from the sample.

Sex Estimation Techniques

Sexing methods can be classified by the types of data used to determine sex. Morphological methods are based on visual examination of the size and shape of skeletal structures to distinguish the sexes. Metric methods, on the other hand, rely on size variation in the bones or teeth of males and females to distinguish the sexes. The degree to which males and females differ from each other for any given trait or measurement varies from population to population. Hence, some indicators used to distinguish the sexes may perform with greater accuracy in one human group than in another.

Unlike the situation with age estimation, most bioarchaeologists do not bother attempting to sex children or infants. Current standards for the collection of skeletal data do not recommend sexing techniques for children (Buikstra and Ubelaker 1994). In the case of adolescents, if typical female pelvic indicators are present, then sex can be assigned as female. Adolescent pelves that do not exhibit female morphology should not be concluded to be male. Cranial indicators of sex typically associated with males are indicative of the male sex in an adolescent. Adolescent crania that appear gracile, however, should not be concluded to be female. Finally, femoral and humeral head diameters, if sufficiently large to merit the assignment of the male sex to adults, may be used to assign male sex to adolescents.

There are two broad groupings of sex estimation techniques that apply to adult skeletons: (1) techniques that rely on differences in pelvic dimensions and morphology due to the demands of childbirth on the female pelvis, and (2) skeletal differences in size and robusticity that reflect the fact that human males are usually larger and more heavily muscled than human females (Shipman et al. 1985; Ubelaker 1989; Schwartz 1995).

The most accurate sexing techniques involve skeletal differences in the morphology of the pelvis (e.g., Phenice 1969). Some of these indicators result from the fact that the female pelvic outlet needs to be big enough for a neonate's head to pass through. In order to allow the passage of a neonate, the female pelvis tends to have a wide inlet, a wide greater sciatic notch of the ilium, a long pubic bone, a wide subpubic angle, and an elevated auricular surface. Evidence of parturition in the form of sulci or pits on the dorsal aspect of the pubic symphysis or in the preauricular area is also a female trait. In addition, the structure of the female pelvis is characterized by the presence of a ventral arc, a subpubic concavity, and a narrow, ridged medial aspect of the ischiopubic ramus. The Phenice method (Phenice 1969) involves scoring the pubic bones for these latter three traits (Table 10.1). If all three conditions are present, Phenice (1969) claimed that the method could be used to assign female sex to a skeleton with close to 100 % accuracy. The presence of the ventral arc is the most highly correlated with female sex of these three indicators.

Sexual dimorphism in size and robusticity is also useful for assigning sex to skeletal elements. In general, females are smaller in size and more gracile than males. Cranial traits that tend to be observable on male crania include prominent supraorbital ridges, heavy temporal and nuchal lines, square orbits with dull superior margins, and large mastoid processes. In addition, males tend to have squarer chins than females, a greater degree of gonial eversion, deeper mandibular rami and more rugose muscle attachment points on the mandible. Postcranial dimorphism between the sexes is reflected in size differences of joint surfaces. Two commonly used postcranial metrics that distinguish males from females are the diameters of the heads of the humerus and femur. For any skeletal dimension, there will be overlap between males and females in the size ranges produced when a large number of individuals are measured. This results in a subset of measurements at the top of the female range, and one at the bottom of the male range, that do not distinguish between males and females. To the extent that the distribution of values of a skeletal or dental metric produces a bimodal distribution, males and females can be distinguished via the calculation of a discriminant function. A discriminant function uses the metrics of groups of known males and females as a basis for comparison of the metric data from an unknown. The discriminant function will classify the unknown as male or female depending on how similar it is metrically to individuals of known sex.

Another means of separating a group of skeletons by sex is to seriate them. Skeletal elements can be arranged according to a qualitative or quantitative trait in order from most masculine to most feminine. The seriation can be anchored by including elements from individuals of known or securely estimated sex. The goal of seriation is to divide a group of skeletons into three subgroups: those most likely male, those most likely female, and those that are intermediate and therefore indeterminate. Crania can be seriated using traits associated with size and rugosity such as prominence of the supraorbital ridges, nuchal crest, mastoid processes and temporal lines. Seriation avoids the problems of many of the other standardized sexing techniques in that the local population, rather than some unrelated group, is the comparative unit by which sex is assigned to unknowns. However, the process can also be quite time-consuming when working with large samples, which may explain why it is used infrequently in bioarchaeological studies despite certain advantages.

SAMPLES INCLUDED IN THE STUDY

Although the focus of this study is the aging and sexing of individuals interred at the Hopewell earthwork, human remains from seven other neighboring Hopewell sites were included in the project. The additional individuals were considered in order to obtain sufficient subadult skeletons for the dental seriations, to increase the number of aged and sexed skeletons available for use in the skeletal seriations, and to maximize sample sizes generally for statistical purposes. The sites from which the additional individuals were recovered are located within the geographic region defined by the Scioto river drainage from its confluence with the Olentangy river to its confluence with the Ohio river. The sites are: (1) Edwin Harness mound at the Liberty earthwork, (2) Raymond Ater mound, (3) Seip earthwork, (4) Rockhold mound group, (5) West mound (also known as the White mound), (6) Tremper mound, and (7) Bourneville mound. See Chapter 7 for a description of each of these sites. Most of these collections are curated at the Ohio Historical Center in Columbus, Ohio. See Table 10.3 for more information on collection locations and catalog numbers for material from each site.

Age Estimation

Eleven separate methods of age estimation were used in this study (Table 10.2). The methods

Table 10.3. Curation Locations and Catalog Numbers of Sites Having Human Remains and Included in this Study

Collection	Site Number	Location	Catalog Numbers
Bourneville Mounds	33RO46	Ohio Historical Center	A3719
Edwin Harness Mound (Mills)	33RO22	Ohio Historical Center	A7
Edwin Harness Mound (Moorehead)[1]	33RO22	Cleveland Museum of Natural History	13814, 13849, 13851, 13880, 13910, 13911, 13912, 13916, 13929, 13983, 13994, 13997, 13999, 14024, 14074, 14150, 14152, 14153, 14154, 14155, 14156, 14157, 14159, 14161, 14162, 14164, 14166, 14168, 14171, 14177, 14178
Hopewell (Shetrone)	33RO27	Ohio Historical Center	A283
Hopewell (Moorehead)[2]	33RO27	Field Museum of Natural History	40455, 40456, 41593–41625, 56068, 56095, 56032, 56064, 56033, 56034
Raymond Ater Mound	33RO63	Ohio Historical Center	A3062
Rockhold Mounds	33RO39	Ohio Historical Center	A1020
Seip Mounds	33RO40	Ohio Historical Center	A957
Tremper Mound	33SC4	Ohio Historical Center	A125
West (White) Mound	33HI13	Ohio Historical Center	A3505

[1]Human remains from the Greber excavations are curated under the CMNH numbers 33RO22-72 B&C, 921-A-700C, 921-A-271/a, and 921-A-281/e.
[2]The Milwaukee Public Museum owns a culturally modified human maxilla fragment that was collected by W.K. Moorehead and transferred from the Field Museum of Natural History to the Milwaukee Public Museum as an exchange in 1945. It is cataloged under the Field Museum number 56034-3 and the Milwaukee Public Museum number A49121/16082.

applied to a particular skeleton depended upon the stage of life (adult or subadult) at the time of death and the completeness and condition of the remains. Data from seven of the 11 aging methods were then used in various combinations to calculate a summary age using principal components analysis, in a manner similar to the multifactorial method proposed by Lovejoy et al. (1985a). Information from only seven methods was used in order to optimize the number of individuals analyzed and the number of age variables considered. The individual aging techniques and the procedure for the principal components analysis are described below.

Dental Seriations

Age at death was estimated via degree of molar attrition using the method of Miles (1963, 1978). In the first step of this process, dental arches recovered from the Hopewell mound group, Edwin Harness mound, Raymond Ater mound, Seip mounds, West mound, and Rockhold mounds were physically arranged in order from those with the least degree of molar attrition to those with the most severe molar attrition.

Factors that would contribute to differences in rates of wear between individuals interred at various Scioto drainage Hopewell sites, such as differing means of subsistence or oral activity, have not been observed. In addition, the ages produced by the dental seriations correspond well with ages derived from the other age indicators. These two facts suggest that there was not enough genetic or environmental variation between the individuals from different Hopewell sites in the Scioto drainage to alter basic biological processes from group to group. Thus, dental arches from the several Hopewell sites in the Scioto drainage could be combined into one set for seriating. Combining the arches from the sites served two purposes. The first was to maximize the precision of the seriations; a larger seriation will perform better as a tool for estimating ages of unknowns. The second reason for combining individuals was to include as many developmentally immature arches as possible. This was critical because the numeric age estimates of older individuals are anchored on those of the immature, as described below.

The arches of individuals with immature dental development were assigned a developmental age based on stages of formation of dental crowns, roots, and apices using the scoring system and norms of Moorees et al. (1963b) as reproduced in Ubelaker (1989). Functional ages (length of time teeth had been functional in the mouth) of molars were calculated based on the fact that first molars tend to become functional when the individual is around the age of 6 years (when their functional age is zero), second molars become functional around the age of 12 years (at the same time the first molar will have a functional age of 6 years) and third molars become functional at about 18 years (at the same time that second molars have a functional age of 6 years and first molars have a functional age of 12 years).

Age of the least worn unknowns in the seriation can be estimated through any of three processes. One approach is to identify an individual exhibiting second molar wear that is essentially the same as the degree of wear on the first molar of an individual of known age (based, for example, on epiphyseal fusion or dental eruption). For instance, if an individual of known age was 12 years old, and had first molar wear essentially equal to the second molar wear of an unknown, then the age of the unknown individual could be estimated as 18 years. This calculation is possible because first molars have a functional age 6 years older than second molars; the age of the unknown can be estimated by adding six to the developmental age of the known. Second and similarly, age of unknowns could be estimated by identifying an individual with third molar wear that matches the degree of second molar wear of an arch that had been assigned a developmental age. Again, because second molars have a functional age 6 years older than third molars, the age of the unknown can be estimated by adding six to the developmental age of the known. The third option is to match the degree of third molar wear with the degree of first molar wear of an arch which had been assigned a developmental age. Because first molars have a functional age 12 years older than third molars, the age of the unknown can be estimated by adding twelve to the developmental age of the known.

The same steps were taken to estimate the ages of arches with higher degrees of wear once ages had been estimated for more lightly worn arches. The lightly worn arches then served as the known individuals as the process continued into older age categories.

In order to avoid reporting misleadingly narrow age estimates for this approach, arches that had been assigned either a developmental or a calculated age were grouped into 5-year age categories. In some cases, an individual had been assigned more than one age because the upper and lower arches were seriated separately. If the two ages did not fall in the same or adjacent 5 year categories, the ages were not used in the principal components analysis.

Auricular Surface of the Ilium

Age was estimated by assigning a chronological stage to each auricular surface as described in Lovejoy et al. (1985b). Stages are defined based on the state of various features of the auricular surface of the ilium and the retroauricular area. Auricular surfaces were also aged by seriation. Auricular surfaces from individuals were arranged in order from most youthful in appearance to least youthful according to descriptions of morphological changes associated with age found in Lovejoy et al. (1985b). The seriated ilia were then separated into groups corresponding to the chronological stages described in Lovejoy et al. (1985b).

Pubic Symphysis

Each pubic symphysis was assigned to a range of chronological ages as described in Brooks and Suchey (1990). If the unknown had been assigned to a sex, series of casts based on pubic symphyses that illustrate the characteristics of each age range for both sexes were used for comparison to help choose the best age range for the unknown. Casts for this purpose were obtained from France Casting. Pubic symphyses were also seriated in a manner similar to that described for seriation of the auricular surface of the ilium.

Ectocranial Suture Closure

Degree of closure of the ectocranial sutures was scored and corresponding age ranges encompassing one standard deviation were calculated as described in Meindl and Lovejoy (1985). In the event that the suture at a particular site could not be scored, an age range was determined using the youngest age that a score of "no closure" at the site would produce (minus one standard deviation) and the oldest age a score of complete closure at the site would produce (plus one standard deviation).

Degree of Union of Centers of Ossification

The degree of union of ossification centers was scored as recommended in Buikstra and Ubelaker (1994). A chronological age range corresponding to the degree of skeletal maturity exhibited by union or lack of union of ossification centers was estimated by referring to published summaries of data found in Krogman and Işcan (1986), Buikstra and Ubelaker (1994), Bass (1995), and Schwartz (1995).

Stage of Formation of the Dental Crown, Root, and Apex

Stages of formation of dental crowns, roots, and apices were scored based on drawings that appear in Buikstra and Ubelaker (1994), which are modeled after information in Moorees et al. (1963a, b). Teeth were also documented individually as to whether they had erupted, were in the process of erupting, or had not erupted. The scoring system of Moorees et al. (1963a, b) was used to document the stage of formation. Age at death was estimated using the norms of Moorees et al. (1963b) as reproduced in Ubelaker (1989) and diagrams illustrating the sequence of formation and eruption that appear in Ubelaker (1989).

Diaphysis Length

Measurements of subadult bones were collected as recommended in Buikstra and Ubelaker (1994), which are based on methods described in Fazekas and Kosa (1978). Correlations between diaphyseal length and chronological age as diagramed in Ubelaker (1989) were referred to in order to produce an age estimate.

Overall Size and Robusticity

Some sets of remains as well as individual bones were incomplete to the extent that none of the age indicators described above could be used. In such cases, the degree of robusticity or general size was used where possible to distinguish adults from subadults.

Principal Components Analysis

Because more than one aging method could be used on many skeletons in the study sample, and because ages of an individual derived from multiple indicators are highly correlated, a multifactorial method of estimating age via principal components analysis was employed. Principal components analysis allows correlated age indicators to be weighted according to the amount of variation they contribute to an age distribution. The number of principal components produced is equal to the number of variables, with the first component accounting for the greatest variation. This research is modeled after Lovejoy et al. (1985a) who found that the summary age resulting from using more than one age indicator was more accurate and less biased than ages estimated using a single indicator. Bedford et al. (1993) tested the multifactorial method on the skeletons of individuals of known age at death who died during the twentieth Century. Their findings confirmed the assertions of Lovejoy et al. (1985a) that the multifactorial method performs better than any individual indicator for estimating ages of skeletal series.

The number of individuals for whom a summary age could be calculated was maximized by identifying the combinations of age estimation methods that had been applied to the largest numbers of individuals. There were seven such combinations. Seven intercorrelation matrices were compiled from the midpoints of age ranges produced by the following indicators: (1) seriated maxillary dentition and seriated mandibular dentition; (2) seriated mandibular dentition and ectocranial suture closure; (3) seriated maxillary dentition, seriated mandibular dentition, and ectocranial suture closure; (4) seriated mandibular dentition and seriated auricular surface of the ilium; (5) seriated maxillary dentition and ectocranial suture closure; (6) seriated maxillary dentition, seriated mandibular dentition, and seriated auricular surface of the ilium; and (7) seriated maxillary dentition and seriated auricular surface of the ilium.

Seven principal components analyses were carried out using Number Cruncher Statistical System software (version 2000) to produce a weighting for each indicator in each of the seven analyses. A weighted average of the individual ages was calculated. The correlation between each individual indicator and the first principal component was calculated by multiplying the eigenvector by the square root of the first eigenvalue and then dividing the product by the standard deviation of the ith variable. The best estimate of age was calculated by multiplying each individual age by its correlation with the first principal component and dividing by the sum of the correlations (Lovejoy et al., 1985a).

Where more than one combination of individual age indicators was used to age an individual, the best estimate of age was taken to be the one produced by the principal components analysis with the largest eigenvalue for the first eigenvector. The results of the principal components analyses are given in Table 10.4. The ages assigned to individuals are presented in Table 10.5.

Sex Assignment

Fourteen indicators were used to assign sex. The majority are standard indicators described in Buikstra and Ubelaker (1994). They are listed in Table 10.1 along with the scores that indicate maleness or femaleness.

Seriation of Cranial Robusticity

Adult crania of those individuals who had been sexed using pelvic morphology were arranged in groups by sex. The male crania were then arranged in order from least to most gracile and the female crania were arranged in order from most to least gracile. The seriation was carried out under the assumptions that the Hopewell were sexually dimorphic, that the sexual dimorphism resulted in male crania being more robust than female crania, and that a continuum in robusticity could be produced by arranging the known-sex crania from least to most robust within their respective categories. Some overlap in the two groups was expected, but in general a continuum was produced. Too much overlap would have rendered the seriation of no utility in assigning sex to unknown crania. Crania of unknown sex were then inserted into the seriation where appropriate based on robusticity.

The cranial traits that proved most useful in seriating the Hopewell crania were the supraorbital tori, nuchal crest and mastoid processes. Sex was assigned if an unknown cranium fit securely within the male or female series. Crania that fell in the area of overlap were not assigned sex based on cranial seriation. A similar procedure was attempted using mandibular morphology. However, many of the mandibles of individuals known to be females based on pelvic morphology were very robust. Therefore, useful series of males and females based on mandibular morphology could not be produced.

Sex Assignment by Discriminant Function Analysis

Discriminant function analysis was used to classify individuals of unknown sex into the male or female category using dental metrics as independent variables.

Buccolingual, mesiodistal, crown height, and root length measurements were taken on all teeth where possible and generally following Buikstra and Ubelaker (1994) and Goose (1963). One hundred individuals with complete or nearly complete dentitions were included in the analysis. Of these, 54 had been assigned to a sex category via cranial or pelvic morphology ($n = 22$ males; $n = 32$ females) and 46 were of unknown sex. The majority of the individuals included in the discriminant analysis were from the Hopewell mound group, but several sexed

Table 10.4. Principal Components Analyses Results

ID Number	Mound/ Burial	Age 1	Age 2	Age 3	Age 7	PCA 1	PCA 2	PCA 3	PCA 4	PCA 5	PCA 6	PCA 7	Best Estimate	Range
150108	2/1	33	38	37	48	36	42	38	38	39	35	34	36	30–40
150109	2/3	18	23	37	–	21	–	–	21	–	19	23	21	20–25
150112	2/4	18	23	32	33	21	27	23	22	24	19	22	21	20–25
150215	2/5	33	48	–	43	41	46	41	–	37	–	–	41	35–45
150129	4/3	23	38	37	–	31	–	–	38	–	30	27	31	25–35
150143	4/4	43	43	37	42	43	43	43	44	43	44	41	43	35–45
150127	4/9	–	53	37	46	–	50	–	55	–	–	–	50	45–55
150137	7/1	23	–	37	35	–	–	–	–	28	–	27	28	25–35
150138	7/3	23	23	–	43	23	30	27	–	31	–	–	23	20–30
41618	18/181	38	48	–	–	43	–	–	–	–	–	–	43	40–50
41602A	23/198	18	31	–	46	25	36	29	–	29	–	–	25	20–30
41598A	23/198	18	23	–	42	21	30	25	–	27	–	–	21	20–25
41613	23/205	23	28	–	–	26	–	–	–	–	–	–	26	20–30
41606	23/228	18	28	–	–	23	–	–	–	–	–	–	23	20–30
56068	24/192	18	18	–	–	18	–	–	–	–	–	–	18	15–20
150165	25/6	23	27	37	44	25	33	29	26	31	24	27	25	20–30
150166	25/7	18	23	42	41	21	30	25	21	27	18	25	21	20–30
150213	25/11	23	28	–	–	26	–	–	–	–	–	–	26	20–30
150124	25/12	23	33	–	36	28	34	30	–	28	–	–	28	25–35
150131	25/15	23	28	37	36	26	31	28	27	28	24	27	26	20–30
150132	25/15	23	28	37	31	26	29	27	27	26	24	27	26	20–30
150122	25/16	18	23	–	47	21	32	26	–	29	–	–	21	20–30
150061	25/22A	33	48	–	44	41	47	41	–	37	–	–	41	35–45
150062	25/22B	23	33	32	32	28	33	29	33	26	28	26	28	25–35
150210	25/23N	43	–	–	42	–	–	–	–	43	–	–	43	40–50
150209	25/23S	43	53	–	48	48	51	48	–	45	–	–	48	45–55
150128	25/24	33	53	27	48	43	51	44	56	39	45	31	43	40–50
150121	25/25	28	33	–	36	31	34	32	–	31	–	–	31	25–35
150117	25/34	–	53	37	46	–	50	–	55	–	–	–	50	45–55
150118	25/34	38	–	–	49	–	–	–	–	42	–	–	42	35–45
150212	25/35	33	43	42	47	38	44	40	43	38	38	36	38	35–45
150056	25/41	23	38	–	39	31	38	32	–	29	–	–	31	25–35

(*Continued*)

Table 10.4. (*continued*)

ID Number	Mound/ Burial	Age 1	Age 2	Age 3	Age 7	PCA 1	PCA 2	PCA 3	PCA 4	PCA 5	PCA 6	PCA 7	Best Estimate	Range
150172	25/41	18	18	–	–	18	–	–	–	–	–	–	18	15–20
150053	25/41-2	23	48	–	47	36	48	38	–	32	–	–	36	30–40
150057	25/41-3	38	53	–	39	46	48	44	–	38	–	–	43	40–50
150116	25/42	23	33	37	32	28	33	29	32	26	27	27	28	25–35
150115	25/45	33	43	32	38	38	41	38	44	35	39	33	38	35–45
150164	26/6	33	43	37	48	38	45	40	44	39	38	34	38	35–45
150107	27/1	28	33	27	35	31	34	31	34	31	31	28	31	25–35

Age 1: Midpoint of age range produced by seriation of the maxillary dentition.
Age 2: Midpoint of age range produced by seriation of the mandibular dentition.
Age 3: Midpoint of age range produced by seriation of the auricular surface of the ilium.
Age 7: Midpoint of age range produced by degree of ectocranial suture closure.
PCA 1: Principal components analysis based on midpoint of ranges produced by age methods 1 and 2. First principal component accounts for 94 % of the variation in age estimates.
PCA 2: Principal components analysis based on midpoint of ranges produced by age methods 2 and 7. First principal component accounts for 85 % of the variation in age estimates.
PCA 3: Principal components analysis based on midpoint of ranges produced by age methods 1, 2, and 7. First principal component accounts for 80 % of the variation in age estimates.
PCA 4: Principal components analysis based on midpoint of ranges produced by age methods 2 and 3. First principal component accounts for 77 % of the variation in age estimates.
PCA 5: Principal components analysis based on midpoint of ranges produced by age methods 2 and 7. First principal component accounts for 77 % of the variation in age estimates.
PCA 6: Principal components analysis based on midpoint of ranges produced by age methods 1, 2, and 3. First principal component accounts for 70 % of the variation in age estimates.
PCA 7: Principal components analysis based on midpoint of ranges produced by age methods 1 and 3. First principal component accounts for 57 % of the variation in age estimates.

Table 10.5. Aged and Sexed Skeletons from the Hopewell Site, by Provenience

ID Number	Mound	Burial	Age (years)	Aging methods[1]	Sex	Sexing Methods[2]
150108	2	1	30–40	PC (1,2)	M	2, 3, 5, 6, 7, 8, 10
150168	2	2	14–19	8	M	11, 12
150109	2	3	20–25	PC (1,2)	F	4, 5, 6, 8, 9, 11,12,13
150112	2	4	20–25	PC (1,2)	F	4, 6, 8, 11, 12
150215	2	5	35–45	PC (1,2)	M	8, 13
150135	4	2 (Skull 1)	Adult	7	F	8, 9
150134	4	2 (Mandible)	50+	2		
150133	4	2	20–35	3, 4		
150129	4	3	25–35	PC (1,2)	M	1, 4, 5, 6, 7, 8, 11
150143	4	4	40–45	PC (1,2)		
150127	4	9	45–55	PC (2,7)	M	4, 5, 6, 8
150137	7	1	25–35	PC (1,7)	F	1–10
150138	7	3	20–30	PC (1,2)	M	14 ($F_{app} = 1.04$)
41618	18	181	40–50	PC (1,2)	M	8, 9, 11, 13
41617	20	177	30–40	1		
41613	23	205	20–30	PC (1,2)		
41606	23	228	20–30	PC (1,2)	F	8, 9, 13
41608	23	234	40–50	2	F	13
41607	23	236	30–60	7	F	9, 13
150165	25	6	20–30	PC (1,2)	M	1–7, 9–11, 13
150166	25	7	20–30	PC (1,2)	F	1, 4, 6, 8, 9, 11, 13
150123	25	10	36–40	1		
150213	25	11	20–30	PC (1,2)	M	13
150124	25	12	25–35	PC (1,2)	F	8, 14 ($F_{app} = 1.04$)
150119	25	13			F	8, 9
150132	25	15	20–30	PC (1,2)	F	4, 6, 8, 9, 11
150131	25	15	20–30	PC (1,2)	F	4, 8, 9, 10, 13
150122	25	16	20–30	PC (1,2)	F	8, 10
150061	25	22A	35–45	PC (1,2)	M	1, 3, 6–9
150062	25	22B	25–35	PC (1,2)	F	3–6, 8, 9, 10, 11
150210	25	23N	40–50	PC (1,7)	F	8, 9, 10, 14 ($F_{app} = 0.91$)
150209	25	23S	45–55	PC (1,2)	M	10, 13
150128	25	24	40–50	PC (1,2)	M	4, 5, 8, 9
150121	25	25	30–35	PC (1,2)	M	4, 6, 8
150117	25	34	45–55	PC (2,7)	M	14 ($F_{app} = 0.42$)
150212	25	35	35–45	PC (1,2)	M	4, 8, 10
150058	25	41–1	41–45	2	F	14 ($F_{app} = 0.91$)
150057	25	41–3	40–50	PC (1,2)	F	4, 9, 10, 11
150053	25	41–2	30–40	PC (1,2)	F	8, 9, 10, 11
150116	25	42	25–35	PC (1,2)	F	4, 6, 8, 9, 10
150115	25	45	35–45	PC (1,2)	M	1, 3, 4, 5, 8, 10
150170	26	5			M	11, 12
150164	26	6	35–45	PC (1,2)	M	1–5, 7, 11–13
150107	27	1	30–35	PC (1,2)	F	14 ($F_{app} = 0.94$)

[1]Aging methods correspond to numbers 1–11 and PC in Table 10.2.
[2]Sexing methods correspond to numbers 1–14 in Table 10.1.

individuals from Seip, Harness, Rockhold, and Raymond Ater were included as well.

The discriminant analysis was performed using NCSS 2000 software. In order to minimize missing values among the independent variables, the data were transformed such that the measurements of antimeres were averaged. In the event that the measurement of one antimere was missing, the measurement that was present was used regardless of side. Sample sizes of the transformed independent variables ranged from $n = 3$ to $n = 26$. Each independent variable was tested for normality using the Kolmogorov-Smirnov test (critical value = 0.05) and normality was accepted for 132 of the 140 variables. In order to test the assumption that group covariance matrices were equal, Box's M test (Box, 1949 as described in Hintze, 1998) was applied. Probability levels for Box's M (F_{Prob}) ranged from 0.05 to 0.97. Results of the test for each unknown that was eventually successfully allocated to a sex category are reported in Appendix 10.2.

For each individual of unknown sex, discriminant functions were calculated using combinations of independent variables from the knowns. The set of functions that produced the least amount of classification error of knowns was chosen for use in allocating an unknown to a sex category. Descriptive statistics, results of the test for equality of covariances, the linear discriminant functions, and allocation error are reported in Appendix 10.2. The assignments of sex to individuals is reported in Table 10.5.

RESULTS

Detailed descriptions of each of the 230 individuals excavated from the Hopewell site by Moorehead (1891, 1897, 1922) and Shetrone (1922–1925, 1926) are provided in Appendices 10.3 and 10.4. These appendices summarize what is currently known about each of the human skeletons encountered at the Hopewell site, including information about whether the skeleton was collected in the field; which bones are currently curated in various collections; whether the remains are cremations, inhumations, or inhumations with charring; body position and orientation in the field; taphonomic information such as preservation, presence of cutmarks, and locations of copper staining; pages in field notes and publications that describe or mention the individual; confusion, if any, whether the skeleton with the assigned catalog number is indeed the one described in site field notes and publications; and the most comprehensive age and sex estimates produced to date. Also included are detailed descriptions of culturally modified human remains from the site. The age and sex information for all cataloged and provenienced human remains from the Hopewell site is summarized in Appendix 10.1.

Age and sex determinations for the Hopewell site individuals that could be tied to a particular provenience and were able to be assigned to an age category other than adult/subadult, as well as the techniques used to obtain them, are summarized in Table 10.5. Of these individuals, 42 could be assigned to an age category using the various techniques described above. This result brings the number of inhumations from the Hopewell site with good age estimates to nearly 23 %. Six of these new ages resulted from application of additional methods used individually, while 33 ages were obtained by means of principle components analysis, either by combining two of the additional methods, or by combining one of these additional methods with one of the standardized methods. Twelve sexes were determined using seriation of cranial robusticity and 14 sexes were determined using discriminant functions of dental metrics, bringing the total to 38 individuals with reliable sexes and raising the number of inhumations from the site with good sex estimates to nearly 21 %. Furthermore, ten of the sexes determined from seriation of cranial robusticity and two of the sexes determined using discriminant functions of dental metrics were supported by individual cranial and postcranial sex indicators, improving the reliability of these estimates for bioarchaeological analysis.

Chapter 11

The Functions and Meanings of Ohio Hopewell Ceremonial Artifacts in Ethnohistorical Perspective

Christopher Carr, Rex Weeks, and Mark Bahti

Clear projectile points knapped from quartz crystals. Five-tone, cane panpipes sheathed in silver and copper. Shiny hemispheres of copper, schist, or chlorite, sometimes hollow, sometimes solid. Alligator teeth, real and copper effigies. Plummets made of shell too light to have served as net sinkers. Barracuda jaws. These and other fantastic artifacts were socially and spiritually loud-spoken in the ceremonies and lives of Ohio Hopewell people. What are Western archaeologists to make of them, today, removed 2000 years and many cultural forms from Ohio Hopewell societies? In earlier days of the formation of Americanist social archaeology, such items were simply called "socio-technic" items, "symbols of status", "symbols of rank", or "symbols of authority" and interpreted in contentless, social-structural terms to describe societal complexity (e.g., Binford 1964b; Braun 1979:67–68, 70; Brown 1981:29–30; Peebles 1971:69; Peebles and Kus 1977:438, figure 3; Struever 1964:88; 1965:213; but see O'Shea 1981; Struever and Houart 1972:49). Clearly there are culturally richer and more Hopewell-specific understandings that can be derived from these items.

An essential aspect of the "thick prehistory" approach to understanding past peoples is defining the culture-specific uses, symbolic meanings, and social role associations of the artifacts and features that the people used. The connection between thick prehistory and identifying artifact functions and meanings is a linear, logical one, mediated through the concept of the social role. Specifically, the goal of thick prehistory is to develop knowledge about a past people that is particularly sensitive to their ways. Arriving at an authentic understanding of a past people is accomplished in part by personalizing the past with people in their active, on-the-ground, sociocultural roles. A role is a suite of rights and duties that a person has relative to another in a given social context and considering their social identities/positions. The rights and duties of a role in turn define its domain and forms of action, and encourage and facilitate choices to act or not, and actions themselves. Those actions may be carried out using artifacts or architectural facilities, which to be effective must be relevant in their functions and meanings. Thus, by identifying the culture-specific uses and meanings of the classes of material culture used by a past people, and the social roles implied by those uses and meanings, an empirical foundation is formed for personalizing the past with active people and for learning about their lives in their terms. Further, when local conditions, demands, historical contingencies, and consequent needs of past people are considered alongside the actions, rights, and duties of a social role that is known archaeologically through its supporting material culture, then insights can also be gained into the motivations behind the choices for action that people make. This chain of logic can be summarized as follows:

functions and meanings of artifacts and architectural facilities	→	domains and forms of action	→	rights and duties of social roles	→	people in social roles	→	choices	→	people in action	→	thick prehistory: understanding others in their terms
								↑				
		local and historical context: conditions, demands, historical contingencies			→	personal and social needs	→	motivations	→			

Within this larger theoretical and analytical framework, this chapter aims at providing insights into the ceremonial and utilitarian functions, symbolic meanings, and role associations likely had by 51 kinds of Ohio Hopewellian ceremonial paraphernalia and raw materials that are recorded in the HOPEBIOARCH data base (Chapter 8). Ranges of possible functions, meanings, and role associations are listed for each of the 51 classes of Hopewellian items based on a systematic documentation of the uses, meanings, and role associations of analogous items employed by historic Native Americans of the Eastern Woodlands, the Prairies, the Plains, and the Subarctic. The ethnohistoric information was assembled from a large number of sources included in the *eHRAF Collection of Ethnography* and in comprehensive works by John R. Swanton, James Mooney, and Henry R. Schoolcraft.

PREVIOUS RESEARCH AND THE IMPORTANCE OF THIS SURVEY

It is fair to say that Woodland archaeologists generally have a limited understanding of the ceremonial uses, spiritual meanings, and social role associations of religious artifacts, features, and materials such as those mentioned at the beginning of this chapter. Much more is known about the subsistence, settlement patterns, and political organizations of prehistoric Woodland Native Americans than their spiritual and social-ceremonial lives. Current seminal syntheses of the archaeology of eastern North America, found within the Smithsonian encyclopedic series, *Handbook of North American Indians* (Demallie 2001; Fogelson 2004; Helm 1981; Trigger 1978), highlight this bias. Only very recently in modern American archaeology have studies of ancient religious life become paradigmatically acceptable and begun to deepen our appreciation of it (Brown 1997; Insoll 2004; Renfrew 1994; Whitley and Keyser 2003).

Of previous studies of prehistoric Woodland ceremonial artifacts and architecture, the works of Robert Hall are perhaps best known and respected (Fowler 2003a; Goldstein 2003). Hall has shed light on the possible ceremonial uses and spiritual meanings of a number of kinds of prehistoric Woodland artifacts and artistic motifs: long bones and crania perforated to the marrow to release souls (1976a, 1979), Hopewellian panpipes associated with fertility and used for courting (1979), certain Ohio Hopewellian mica and copper cutouts shaped to represent atlatls (1977), Hopewellian platform pipes as atlatl-pipe composite calumets used in meeting rituals to create peaceful interactions among distant peoples (1977, 1979, 1983a, 1987, 2000), Red Ocher turkey tail knives used as bullroarers in weather magic and other ways (1983b), Glacial Kame sandal-sole gorgets as a representation of the constellation Orion (1983b), bone skewers that fastened hide and fabric coverings over graves as representing water spirits at the four corners of the earth, Adena circular embankment ceremonial centers constructed as water-collecting ghost barriers (1976b), the unique Bedford Mound 8 copper cutout as a composite caiman-raptor creature (2006), Hopewellian burial mounds constructed to recall earth diver myths and facilitate in ceremonies aimed at the recreation of the cosmos (1979), the eye-in-hand motif in Adena, Hopewell, and Mississippian art as a representation of a soul of a person (1979), and early Mississippian Long-nose God shell and copper maskette earrings as representations of the Winnebago and Iowa supernatural He-who-wears-human-heads-as-earrings (Red Horn, He-who-is-hit-with-deer-lungs), who might have been symbolically essential in rituals for creating fictive kinship between leaders of large polities and clients in outlying areas (1997).

Other insightful interpretations of prehistoric ceremonial paraphernalia and motifs have also been posed, more so for Mississippian societies than Hopewellian ones. Examples include: atlatl weights, embossed copper plates, rock-art, temple statuary and other stone figurines, carved shell cups and gorgets, maskettes, smoking pipes, shell trade beads, shiny raw materials, birdmen, thunderbirds, pileated woodpeckers, turkey cocks, owls, copper and clay bears, underground or underwater panthers, various serpents and snakes, frogs, otters, trees, motifs of military strength and war, representations of mortuary treatment of corpses, symbols of death and the journey to an afterlife, symbols of the four directions and the *axis mundi*, other beings of the above and below realms of the cosmos, sun signs, floating islands, the weeping eye, the eye-in-hand motif, and ogees (e.g., Aftandilian 2007; Berres et al. 2004; Brain et al. 1996; Brose et al. 1985; Cleland 1985; Cobb et al. 1999; Diaz-Granados et al. 2001; Duncan and Diaz-Granados 2000; Dye 2001; Emerson et al. 2000, 2003; Fitzgerald et al. 1998; Fox 2004; Galloway 1989; Knight 1986, 2004; Knight et al. 2001; Hamell 1983, 1987, 1998; Lepper and Frolking 2003; Lovis 2001; Perino 1971; Phillips and Brown 1978, 1984; Power 2004; Reilly and Garber 2007; Sampson 1988; Smith and Smith 1989; Townsend et al. 2004). More attention has been given to the religious meanings of motifs than to the specific functions of artifact classes in ceremonies.

In these examples and others, ethnohistoric analogy is the strategy that has been used most commonly to interpret the socio-religious dimensions of prehistoric material culture. Contextual, formal, stylistic, and technological studies have provided supporting argumentation (e.g., Brain et al. 1996; Carr 2005e; Carr et al. 2002; Emerson 1989; Hoffman 1997; Muller 1966, 1979; Phillips and Brown 1978, 1984; Spence and Fryer 2005).

Although such approaches have certainly enriched our pictures of past Woodland Native American ceremony and spiritual thought, the methods used and the credibility of the interpretations wrought can be improved. Previous studies have, in general, been wanting in three ways.

First, they have tended to be piecemeal, focusing on *individual* classes of material culture or motifs rather than encompassing whole, integrated cultural assemblages of ceremonial items of diverse kinds (e.g., see the above list of studies). Yet, it is through integrated analysis of functionally and/or conceptually related ceremonial paraphernalia, features, and materials that the range of possible ceremonial uses and religious meanings assignable to each is constrained to a few coherent and most reasonable interpretations. The ceremonial and meaningful contexts of a given item and its position within them, as expressed by its associations with and disassociations from other ceremonial items, provide multiple corroborating lines of evidence for deducing its meaning and uses.

In regard to their piecemeal focus, recent archaeological studies differ significantly from synthetic ethnological attempts to summarize historic eastern Native American religious thought and material culture. The comprehensive works by art historian Christian Feest (1986) on the Northeastern Woodlands, by ethnohistorians Hudson (1976, 1984) and Swanton (1946, 1952) on the Southeast, and by religious studies scholar Åke Hultkrantz (1973) and anthropologist Alice Kehoe (1989) on the Plains are notable here. More broadly, the multi-artifact class, contextualizing strategy preferred here for assigning ceremonial uses and religious meanings to an artifact class is very similar to Turner's (1969) concept of the "positional meaning" of a symbol within a suite of associated symbols and their meanings. The strategy is also equivalent to that used for assigning functions, meanings, and social role associations to artifact classes by their spatial associations within and among sites—a strategy discussed further in Chapter 13.

The second difficulty with previous ethnohistorical-analogic reconstructions of the ceremonial uses, spiritual meanings, and social role associations of ancient Woodlands religious items is that the studies do not make explicit the *range* of uses, meanings and roles that are suggested by varying ethnohistoric sources and cultures for a given class of material culture. Nor are the uses, meanings, and roles that were culled through before arriving at the proposed interpretation of the class reported. It is difficult to evaluate the credibility of an interpretation from its supporting data and argumentation, alone, without a discussion of alternative interpretations and counter data suggested by the same or other ethnohistoric sources.

Finally, in most ethnohistorical-analogic studies of ancient Woodland religious material culture, methodology is not specified. What ethnohistorical sources were searched and not, and why? Which found ceremonial uses and meanings of a class of material culture were discarded? Why were they discarded and others kept? An interpretation is only as convincing as the credibility of the methods and data used to reach it. Evaluation of methods and data necessitates that they be reported.

If we really are to attempt to understand Hopewell peoples and their ways in their own terms, then a more holistic, systematic, explicit approach to making ethnohistoric analogies is needed. Minimally, such an approach includes surveying and reporting the full range of Woodland uses and meanings documented for each of a suite of functionally and/or conceptually related ceremonial paraphernalia, features, and materials. In addition, an explicit statement of the ethnohistoric sources and cultures surveyed, the methods used to locate analogs, and the reasoning used to whittle down analogs to a most probable set of interpretations should be provided. Part of this reasoning will pertain to corroborating lines of evidence found within the ethnohistoric sources, part to reinforcing lines of evidence found for functionally and/or conceptually related ceremonial items, and part to archaeologically specific contextual information.

It is in this light that the following systematic inventory of the ethnohistoric uses, meanings, and role associations of Woodland ceremonial artifacts gains its significance. The survey provides a complement and balance to the common, more piecemeal and idiosyncratic approach of searching certain sources for insightful analogs and following out possible leads. The survey reveals many alternative interpretations for given classes of ceremonial artifacts and raw materials. It also encompasses a very broad array of kinds of ceremonial artifacts and raw materials compared to those that have previously been studied. Some of these classes of items are functionally and/or conceptually interrelated in Hopewell ceremonialism and, together, the associated classes provide corroborating lines of evidence in favor of certain interpretations of Hopewellian uses and meanings over alternative ones (see Chapter 13 for associations among Hopewellian artifact classes). Finally, the bibliographic sources and methods of the survey reported here are explicit and can be extended later as needed.

With the primary ethnohistoric information systematized here, it is possible for researchers to explore the ceremonial uses, spiritual meanings, and social role associations of many kinds of Woodland ceremonial artifacts and raw materials that have yet to be studied. It is also possible to evaluate the productive and provocative interpretations of Hopewell artifacts and raw materials that have previously been offered through more particularistic and opportunistic approaches. The information presented here is useful not only to Hopewell archaeologists, but also to archaeologists and ethnohistorians studying other prehistoric and historic Woodland Native American groups.

ETHNOHISTORIC SOURCES

Six collections of ethnohistoric sources for the Eastern Woodlands, the Prairies, the Great Plains, and the Subarctic were searched for the functions, meanings, and social role associations of artifact classes analogous to Ohio Hopewellian ceremonial paraphernalia. These sources are:

(1) the *eHRAF* © 1997 *Collection of Ethnography,* which is maintained by the Human Relations Area Files, Inc. at Yale University (www.yale.edu/hraf/);
(2) Henry R. Schoolcraft's (1860) *Archives of Aboriginal Knowledge*, including a modern index to it by Francis S. Nichols (1954), all reproduced by the Guild Press of Indiana, Inc., in their © 1997 *The American Indian CD-ROM* (www.guildpress.com);
(3, 4) John R. Swanton's (1946, 1928) *Indians of the Southeastern United States* and *Religious Beliefs and Medical Practices of the Creek Indians*; and
(5, 6) James Mooney's (1891a, 1900a) *Sacred Formulas of the Cherokees* and *Myths of the Cherokee.*

The first two collections provided coverage of tribes in the northern Woodlands, the Prairies, the Plains, and the Subarctic, whereas the remainder were selected for their complementary coverage of southeastern Woodland tribes.

The eHRAF Collection of Ethnography

The *eHRAF Collection of Ethnography* is an electronic data base of full-text sources that are amenable to exact word searches. The data base provides descriptive information on many aspects of cultural and social life for various ethnic groups around the world. For this study, we focused on information from ethnological documents on all nine Eastern Woodlands, Prairies, Great Plains, and Subarctic tribes that are covered in the data base.

The nine tribes are diverse in culture, belonging to six language families (Table 11.1). There are 300 documents in total on the nine tribes in the *eHRAF*. Over one-third of the documents are for Algonquian-speaking tribes. The other five language families, including the Athabascan, Caddoan, Iroquoian, Muskogean, and Siouan, each are represented by less than one-fifth of the total documents.

Schoolcraft and His Archives of Aboriginal Knowledge

Schoolcraft's *Archives of Aboriginal Knowledge* (AOAK) are among a suite of many important early historical and ethnological documents on native North Americans that are electronically reproduced in full text on *The American Indian CD-ROM*. The texts can be searched for exact words. Most of the documents on the CD are not found in eHRAF, particularly Schoolcraft's.

To give the reader a sense of the kinds and quality of information in Schoolcraft's AOAK, we summarize his history as an ethnologist. The most concise statement of Schoolcraft's life and works is presented by Tanner (1999). Excellent book-length biographies on Schoolcraft have been written by Bremer (1987) and Osborn and Osborn (1942). Osborn and Osborn (1942) have also compiled the only complete, published bibliography of Schoolcraft's works. Bieder (1986),

Table 11.1. Woodlands, Prairie, Plains, and Subarctic Native American Tribes Covered in the eHRAF and Included in the Survey of Artifacts and Raw Materials

Algonquian	Athabascan	Caddoan	Iroquoian	Muskogean	Siouan	Total
Blackfoot 34	Chipewyan 57	Pawnee 18	Iroquois 51	Seminole 38	Assiniboine 19	
Delaware 20					Stoney 8	
Ojibwa 55						
TOTALS 109	57	18	51	38	27	300

$n = 9$ tribes, 6 language families, 300 ethnohistorical documents

Michaelsen (1999), and Clements (1990) provide important discussions of Schoolcraft's role in the development of early American anthropology.

Schoolcraft lived from 1793 to 1864. He was a key historical figure to the foundation of professional ethnology, particularly in the eastern United States. Among ethnologists of the early nineteenth-century, he was unique for having lived closely with Native Americans for a long time. He served the Office of Indian Affairs for nineteen years at remote agencies on the northwestern American frontier. Subsequently, he directed federal research and lectured widely on Native American ethnology. Between 1821 and 1857, he contributed numerous articles and monographs, which ultimately shaped popular colonial opinion regarding American Indians.

The major theoretical and methodological influences on Schoolcraft were the works of five scholars, including William Robertson (1777), Comte de Volney (1822), Thomas Jefferson (1788), Albert Gallatin (1836), and Lewis Cass (1823). Robertson's and Volney's writings unfortunately predisposed Schoolcraft to view American Indians in a rather lowly position of cultural development. Robertson and Volney asserted an erroneous model of hierarchical cultural evolution from savagery to civilization. Nevertheless, Schoolcraft did make substantial contributions to Native American ethnology, especially in the field of linguistics and in documenting oral traditions. His emphasis on the importance of language and culture were likely inspired by Jefferson and Gallatin. The greatest scholarly influence on Schoolcraft, however, was probably Cass. Schoolcraft worked directly with Governor Cass between 1819 and 1831 in the northwestern territories. Schoolcraft's methods of designing research and gathering data are easily traced to previous work by Cass.

Following Cass, Schoolcraft began his most important ethnological work in 1847. The purpose of the work was to improve policy regarding federal relations with American Indian tribes in the United States. The project was sponsored by an act of Congress and administered through the Office of Indian Affairs. Under Schoolcraft's direction, a lengthy census and ethnological questionnaire was distributed to all agents, mission school administrators, and missionaries who were affiliated with the tribes. This was the first official attempt at a national census and an ethnological survey of all American Indian tribes that maintained relationships with the U.S. government.

From the survey, Schoolcraft acquired the aggregate census data for 23,497 Indians and partial results on another 8,893. There are substantial ethnological data within the text on sixteen tribes in the Eastern Woodlands, Prairies, and Great Plains, including the Algonquian Fox, Kickapoo, Miami, Ojibwa, Ottawa, Potawatomie, and Sauk; the Siouan Dakota, Omaha, Oto, and Winnebago; the Muskogean Chickasaw and Creek; the Iroquois and Cherokee; and the Caddoan Pawnee. The work was supplemented by library research and by Schoolcraft's own observations from having lived over 30 years with the Ojibwa. His primary Ojibwa informants included Catherine Wabose, Chingwauk, Chusco, and Schoolcraft's first wife Jane Johnston.

The results of Schoolcraft's federal census and ethnological survey are reported in *Historical and Statistical Information Respecting the History, Condition, and Prospects of the Indian Tribes of the United States*. The first three volumes have been reviewed briefly in an article by Bowen (1853) and extensively in the biography by Bremer (1987:293–346). The publication remains a standard reference on early Native American ethnology, including five volumes, 3,200 pages, and 300 illustrations. There is also a sixth volume that summarizes the study. J.B. Lippincott consecutively printed volumes one through six between 1851 and 1857 in Philadelphia. Most of the illustrations were reproduced from the engravings of the highly acclaimed artist of frontier life, Seth Eastman (Boehme et al. 1995; McDermott 1961). In 1860, the set was reprinted as the *Archives of Aboriginal Knowledge* (AOAK), after Schoolcraft had obtained the copyright from Congress. A seventh volume, which is a modern index of the AOAK and which was compiled by

Francis S. Nichols (1954) for the U.S. Bureau of American Ethnology, is also included on *The American Indian CD-ROM*.

As with all early anthropological and lay sources of information on Native American life, Schoolcraft's must be read with a critical eye for biases of the time and writer. In addition to his unilineal, cultural evolutionary perspective, from which he assumed his and Westerners' superior position to native peoples (see above), Schoolcraft also often romanticized and exaggerated his findings (e.g., Mallery 1888 cited in Hoffman 1891:156). He has also been criticized for not adequately acknowledging his sources of information, including the works of contemporaries and his Ojibwa wife, Jane Johnston (Angel 2002:29, 89; Michaelsen 1999).

The *eHRAF* and Schoolcraft's works complement each other well. The *eHRAF* is constituted by more sources of information, whereas Schoolcraft's works offers examples from more tribes. Together, both databases provide much ethnological and historical information on Native American tribes in the Eastern Woodlands, Prairies, Great Plains, and Subarctic, especially north of the 35th Parallel.

Neither the *eHRAF Collection of Ethnography* nor *The American Indian CD-ROM* data bases report much information on Native American tribes in southeastern North America. The *eHRAF* covers only one tribe, the Seminole, in the southeastern Woodlands. To compensate for these biases, the four key texts by Swanton (1928,1946) and Mooney (1891a, 1900a) and cited above were consulted. All four of these texts are considered foundational to southeastern ethnological studies by many anthropologists.

Swanton and His Works

Biographical notes on John Swanton appear in three articles, by Steward (1960), Dorson (1980), and Lonergan (1999), in two introductory chapters by Kroeber (1940) and Lankford (1995), and in an obituary by Fenton (1959). The largest bibliographies of Swanton's publications were compiled by Nichols (1940) and Fenton (1959). Judd (1967) presented the highlights of Swanton's professional career with the Bureau of American Ethnology from 1900 to 1944.

Swanton lived from 1873 to 1958. He was educated in anthropology at Harvard University in the 1890s. While studying there under archaeologists Frederick W. Putnam and Charles C. Willoughby, he conducted excavations in Maine, New Jersey, and Ohio with Harvard's Peabody Museum of Archaeology and Ethnology. In 1898, when working for the American Museum of Natural History, he began conducting ethnographic fieldwork among the Indians of the northwest Pacific Coast under the tutelage Franz Boas. From his Pacific Coast fieldwork, he earned a Ph.D. in 1900. Subsequently, Swanton gained a position at the Bureau of American Ethnology, where he remained until his retirement in 1944.

Swanton is chiefly remembered for his anthropological work in the southeastern United States. Among anthropologists, "mention of the area automatically brings to all of us the association of his name" (Kroeber 1940:2).

For Swanton and his contemporaries, the Southeast seemed rather hopeless for salvaging much ethnography on American Indian cultures. The southeastern Indians had been despoiled by nearly four centuries of colonialism, assimilation, and genocide. Moreover, the majority of the surviving populace had resided in Oklahoma for generations, far from their traditional homelands. By many accounts, the Southeast appeared to be the most acculturated of all cultural areas in North America.

Nevertheless, Swanton rose to the occasion with an innovative approach. He proposed that southeastern Indian cultures could be reconstructed from the descriptions of early observers, explorers, soldiers, travelers, and missionaries. Indeed, he was the first to make substantial use of historical documents to sketch the ethnology of southeastern Indians. Although he did not use the term, the fruits of his labors eventually matured into the field of "ethnohistory."

Modern ethnohistorical methodology requires evaluation of the authenticity, completeness, and biases of early documents. Swanton, however, was seldom very critical of his sources. He instead preferred to collect, organize, and present ethnological information, allowing the historical texts to simply speak for themselves.

The most comprehensive of Swanton's works is his 1946 *Indians of the Southeastern United States*. Although supplemented by summaries of ethnographic fieldwork by Swanton and others among southeastern tribes residing in Florida, Louisiana, North Carolina, Oklahoma, South Carolina, and Texas, most of the information in the report was drawn from numerous early historical documents (Swanton 1946:827–856). The work contains 943 pages of ethnohistorical information complemented by 106 illustrations. Furthermore, it covers 177 tribes from 7 language families, including Algonquian, Caddoan, Iroquoian, Muskogean, Siouan, Tunican, and Uchean. See Swanton's table 1 (1946:10–11) for a complete list of the tribes according to their respective language families. Over half of the tribes are Muskogean speakers, among which the largest is the Muscogee, or Creek. The monograph was reviewed positively by Alden (1947) and Haas (1948).

Swanton's (1928) *Religious Beliefs and Medical Practices of the Creek Indians* was selected in order to further examine Muskogean-speaking tribes. The majority of the information reported by Swanton was derived from the works of early observers, including James Adair (1775), William Bartram (1792, 1853), Benjamin Hawkins and William Hodgson (1848), Clay MacCauley (1887), and Caleb Swan (1856). Beyond these ethnohistorical records, the source of some of the data was Swanton's own ethnographic fieldwork in Oklahoma and Texas around 1912. His primary informants included Zachariah Cook, Big Jack, Silas Jefferson, Jackson Lewis, Caley Proctor, and Watt Sam, although he also obtained information from Charlie Adams, Sanger Beaver, Wiley Buckner, Ellis Childers, David Cummings, G. W. Grayson, Jackson Knight, William McCombs and many others who remained anonymous. The text includes 199 pages of detailed information on ceremonial artifacts, features, and raw materials and seven illustrations of artifacts. The report was reviewed in an article by Abernethy (1928).

Swanton was especially sensitive to ethnohistorical data that had become pertinent in archaeological studies. In fact, he was the first scholar to identify from ethnohistorical descriptions the likely presence of medicine bags in the archaeological record (Swanton 1920:33), which led to the discovery of many other prehistoric cases in the Eastern Woodlands (for a summary, see Fox and Molto 1994: 31–32). Furthermore, he devoted a large portion of *The Indians of the Southeastern United States* (Swanton 1946:242–629) to identifying numerous kinds of material culture that were used historically by Native Americans in the Southeast (Haas 1948:90). Swanton (1946:827) concluded his magnum opus by saying, "the future study of the Southeastern Indians rests mainly with the archaeologists".

Mooney and His Works

A great deal of biographical information is available on James Mooney. Detailed biographies include a Ph.D. dissertation by Colby (1977), a book by Moses (1984), and an introductory chapter by Ellison (1992). Articles by both King (1982) and Moses (1999) offer succinct biographies. Interesting notes on Mooney's life and personality appear in a dedication to his posthumous publication edited by Olbrechts (1932) and in an obituary by Swanton (1922). An inventory of Mooney's publications and manuscripts is provided by Colby (1977) and Moses (1984).

Mooney lived from 1861 to 1921. In 1879, he began his professional career first as a secondary school teacher and then as a newspaper reporter with the *Richmond Palladium* in Indiana. Through the media, he quickly learned about the Smithsonian Institution's Bureau of Ethnography that had been recently established to study American Indians. Fascinated by Indians, Mooney applied three times for a job at the Bureau. In 1885, he was finally awarded a volunteer position after a chance meeting with the director, John W. Powell. He impressed Powell with his depth of knowledge on Indian history and with the scope of his independent research on the synonymy of tribal names. He was officially hired in the fall of 1886, where he worked until his untimely death at age 61. Under the supervision of senior ethnologists Albert Gatschet and Washington Matthews, he was granted his first field assignment among the Eastern Band of Cherokee residing in the Great Smoky Mountains of western North Carolina. He conducted intermittent ethnographic fieldwork with the Eastern Cherokee from 1887 to 1890. In subsequent field studies on Plains Indians, he investigated the Ghost Dance, Peyote Religion, and picture-writing. He did not do further ethnographic field work in the Eastern Woodlands.

Mooney's (1891a, 1900a) *Sacred Formulas of the Cherokees* and *Myths of the Cherokee* were selected here for their detailed and extensive ethnographic data on the Iroquoian-speaking Cherokee. *Sacred Formulas of the Cherokees* includes 96 pages of textual information and four illustrations. The text presents 28 sacred formulas of 600 that were gathered by Mooney from seven Cherokees in western North Carolina between 1887 and 1888. The collection of sacred formulas consists of various ritual manuscripts that were transcribed in the Cherokee language. In the monograph, Mooney provides translations and explanations of the texts. Half of the sacred formulas in the report were acquired from Mooney's primary informant, A'yûñ'inǐ, or "Swimmer". The rest were obtained from A'wanita, Ayâsta, Inâli, Takwtihi, Tsiskwa, and Wilnoti.

Myths of the Cherokee contains 573 pages of text and 22 illustrations. The text includes an ethnohistorical sketch, notes on the narrators of the myths, parallels with the stories of other tribes, and a glossary. Much of the ethnohistorical information in it comes from the accounts of early observers, especially James Adair (1775), William Bartram (1853), Daniel S. Buttrick (1884), John Haywood (1823), John H. Payne (1849, 1862), and Ephraim G. Squier (1851) (see Churchill 2000). Mooney's major contribution to the report was his ethnographic fieldwork among the eastern Cherokee between 1887 and 1890. Some information, however, was obtained later from the Oklahoma Cherokee, particularly James D. Wafford. The monograph presents over 100 myths, of which approximately 75 percent obtained were from Swimmer. The remainder were acquired from Ayâsta, James and David Blythe, Ităgû'năhǐ, Salâ'lǐ, Nimrod J. Smith, Suyeta, Ta'gwădihǐ, and Tsěsa'nǐ. Concise reviews of the *Myths of the Cherokee* appear in articles by Beddoe (1903) and Chamberlain (1903).

Mooney has been criticized for having retained the same naïve realism and ethnocentrism of his predecessors, Adair, Buttrick, and Squier, when interpreting Cherokee ceremonial life (Churchill 2000; cf., Hudson 2000). The works of Adair, Buttrick, and Squier were particularly flawed by the belief that the Cherokees had originated from the lost tribes of Israel, a prevalent notion of the time eventually dispelled through the archaeological investigations of burial mounds by Cyrus Thomas (Silverberg 1968). While Mooney was not committed to Semitic origins for the Cherokee, he did continue to inadvertently describe them as though they conceptualized the world much like the ancient Hebrews.

In addition, Mooney's works commonly make analogies between notions of the Cherokee and those of Judeo-Christians (e.g., his opening statements to the "Cherokee River Cult" [Mooney 1900b]) and sometimes even those of Celtic Druids (e.g., Mooney 1891a:309). Mooney was an Irish Catholic, was actively thinking and writing about his Gaelic roots, and was clearly writing for a Christian audience. Mooney, by his own admission, also edited out many parts of myths that were considered vulgar by Judeo-Christian standards, especially parts that explicitly described aspects of sexuality.

A point of frustration to scholars who have worked with Mooney's *Myths of the Cherokee* is that he reports them only in English translation, without their Cherokee originals. This has prevented evaluation of the closeness and cultural sensitivity of the translations.

Sacred Formulas of the Cherokees provides both English and Cherokee renditions. Scholarly concern over content and wording also derives from Mooney having idiosyncratically joined translated statements from separate informants, Swimmer and John Axe, into a single text for the cosmogonic myth, "How the World was Made", without distinguishing who said what, or justifying why the two accounts belong together in a single narrative.

Despite these shortcomings of Mooney's works, the information on Cherokee thought and ceremony that he preserved remains central to contemporary southeastern Woodlands ethnohistory and anthropology. As one of Mooney's biographers has aptly noted, "no greater testimonial can be offered to Mooney than the reliance placed on his work by anthropologists" (Ellison 1992:1). Both the *Sacred Formulas of the Cherokees* and the *Myths of the Cherokee* heavily influenced Charles Hudson's (1976) seminal synthesis, *The Southeastern Indians.* Hudson's work, in turn, as been one of the main ethnohistorical sources of inspiration for archaeologists who have attempted to reconstruct Mississippian social and religious life in the Eastern Woodlands (e.g., Reilly and Garber 2007).

Modern, Critical Perspectives

The works of Schoolcraft, Swanton, and Mooney are generally assumed to be among some of the most reliable sources of ethnological information available on Eastern Woodland Indians prior to significant acculturation. Yet, it must be remembered that their texts were written in cultural and academic contexts not yet self-critical of their Judeo-Christian biased and English language-biased world view assumptions. Moreover, their works were produced for a largely Judeo-Christian readership. Consequently, the writings of Schoolcraft, Swanton, and Mooney implicitly impose Judeo-Christian concepts and perspectives in reporting the ceremonial uses, religious meanings, and perhaps the social role associations of ritual paraphernalia, other artifacts, and raw material classes, such as those surveyed here. Some of the quotations from Schoolcraft's, Swanton's, and Mooney's works reproduced in this chapter probably give at best a partial and filtered understanding of the functions and religious meanings of these items for historic Native American peoples and, by analogy, for prehistoric Ohio Hopewell peoples. For example, nuances of the functions and symbolic meanings of artifacts reported to have been used for "purification", "sacrifice", "worship", "obtaining supernatural power", and such are likely off-center (Churchill 2000; Hallowell 1960; Morrison 1984, 2000; Miller 1955). This kind of interpretive problem has only recently begun to be addressed through critical anthropological studies (Churchill 2000; Kehoe 1989; Mann 2003; Morrison 2002). Interpretations of Hopewellian ceremonialism based on the presented quotations could be improved by taking the critical vantage of such modern studies, as well as through continued dialogue with contemporary Native American communities.

OHIO HOPEWELLIAN ARTIFACT CLASSES AND RAW MATERIALS

The six collections of ethnohistoric works discussed above were searched for information on the ceremonial and utilitarian functions, symbolic meanings, and role associations of 51 classes of fancy artifacts and raw materials. The items are formally equivalent or analogous to ones found in Ohio Hopewell burials and ceremonial centers and are recorded in the HOPEBIOARCH data base. The 51 classes and the multiple keywords for each that were used to make the searches are listed in Table 11.2.

The particular kinds of items that were selected for search include almost all that we thought were used or possibly used in shamanic or shaman-like ceremonies, given our a priori knowledge of ethnohistoric literatures and archaeological contextual information. We also chose most classes of items that we thought represented leadership in communities, leadership or membership in ceremonial societies, and high prestige. The artifact classes

Table 11.2. Ohio Hopewell Artifact Classes and Corresponding Terms Searched in Ethnographic Literature

Ohio Hopewell Artifact Class and a priori Identification of Its Function	Terms Searched in Ethnographic Literature	Searched in HRAF?	Searched in Schoolcraft (American Indian CD)?	Searched in Swanton (1928, 1946) and Mooney (1891a, 1900a) ?	Found in HRAF?	Found in Schoolcraft?	Found in Swanton (1928)?	Found in Swanton (1946)?	Found in Mooney (1891a)?	Found in Mooney (1900a)?
Shaman-like Practitioners' Paraphernalia, Definite or Likely										
projectile points of quartz, obsidian, other gems, translucent stones, copper, mica, cannel coal	point(s), projectile(s), projectile point(s), arrow(s), arrowhead(s), spear(s), spearhead(s), lance(s), knife, knives, blade(s), quartz, obsidian, gem(s), amethyst, translucent, copper, mica	x		x	y		y	y	y	y
mica mirrors	mirror(s), tablet(s)	x			y					
cones, hemispheres	cone(s), cup(s), hemisphere(s)	x			y					
boatstones	boatstone(s), trough(s)	x			n					
marbles	marble(s), pebble(s), ball(s), sphere(s), spheroid(s)	x	x	x	y	y	n	y	y	y
plummets, pendula	plummet(s), pendulum(s), pendula	x	x	x	y	n	n	n	y	n
crystals of quartz or other stones	crystal(s), gem(s)	x	x	x	y	n	y	y	y	y
fossils, concretions	fossil(s), concretion(s)	x	x	x	y	n	n	n	n	n
sucking and blowing tubes	tube(s), blowing tube(s)	x		x	y		y	y	y	y
wands, small	wand(s), rod(s)	x	x	x	y	y	y	y	n	y
awls	awl(s), skewer(s)	x		x	y		n	y	n	y
conch shell cups	conch(s), shell cup(s), shell vessel(s)	x		x	y		y	y	n	y
cutouts of copper, mica	cutout(s), fenestration(s)	x			y					
barracuda jaw scratchers	barracuda jaw(s), scratcher(s)	x	x	x	y	y	y	y	y	y
shark teeth	shark, shark teeth, shark tooth, shark's teeth, shark's tooth	x	x	x	y	n		y		
alligator teeth	alligator teeth, alligator tooth	x	x	x	y	n	n	n	n	n
fans	fan(s)			x			y	y	y	y
tinklers and rattlers	tinkler(s), rattler(s), jingler(s), bell(s)	x		x	y		y	y	y	y
smoking pipes	pipe(s)	x		x	y		y	y	y	y
Possible Shaman-like Practioners' Paraphernalia										
panpipes	panpipe(s), flute(s), whistle(s)	x	x	x	y	y	y	y	n	y
incised tablets	tablet(s), palette(s)	x		x	y		n	y	n	n
figurines	figurine(s), effigy, effigies, doll(s), idol(s), fetish(es)	x		x	y		y	y	n	y
owl	owl(s)	x			y					

(*Continued*)

Table 11.2. (*continued*)

Ohio Hopewell Artifact Class and a priori Identification of Its Function	Terms Searched in Ethnographic Literature	Searched in HRAF?	Searched in Schoolcraft (American Indian CD)?	Searched in Swanton (1928, 1946) and Mooney (1891a, 1900a) ?	Found in HRAF?	Found in Schoolcraft?	Found in Swanton (1928)?	Found in Swanton (1946)?	Found in Mooney (1891a)?	Found in Mooney (1900a)?
Paraphernalia of Nonshamanic Leaders, Sodality Members, Roles of Social Importance										
headplates	headplate(s), head plate(s), head dress(es), headdress(es), headgear, head gear, head ornaments, hat(s)	x		x	y		y	y	n	y
batons	baton(s), staff(s), rod(s), mace(s)	x		x	y		y	y	y	y
breastplates	breastplate(s)	x	x	x	n	y	y	y	n	n
earspools	earspool(s), ear spool(s), ear ornament(s)	x		x	y		y	y	n	y
crescents	crecent(s)	x	x	x	y	y	n	y	n	n
gorgets, pendants	gorget(s), pendant(s), reel	x		x	y		y	n	n	y
"trophy" skulls, jaws, ears, fingers	trophy, trophies, mandible(s), maxilla(e), jaw(s)	x		x	y		y	y	n	y
celt	celt, axe, hatchet, tomahawk			x			y	y	n	y
atlatl	atlatl, spear thrower			x			n	y	n	n
Raw Materials of Multiple or Uncertain Social Role Associations										
amethyst	amethyst	x	x	x	n	n	n	n	n	n
cannel coal	cannel coal, lignite, hard coal	x		x	n		n	n	n	n
copper	copper	x	x	x	y	y	y	y	n	y
fluorite	fluorite	x			n					
galena	galena	x			n					
gold	gold			x			n	y	n	y
graphite	graphite	x		x	y		y	n	n	n
hematite	hematite	x		x	y		y	y	y	y
malachite	malachite	x			n					
meteoric iron	meteor, meteorite, meteoric, meteoritic	x		x	y		y	n	n	y
mica	mica	x		x	y		n	y	n	n
micaceous schist (goldstone)	micaceous schist, goldstone	x		x	n		n	n	n	y
obsidian	obsidian	x	x	x	y	y	n	n	n	n
ochre (red and yellow),	ochre, vermillion, red paint, cinnabar	x		x	y		y	y	y	y
pearls	pearl(s)	x			y					
pyrite	pyrite	x		x	y		n	n	n	y
quartz	quartz	x	x	x	y	y	y	y	y	y
sandstone	sandstone	x			y					
shell	shell(s)	x		x	y		y	y	y	y
silver	silver	x		x	y		y	y	n	y
tortoise and turtle shell	tortoise shell, turtle shell, terrapin	x		x	y		y	y	y	y
translucent stone	translucent	x	x	x	n	y	n	n	n	n

of these kinds that we did not choose for search were limited to a small number for which we could not figure out sound keywords–words that described the classes precisely and would not generate a huge number of irrelevant "hits", and words that were not jargon particular to Hopewell archaeological literature. These unselected classes are disks, cups, and dishes of fancy materials, copper rods, and boatstones. We also excluded items that were rare and idiosyncratic to Hopewell material culture: a mushroom effigy copper staff, copper effigy deer antlers, and copper nostril inserts. Images of animal-human impersonators (e.g., a bird-man, a bear-man) were not chosen for search because they are already known well to represent shamanic or shaman-like leadership roles (Chapter 4, Depictions, Costumery, and Symbols of Position of Leaders; Carr and Case 2005b).

We systematically did not select artifact classes that, based on contextual analysis (Thomas et al. 2005), are already known to have marked prestigious or ordinary clan roles (metallic and mica effigy animal power parts, ordinary animal power parts). We also did not search the literatures for items that probably reflected only personal prestige and/or wealth (e.g., necklaces, bracelets and anklets of metallic beads; hair skewers and buttons of copper) or that were for personal adornment (e.g., nonmetallic buttons, necklaces, bracelets, anklets) or that were used in utilitarian subsistence and material processing activities (e.g., containers, hammerstones, drills, knives, celts, and points, all made of mundane materials). These personal and utilitarian items were not chosen for search because they would have generated unmanageably large numbers of "hits" in the literature, probably with little return on ceremonial uses.

All 51 classes of items chosen for study were searched in the *eHRAF*. Smaller numbers of classes of items were searched in the *American Indian CD-ROM* and the works by Swanton and Mooney (Table 11.2), given a shortage of manpower and the difficulties of searching non-electronic, hard-copy literatures.

SEARCH PROCEDURES

Searches in the *eHRAF* and the *American Indian CD-ROM* were made using the keywords listed in Table 11.2. Plural and singular terms were searched, as were synonyms for an item. Technical aspects of the searches are described in Appendix 11.1. Examples of searches are also given there. The analog texts by Swanton and Mooney were searched by reading each of the 1,811 pages of the texts. The indices included with these works were helpful in making the searches, but are incomplete and could not be relied upon to guide full searches of the texts. An example of this situation is given in Appendix 11.1.

Not all search hits were informative or relevant to the intended search category. These hits are not reproduced here. For example, sometimes the found reference to an artifact class was simply its name among a larger set of classes mentioned for some obtuse reason. Sometimes the found keyword referred to a thing having the same name as the searched artifact class but different in nature. For instance, the search for "pebbles", which were used among Woodland Native Americans for divining, also brought up pebbles as constituents of natural landscapes. Such hits were discarded while the search was ongoing.

RESULTS OF THE SURVEY

Searches in the *eHRAF* and the works of Schoolcraft, Swanton, and Mooney for information on the 51 artifact and raw material classes led to more than one thousand informative and relevant quotations. The quotations, their indices, and bibliography total over 10 MB. The full set of quotations are given in Appendices 11.2–11.7, each appendix allocated to one of the six major ethnohistoric sources (i.e., *eHRAF*, Schoolcraft's texts, Swanton 1928, 1946; and Mooney 1891a, 1900a).

Appendices 11.2 and 11.3 contain information from the *eHRAF* and Schoolcraft's texts. The appendices provide quotations in a sequence arranged hierarchically, first by artifact and raw material class, then by language group, and finally by tribe. Each artifact and raw material class has its own Word file of quotations. In a given file, for a given tribe, there may be from one to many quotations. Bibliographic citations for each quote are given at the end of each quote. The full bibliographic information for each cited source, along with summary information about the nature of each source, are presented at the end of each file of artifact and raw material classes.

Appendices 11.4 through 11.7 provide information from Swanton's and Mooney's four texts. Each appendix lists, in an index, the citations for each quotation, rather than the quotations, themselves, in the same sequence as Appendices 11.2 and 11.3, that is, arranged by artifact and raw material class, then by language group, and finally by tribe. Each index of citations is found in a Word file named "Index". The quotations, themselves, are given in a file named "Quotes", ordered by page number in the one book by Swanton or Mooney that pertains. In addition, plates, a glossary, and a table that come from Swanton's or Mooney's publications and that have relevant information are listed in the indices and are found in files named "Plates", "Glossary", and "Table 1".

To aid the reader in finding particular kinds of information, from one to four descriptors are listed in the headers for each tribe: "ritual", "use", "meaning", and/or "social category". These terms indicate the kinds of information to be found within the quotes given for that tribe:

(1) Ritual. The rituals and purposes of the rituals in which the artifact class was used historically.
(2) Use. The specific ritual use of the artifact class historically.
(3) Meaning. The religious meaning attached to the artifact class historically.
(4) Social category. The social categories of persons who used the artifact class historically (e.g., particular clans, ceremonial organizations, genders, age classes, leaders of various kinds).

Diacritical marks on Native American words are used in the *eHRAF* for most but not all documents surveyed here and are retained in the Word files in Appendix 11.2. Schoolcraft's texts on the *American Indian CD* seldom use diacritical marks, and this convention is retained in the quotations that are drawn from it and reproduced in Appendix 11.3. The diacritical marks used by Swanton and Mooney in their texts are not retained in the Word files in Appendices 11.4–11.7, with the exception of Mooney's (1900a) glossary in Appendix 11.7. This is reproduced in .pdf format in order to allow full diacritical marking.

Table 11.3 summarizes the information in Appendices 11.2–11.7. The table lists each of the 51 artifact classes and its functions, meanings, and role associations in the tribes for which information about it was found. The functions, meanings, and role associations in this table are described in general categories (e.g., divination, war, dances), to give the reader an overview of the artifact class. More detailed descriptions of variations in the functions, meanings, and role associations of an artifact class across and within tribes, in terms closer to the original texts, are provided in Appendix 11.8. No attempt has been made to reinterpret Western descriptive terms, such as worship, evil, purity, and god, which are used in the original texts, into terms more in line with native knowledge.

To explore whether an artifact class had a particular function, meaning, or role association of interest historically and possibly among Ohio Hopewell peoples, and to track down quotations that support, or not, that function, meaning, or role association, the reader should begin with the summaries in Table 11.3. If promising information is found, the reader should proceed to the finer information provided in Appendix 11.8. This Appendix also lists the bibliographic source(s) (*eHRAF*, Schoolcraft, Swanton [1928, 1946], Mooney [1891a,1900a]) of the finer information. If Appendix 11.8 bears fruit, then the reader can turn to the indices and quotations for the relevant bibliographic source(s) (Appendices 11.2–11.7) to obtain from them direct quotations and bibliographic citations.

Table 11.3. Summary of the Uses, Meanings, and Social Role Associations of Artifacts of Historic Native Americans in the Eastern Woodlands, Prairies, Plains, and Subarctic

Ohio Hopewell Artifact Class and a priori Identification of Its General Function	Summary of the Ceremonial or Utilitarian Uses, Social Role Associations, and Meaning Associations of Analogs Found in Ethnographic Literature
Shaman-like Practitioners' Paraphernalia, Definite or Likely	
projectile points of quartz, obsidian, other gems, translucent stones, copper, mica, cannel coal	*Uses*: divination as a pendulum, finding a lost person by shooting method, medicinal scratching, scratching prior to a ceremony, spirit arrows/intrusions, ensure a good hunt, gaming, utilitarian points, other *Associations*: red (blood), not bears, cannibal spirits, a mischevious boy, a sky being, other
mica mirrors	*Uses*: divination, sun signaling, mirror for grooming, body ornamentation, flashing at a woman to attract her, customary grave offering, given as gifts, other *Associations*: a soul, cause of death, the dead
cones, hemispheres	*Uses*: divination, gaming, healing by sucking and cupping, work hides, crystallize maple syrup *Associations*: sky, Milky Way, sweat lodge
boatstones	no information
marbles	*Uses*: magical weather control, find lost objects, pendulum method of divining, evidence of a sucked out power intrusion, to contain a medicine man's spirits, part of a ceremony to kill a person, children's games, adult gaming, counters, placed inside rattles, ornaments, other *Associations*: shaman, "lower world" creatures and beings (Uktena, Spear-finger, others), the dead, high-level Mide's powers
plummets, pendula	*Uses*: divination of the location of lost objects, divination of a sick person's prognosis *Associations*: shaman
crystals of quartz or other stones	*Uses*: to see through opaque barriers, to see things far away, find lost objects, taken out of patients, to bring rain, bring success in many kinds of ventures, a medium of exchange, components of bundles of medicine men and warriors, other *Associations*: medicine men, warriors, Uktena, water, lightening, the Little People, the creation, sexual excitation
fossils, concretions	*Uses*: healing, antidote for poison, to bring prosperity, in prayer, for ornaments; contents of medicine pouches and war bundles, to make face paint *Associations*: meteorites, buffalo, power, women, leaders, common people
sucking, blowing, bubbling, and breathing tubes	*Uses*: to suck out a power intrusion or blood from a patient, blow medicine on a patient, blow prayers or spiritual essenses into a medicinal tea, allow a novice medicine man breath when "buried alive", other *Associations*: medicine men, medicine bundles, birds and bird bone, cane, cattail
wands (wands, rods)	*Uses*: prayer, divination, gambling, "stick swallowing" by medicine men, leading dances, conducting singers, suspend scalps taken in war *Associations*: medicine men, dance leaders, chiefs, guards, warriors, the sun, birds (feathers), snakes, deer
awls	*Uses*: gaming, skewers to pierce the flesh in ceremonies or for ornamentation, utilitarian punches, basket weaving, other *Associations*: kingfisher, fishing spear, Spear-finger (witch), brides, utilitarian tasks

(*Continued*)

Table 11.3. (*continued*)

Ohio Hopewell Artifact Class and a priori Identification of Its General Function	Summary of the Ceremonial or Utilitarian Uses, Social Role Associations, and Meaning Associations of Analogs Found in Ethnographic Literature
conch shell cups	*Uses*: serve the black drink, grave offerings for a chief *Associations*: the black drink, chiefs
cutouts of copper, mica	*Uses*: to represent things in ceremonies and dances (horses, stars, items given away) *Associations*: medicine men, ritual lodges, dances
barracuda jaw scratchers (barracuda, scratcher)	*Uses*: in healing to let out "bad" blood, rub in medicine to bring it closer to blood, and/or remove power intrusions; mutual scratching in the exchange of promises; to prepare a person for a ceremony; to punish children, adults; to threaten animals with punishment; scratching with various sharp animal parts to give a person some quality of the animal or achieve some specific end related to the animal *Associations*: the ground squirrel, per a myth; scratchers can be made from jaws, teeth, pinchers, claws, arrowheads, flakes, briers, sharpened wood or bone
shark teeth	*Uses*: exchanged with inland groups for hides
alligator teeth	*Uses*: exchanged among tribes, necklaces
fans	*Uses*: by greeting parties, in processions preceding the chief, in war ceremonies, in dances, in cooking to fan fires *Associations*: chiefs, warriors
rattlers (gourd, not turtle shell)	*Uses*: ceremonies concerning peace-making, vegetation, crops; the busk *Associations*: plants, chiefs and leaders of ceremonies
tinkers	*Uses*: for sound in dances *Associations*: both men and women
smoking pipes	*Uses*: make treaties, oaths, pass around council meetings, expel humors to cure, blow as a medicine on or into a patient, reinvigorate the aged, keep harmful spirits away, with magical formulae, ceremonies to recount events of prestige, blow into the nostrils of a killed bear to appease it, transfers and trade, other *Associations*: medicine bundles, men (or men's pipes differentiated from women's), chief's and warrior's pipes differentiated, reckoning distance in terms of pipefuls of tobacco smoked, other
Possible Shaman-like Practioners' Paraphernalia	
panpipes (flutes)	*Uses*: courting, welcome parties, ambassadors, warn a village of danger, accompany singing and dancing, other *Associations*: individuals, not collectives; the directions; other
panpipes (whistles)	*Uses*: in war, hunting, welcoming parties, processions within a polity, to gather people, infrequently in courting, prayer during curing, prayer by whole band, to prevent rain, the Sun Dance, many other ceremonies, to direct dances, frighten birds, to imitated the calls of diverse animals and beings, divination, courting rarely, other *Associations*: warriors (leader or all), medicine men, ceremonial societies (men's and women's), dance leaders, all members of dances, sacred bundles (medicine man's and personal), diverse animals, diverse mythical beings, bird bone, other
incised tablets	*Uses*: left in enemy territory by warriors to tell that they committed an act of war, or to warn an enemy of an impending attack

(*Continued*)

Table 11.3. (***continued***)

Ohio Hopewell Artifact Class and a priori Identification of Its General Function	Summary of the Ceremonial or Utilitarian Uses, Social Role Associations, and Meaning Associations of Analogs Found in Ethnographic Literature
figurines (small)	*Uses*: Big House mortuary ceremony, grieving, grave offering, Midewiwin and Husk Face ceremonies, channel of communication to beings/deities, objects of power in themselves, by medicine man in healing a patient, to protect one from illness, to protect one's home, by whole families to guard against disease and rid disease, in the form of one's guardian spirit and worn, depict clan animals, made after a dream or important incident, in pairs in love magic, sympathetic hunting magic, to kill or apprehend a murderer within a society, carried to war, represent warrior enemies to act out aggression, carried by greeting parties, carried by dance leaders, children's play and learning of adult tasks, on top of ball game poles, other *Associations*: sacred bundles, men, women, children, guardian spirit, clan animals, illness, whatever is depcted by the figurine, death, elements of headdresses, different figurines distinguish different grades of Midewiwin members, other
idols (large)	*Uses*: protect a settlement; brought out and thanked at sowing and harvest time to provide good crops, health, peace, victory in war; given offerings (esp. necklaces); object of other ceremonies; embody or represent a deity; perpetuate the memory of a hero; placed around square ground or decorated buildings around the square, within dance house, on top of poles used in the ball game, by or within chief's house, by council house or decorating it, by and inside temple, protect the temple with animals or armed men or beings, on top of each mortuary house or coffin watching over bones of the dead, by corpses in temple; prayed to in temple by chief daily; in houses of individuals; carried to war and consulted; in fields to encourage men to work; in ceremonial grounds remote from village; other *Associations*: chiefs, council, priests, the dead, crops, war, diverse kinds of animals and beings; other
owl	*Uses*: head is part of the dress of chiefs, medicine lodge leader, warrior; part of the medicine bundle of a medicine man, a chief, an individual, a tribe, a sorcerer; helps in hunting; gives medicine man the power to cure; is a witch transformed to cause harm to a victum; is a dead person returned; claw used to scratch a patient; feather gives a person the ability to see when gaming; allows one to sneak up on prey at night or locate one's party; protects a person at night; prevents a witch from entering one's house; a bad omen for a person who sees one; *Associations*: night, seeing extraordinarily, harm, the origin of black magic, chief, warrior, medicine man, sorcerer, the dead
Paraphernalia of Nonshamanic Leaders, Sodality Members, Roles of Social Importance	
headplates	*Uses*: marked status of diverse elite persons (see below); sacred bundles with headdresses were taken to war; medicine men lured bison with them; camouflage a hunter; given to a killed bear; worn by a woman to show she is marriageable; given as gifts to honor someone; given to a person because of his or her dream; transfered between individuals, ceremonial societies, husband and wife, or fellow dancers; utilitarian hats; other *Associations*: chief, priest, noble, elite wariors, ball players, medicine man, prophet, ceremonial society leader, all members of a ceremonial society, dance leader, distinguish genders, chief's war horse, medicine bundles of

(*Continued*)

Table 11.3. (*continued*)

Ohio Hopewell Artifact Class and a priori Identification of Its General Function	Summary of the Ceremonial or Utilitarian Uses, Social Role Associations, and Meaning Associations of Analogs Found in Ethnographic Literature
	ceremonial societies (men's and women's) and individuals, birds and their feathers, animal fur, animal head or horns, human hair, scalp (one headdress feather per scalp taken) plants (for women's headdresses), wampum, a star, distinguishes ceremonial societies, distinguishes warriors in different tribes, contrary to self-pride, other
batons (batons)	*Uses*: in Big House ceremonies, the busk, in war as clubs, to punish public offenders, dances, other *Associations*: the axis mundi, the four quarters, war (in contrast to the rattle associated with peace) and warriors, the ball game likened to war, power, purity, leaders, a hero myth, sacrificers of children, other
batons (staffs, rods)	*Uses*: in dances, warfare, to display scalps taken, the busk, going to water, healing, Peyote rite, by medicine men to avert tornados, part of a medicine bundle, the center-post of the Big House, other *Associations*: dance leaders, warriors, chiefs, chief's bride's litter bearers, head(s) of a ceremonial society, all members of a ceremonial society, attendants of the Big House, magical power, the axis mundi, Stone Man (cannibal), other
baton (mace)	*Associations*: the crier who announces upcoming dances
breastplates	*Uses*: in the busk at Tukabahchee, presented to the chief, buried with chiefs; worn by chief; armor in war; distinguishes men from women by form of the plate *Associations*: the chief, fire-maker in the busk, high priest
earspools	*Uses*: worn in fancy dances, mark gender and class *Associations*: men or women or both; upper class or commoners or both
crescents	*Uses*: the image, in medicine lodge ceremony and Sun Dance; painted on tipis, tipis of medicine women, shields, clothing; shape of altars of sweat tipis; crescent gorgets mark chiefs, important men, or men generally *Associations*: moon, doorway to Spirit World, rainbow, sweating
gorgets, pendants	*Uses*: contents of medicine bundle; worn by dancers, weather dancers, leaders, high priests, great warriors, *Associations*: medicine, dancing, leadership, sun or moon
"trophy" skulls, jaws, ears, fingers	*Uses*: taken in war to prove exploits; used in dances of returning warriors and of the busk; numbers determined prestige of a warrior; decorated entrances of temples and center of square ground, buried with adults, children, taker of the trophy, and not; placated souls of the dead; taken from persons who broke tribal law *Associations*: war and victory for takers, disgrace for those who have lost, the dead, turkey, eagle
celt	*Uses*: weapon in war, war dances, revenge killing sorcerers, distinguished war chiefs from peace chiefs, recitation of war expoits *Associations*: war, victory/power, war chiefs
atlatl	*Uses*: weapon in war, hunting *Associations*: war, hunting
Raw Materials of Multiple or Uncertain Social Role Associations	
amethyst	no information
cannel coal	no information

(*Continued*)

Table 11.3. (*continued*)

Ohio Hopewell Artifact Class and a priori Identification of Its General Function	Summary of the Ceremonial or Utilitarian Uses, Social Role Associations, and Meaning Associations of Analogs Found in Ethnographic Literature
copper	*Uses*: medicine man scratches a patient; part of the content of a medicine bag; a plate for tabulating family generations or for writing or drawing; given by chief to a warrior who served his people; mark person of high status; plaque precedes the chief in procession; buried with the chief; bridewealth; mark girls of good parentage; for many kinds of ornamentation and ceremonial paraphernalia; utilitarian hatchets; trading; *Associations*: power, but less so than for shell and bird effigies; persons of high status; underwater manito
fluorite	no information
galena	*Uses*: paint for one's face
gold	*Uses*: jewelry, tinklers, armor in war
graphite	*Uses*: charm in hunting and love; in emergencies, public speaking, war
hematite	*Uses*: medium of exchange
malachite	no information
meteoric iron	*Uses*: indicates the direction war comes from and goes, the direction of concealment of a fugitive; the direction of a woman's lover and trail of elopement; foretells the weather; brought animals the power to communicate with people; brought medicine men their bundles *Associations*: excrement dropped by non-human beings; fire-panther, the spirit of war; war; a bad omen, bad luck, good luck; a buffalo holding up the sky on his back; Morning Star, his origin, his brother; Raven Mocker (witch); flint, projectile point, and scalp; the color, black; prairie puff balls; birds
mica	*Uses*: temper in ceramics, traded *Associations*: life forces, spiritual power, well being
micaceous schist (goldstone)	no information
obsidian	*Uses*: utilitarian arrowheads, arrowheads hung from a medicine pipe *Associations*: Smoking Star
ocher (red and yellow)	*Uses*: decoratively paint the body, face, hair, clothing for ceremonies, dances, war, ball games; facial painting more elaborate by single men or women to attract the opposite sex; mixed with quartz powder as a love charm applied to the cheek; distinguish men and women by their facial painting; by traders to estimate the wealth of a person by the amount of their facial paint; mark a female adulterer by painting her whole body; different facial markings for a "loose woman"; color face of a corpse; face of the bereaved not colored; grave good; decorate the fur of a killed bear; sun screen; waterproof hides; component of medicine bundles; applied to ceremonial equipment; traded; remedy inflamations; hunting magic; other *Associations*: men, women, unmarried, married, deceased, and living contrasted; clan name; ceremonial and spiritual matters; war (red); success; strength; protective powers; a cannibal; Stone Man; Redbird and Wolf; other
pearls	*Uses*: given by chief to warrior who served his people, offerings to a deceased chief, marked women and girl of standing, medium of exchange *Associations*: chief, prestige, wealth
pyrite	*Uses*: put in warriors' bundles equivalent to a meteorite *Associations*: meteorites

(*Continued*)

Table 11.3. (*continued*)

Ohio Hopewell Artifact Class and a priori Identification of Its General Function	Summary of the Ceremonial or Utilitarian Uses, Social Role Associations, and Meaning Associations of Analogs Found in Ethnographic Literature
quartz	*Uses*: as pendula in divination, to repel an approaching thunderstorm, to protect and assist a warrior, in warrior bundles as an equivalent to meteorites, as a love charm mixed with vermillion as a rouge, to make a mortar to grind pigment, temper in pottery *Associations*: meteorites, sky, power
shell	*Uses*: trumpets (conchs); rattles (inside gourd); face masks; to mix ground pigments with oil or water; impromptu knife; drinking cup; medium of exchange; marker of prestige; wampum to mark treaties, as proof of the integrity of a message brought by an ambassador to an enemy tribe, as a means to record and hand down tribal traditions, to give to a killed bear, for hair and neck ornamentation; single shells as body jewelry; ornament clothes and hats; a horse's headgear; chief's grave offerings, sometimes stuffed in his body; elements of a medicine bundle; other *Associations*: peace, integrity of word, Sun Dancers, Medicine Lodge members, medicine pipe holders, chiefs and others of high position
silver	*Uses*: jewelry for everyday use and only at dances, jinglers, stakes in gambling, armor *Associations*: shell
tortoise and turtle shell	*Uses*: hand rattles used in diverse ceremonies (cure the sick, drive illness from a home, recite dreams, recount blessings), in dances to accompany singing, as a talking stick; kind of hand rattle distinguishes ceremonies and tribes; leg rattles used by dance leader or all or only women and girls; contents of a medicine bundle; scratch a patient; scutes used to ward off a tornado; prepare for war; protect a warrior; protect against snakes; containers; cups; platters; utensils; hoes; saws; other *Associations*: medicine men, sodalities, dancers, women and girls, warriors, world-flood myth, earth-bearer, mother earth, persistence, patience, endurance, mischief, hunch back
translucent stone	no information

SUGGESTIONS FOR FUTURE WORK

Our search for the ceremonial uses, spiritual meanings, and social role associations of artifacts and raw material that were used by historic Woodland Native Americans and that are analogous to ones used by Ohio Hopewell people could be augmented in two basic ways. First is by considering earthen, stone, and wooden architecture, facilities, and features. Our survey encompassed only artifacts and raw materials. Some suggested search terms include: "altars", "burials", "caches", "cemeteries", "charnel houses", "crematoria", "crypts", "graves", "ossuaries", "earthworks", "enclosures", "houses", "mounds", "shrines", and "temples".

Second, our studies could be extended by searching additional key sources of information for ceremonial materials, artifacts, and features. Full-text electronic documents are perhaps the most expedient means. Electronic resources can be found currently in three formats: on-line databases, CD-ROMs, and journals. Other key resources still remain only in printed format. In the following, we recommend and describe some of the more important potential resources.

There are, at this writing, two major on-line ethnohistoric data bases that contain enormous collections of searchable, full-text electronic documents. The largest is *Early*

Encounters in North America by the Alexander Street Press (www.alexanderstreet.com). This database includes many primary sources that date from 1534 to 1850, capturing the first impressions of traders, missionaries, explorers, soldiers, and officials as they encountered indigenous peoples. A second data base is *Southeastern Native American Documents* 1730–1842, which is available from the University of Georgia at Athens (www.galileo.peachnet.edu). This source contains approximately 2,000 documents on American Indians in the southeastern United States from the collections of the University of Georgia Libraries, the University of Tennessee at Knoxville Library, the Frank H. McClung Museum, the Tennessee State Library and Archives, the Tennessee State Museum, and the Museum of the Cherokee Indian.

Other important ethnohistorical resources are available in fully text searchable electronic documents on CD-ROM. Three are available from Quintin (www.quintinpublications.com). The largest is *The Jesuit Relations and Allied Documents* (Thwaites 1896–1901), including 72 volumes with over 21,000 pages of information from the journals of the Jesuit missionaries from 1610 to 1791 in the original French, Latin, and Italian with translations and notes in English. Two other important resources are U.S. Bureau of American Ethnology references. One, the *Handbook of American Indians North of Mexico* (Hodge 1907–1910), includes two volumes with 2193 pages on every known tribe in the U.S. and Canada. It also contains data on all kinds of materials, artifacts, and features used by American Indians. The second is *The Indian Tribes of North America* (Swanton 1952), which is a supplement to the handbook, offering an additional 732 pages of ethnohistorical information.

Also available on CD-ROM is *George Catlin: The Printed Works* from the University of Cincinnati Digital Press (www.ucdp.uc.edu). The works of George Catlin are important primary sources on the ethnohistory of Woodlands and Plains Indians (Dippie 1990). Catlin was an artist and scholar, who sketched and painted over 600 scenes of native life. In his printed works, he illustrated and described the cultures of 48 tribes.

In addition to electronic data bases and CD-ROMs, a great deal of ethnological information may be gleaned from electronic journals. The *American Anthropologist* and the *Journal of American Folklore* are two of the longest-running academic serial publications that feature much information on the ethnology of American Indians from the late nineteenth-century to present times. The entireties of these serials are available in searchable full-text format from JSTOR (www.jstor.org), a nonprofit organization of the Andrew W. Mellon Foundation. JSTOR also provides the journals in high-resolution .pdf files as originally printed and illustrated.

Although electronic documents are increasing in number, there are still many significant sources of ethnohistorical information on eastern Native Americans that remain only in their original printed format. Some of the most important include: most of the Smithsonian Institution's Bureau of American Ethnology *Annual Reports* and *Bulletins*, the *Anthropological Papers* of the American Museum of Natural History, the Heye Foundation's *Indian Notes and Monographs*, Harvard University's *Archaeological and Ethnological Papers of the Peabody Museum*, and the *Fieldiana* anthropological series of the Chicago Field Museum of Natural History. Harding and Bolling (1938) have prepared an excellent bibliography from these sources and others on early ethnological studies of the uses and meanings of many types of materials, artifacts, and features, which are organized by culture area and American Indian tribe.

Chapter 12

Contextualizing Preanalyses of the Ohio Hopewell Mortuary Data, I: Age, Sex, Burial-Deposit, and Intraburial Artifact Count Distributions

Christopher Carr, Beau J. Goldstein, and D. Troy Case

Reconstructing the social organization and broader culture and lifeways of a past people through the study of their mortuary remains is by nature an exercise in contextual analysis. The distributions of artifact classes, tomb forms, mortuary treatments, and skeletal traits of various kinds among different sets of individuals can give insight into socially defined categories of persons, their roles, modes of recruitment into social categories, divisions of labor, the degree of social hierarchy, and so on.

This chapter and the next present some very basic contextual analyses that a researcher would need to make in order to reconstruct any of a wide range of aspects of Ohio Hopewell culture and lifeways. This chapter and its associated tables summarize the distributions of various mortuary traits along four most essential dimensions of mortuary variability of the Ohio Hopewell individuals and ceremonial deposits recorded in the HOPEBIOARCH data base. The mortuary traits that are explored include artifact classes, tomb attributes, and various kinds of body treatments. The four essential dimensions are: (1) the age class(es) of the individuals having a given mortuary trait; (2) the sex(es) of individuals having a given mortuary trait; (3) whether a given artifact class tends to occur in burials or in ceremonial deposits lacking human remains; and (4) the number of artifacts of a given class that tend to be found per burial.

The four dimensions of mortuary variability documented here have been found useful in previous studies of Ohio Hopewellian and other societies for reconstructing many kinds of social and cultural characteristics. The age and sex distributions of mortuary traits that involve much expenditure of energy have long been recognized to bear on the issue of whether a society was organized by principles of rank (Binford 1971; Brown 1981; Braun 1977, 1979; Buikstra 1976; Carr 1995; Peebles 1971; Peebles 1974; Peebles and Kus 1977; Tainter 1975, 1978). Consideration of the age and sex distributions of a broader suite of mortuary traits allows additional applications. The age and sex distributions of mortuary traits that indicate vertical social differentiation – including those implying much energy expenditure, those that are also rare and imply high cultural value, and those set off by spatial location – can be used with other criteria to distinguish the separate social dimensions of achieved prestige, ranking, achieved leadership, leadership ascribed by rank or class, and wealth (Carr 2005d:242–243, Table 6.1). Age and sex distributions of yet other mortuary traits have also been used to archaeologically identify communities (Carr 2005a), ethnic groups (Beck 1995), sodalities (Chapter 4; Carr 2005a), kinship structure (Field et al. 2005), shaman-like practitioners in distinction from classic shaman (Carr and Case 2005b), third genders (Field et al. 2005), division of utilitarian labor (Hawkey 1988; Hawkey and Merbs 1995; Rodrigues 2005; Rothschild 1979), differential work and disease load (Cook 1981; Larsen 1997:81–82, 91–92, 99, 103, 106; Rodrigues 2005), differential access to meat and nutritious foods or other dietary variation (Ambrose et al. 2003; Barrett and Richards 2004; Larsen 1997:278; White 2005; White et al. 2001), the cultural value placed on children (Senior 1994) and the elderly (Buikstra 1981:129–130; Turff and Carr 2005), the timing of transition to adulthood and other age-related rites of passage (Braun 1979; Carr 2005d; Senior 1994; Turff and Carr 2005), and patterns of warfare and violence (Larsen 1997:118–119, 122–125, 128–130, 139, 141, 144; Milner 1995; Owsley et al. 1977; Seeman 1988).

Beyond age and sex, a third dimension documented here distinguishes artifact classes by whether they are found more often in graves or in ceremonial deposits without human remains. This dimension is not crossculturally important to sociocultural analysis like the age and sex distributions of mortuary traits, but is critical to the study of Ohio Hopewell societies. In the Ohio Hopewell case, people decommissioned certain classes of artifacts and materials in large quantities in ceremonial deposits. For a full inventory of such items and deposits, see Carr et al. (2005:486–488, Table 13.2).

The distinction between the two pathways of deposition of artifact classes in Ohio Hopewell ceremonial centers gives insight into an array of social and cultural matters largely different from those indicated by age and sex associations of mortuary traits. First, an artifact class that was decommissioned in quantity in ceremonial deposits predominated by that one kind of artifact can potentially indicate the collective rites of a sodality or a clan-based ceremonial society, or the collective professional rites of a group of role-specialized shaman-like practitioners of a kind (Chapter 4, Sodalities and Ceremonial Societies; Chapter 4, Leadership; Carr, et al. 2005:496–499, 529–530). Additional archaeological criteria are necessary to secure such identifications (Chapter 4, Sodalities and Ceremonial Societies). Analyses to date suggest that copper breastplates, metallic earspools, smoking pipes, and bear canine pendants and necklaces each have the strong, multiple-characteristic signatures of sodalities or clan-based ceremonial societies, including their occurrence in large, homogeneous ceremonial deposits. Mica mirrors, galena cubes, and the teeth of fox, elk, raccoon, and canine, each placed ceremonially in large homogeneous deposits, may also represent sodalities or clan-based ceremonial societies (Chapter 4, Sodalities and Ceremonial Societies). Large, homogeneous deposits of shaman-like paraphernalia of a kind may indicate the professional societies of shaman-like specialists (Chapter 4, Leadership).

The distinction between artifact classes typically placed in burials and those commonly decommissioned in ceremonial deposits that lack human remains can be insightful in a second way: it can help to distinguish individually owned and used items from collectively owned and used items. An artifact of a class that always or almost always was placed in graves, and in a number that would have been used by a single individual (one, or one functional set such as a pair of earspools), can be assumed with good likelihood to have been the property of an individual – either the deceased or someone who placed the item with the deceased at burial. On the other hand, an artifact of a class that seldom was buried with people and instead was placed in ceremonial deposits – either homogeneous or heterogeneous – is a candidate for communal property. The many geometric copper cutouts placed in the Copper Deposit underlying Mound 25 at the Hopewell site (Greber and Ruhl 1989:90–123; Moorehead 1922:109–110; Shetrone 1926a:74–75) are good examples of possible communal property. Items of these designs were never placed in burials, they were placed together in a single deposit suggesting their coordinated and possibly corporate use ceremonially, and most of them are unique in their forms in the Hopewell world rather than common designs that might mark the established social roles of individuals.

A third way in which the distinction between artifact classes placed in ceremonial deposits and those put in graves can be important is in shedding light on notions of power and personhood that vary among artifact classes. Historically, Woodland Native Americans commonly attributed personhood to ceremonial items and other things that we consider "inanimate" (e.g., Hallowell 1960). Ceremonial paraphernalia were thought to have the potential for gaining power over time through their use, i.e., having relationships with other persons, like humans could gain power through their social relations. Long-lived items that had gained much power, like all beings of power, could be equally as dangerous as helpful, and sometimes were taken out of service through destruction or burial in the earth as a precautionary or necessary measure. Ohio Hopewell artifacts of a kind that typically were placed in ceremonial deposits away from the bodies and souls of the deceased may have been considered sentient and capable of social relations, able to accumulate power, and potentially dangerous. Those artifact classes placed with people in their graves may not have been attributed personhood, or may have been thought to embody power that was manageable. For example, worked quartz and obsidian items such as bifaces, cones, and disks were usually decommissioned in ceremonial deposits and seldom placed with the deceased.[1] Even scraps of quartz and obsidian from knapping bifaces were at times carefully collected and deposited away from humans (e.g., Cowan 2005; Genheimer 2005); and in one case, a huge assemblage of obsidian scrap from biface manufacture was buried surrounded by an insulating, symbolic water barrier of stones (Shetrone 1926a:40–43, figure 10). A great concern for sheltering both the deceased within the burial mound and the living from the power of these artifacts is implied. In contrast, other gem and translucent bifaces were more commonly put in graves with the deceased and only in one instance segregated in a ceremonial deposit that lacked human remains. This suggests that any power that they were thought to have accumulated over their use-life was considered manageable. At a broader scale, within Ohio and across the Eastern Woodlands at large, metal-jacketed panpipes normally were buried with the deceased, usually one per person, suggesting that they were personal items with power that could be controlled throughout the lifetime of the owner and thereafter (Turff and Carr 2005:679–680).

Knowing whether an artifact of a given kind was normally owned by an individual or collectively, and whether it was thought to normally have manageable power or not – points two and three above – are important as foundations for the analysis of social roles, social positions, and social organization. To determine the social roles that an individual played, and to then assess aspects of role organization such as the centralization or segregation of roles among individuals, the strength of institutionalizing of roles, which roles were consistently combined so as to define a social position, and such, it is necessary that the artifacts used by a person in his or her social roles in life be buried with him or her – at least in a good proportion of cases, so that social patterns can be recognized archaeologically. This socially faithful and insightful distribution of grave goods can potentially occur when most kinds of artifacts are owned by individuals, and when there is no cultural deterrence from burying the deceased with most kinds of artifacts. Classes of artifacts that are owned collectively, or that are thought too powerful to bury safely with the deceased, do not afford the opportunity to accurately identify the roles of individuals and the organization of roles.

The fourth dimension of mortuary variability that this chapter documents – the number of artifacts of a given class that tend to be found per burial – is also essential to determining whether or not the artifacts buried with a person tend to be those that she or he owned and used during life and that identify the person's social roles during life. When artifacts of a class typically are buried one per person when present in a grave, or one functional set per person (e.g., one pair of earspools, one pair of hair skewers, four bear canines), then it is likely that artifacts of that class were owned by individuals rather than corporately. An occurrence of such an artifact or set of artifacts within the grave of a person probably indicates that he or she owned it, and had the role in life in which the artifact was used. Uncommon occurrences of multiple such artifacts or sets of artifacts within a grave likely reflect the ownership of one of the artifacts or sets of artifacts by the deceased, and the gifting of the additional, redundant artifacts or sets by mourners who had in common with the deceased the role marked by the artifact (Chapter 4, Ritual Gatherings and Alliances). In contrast, when many deceased persons in a cemetery are buried with multiple artifacts or functional sets of artifacts of a kind, then it becomes difficult to say whether the deceased persons with such artifacts had the role marked by them or whether the distribution represents simply a cultural norm for mourners to give that kind of artifact to the deceased, regardless of the deceased person's social roles in life.

Documenting mortuary variability along each of the four dimensions just discussed is vital to developing a solid contextual foundation for interpreting mortuary patterning in culture-specific terms. Consequently, in this chapter, we present these four kinds of contextualizing preanalyses of the HOPEBIOARCH data set, in order to help researchers move their studies forward onto more central questions about Ohio Hopewell social organization and lifeways.

DOCUMENTATION METHODS

A total of 115 variables are described here for their distributions along the four dimensions discussed above, drawing upon information from 854 burials and 76 ceremonial deposits found in 33 mound and earthen enclosure ceremonial centers. The assessments were undertaken on an abbreviated, previous version of the HOPEBIOARCH data base several years ago as a part of the analyses made for *Gathering Hopewell* (Carr and Case 2005c). The selection of sites in the abbreviated data base is weighted heavily toward ceremonial centers in the Scioto drainage and secondarily toward those in the Muskingum drainage, Little Miami drainage, and northeastern Ohio. Many Hopewell ceremonial centers in southwestern Ohio, now a part of the HOPEBIOARCH data base, are not included in the study. Variables that describe the positions of grave goods relative to the body are also not considered. Some additional ways in which the sample of burials, deposits, and ceremonial centers and the range of variables analyzed here differ from the wider data in the HOPEBIOARCH data base presented in this book are noted below.[2]

All statistics and qualitative summaries reported here are given by individual site, rather than globally across all sites. This site-specific approach to pattern definition is necessary because different Hopewellian peoples in different regions of Ohio, and peoples of the same region at different times, varied in their social and ritual organization. Global mortuary patterns, not assessed here, would have the strong potential to be artificial mixes or averages of differing regional or temporal-specific patterns, and to not really represent any one time or place. Site specific patterns, or patterns across a limited number of sites close to each other in time and space, are more likely to express cultural and behavioral reality.

Specifically, kinship structure appears to have varied between northeastern Ohio (strongly patrilineal), south-central Ohio (moderately patrilineal), and southwestern Ohio (matrilineal). Patterns of recruitment of genders into social roles varied among these three regions, apparently in relation to these differences in kinship structure (Chapter 4, Gender, Gender Relations, and Kinship Structure). Sex distributions of mortuary traits vary among sites accordingly. Also, over time in the Scioto-Paint Creek area, sodalities of various kinds arose and waned, leading to different patterns among sites and among artifact classes in the placing of artifacts in burials versus ceremonial deposits lacking human remains. Changes in sodality popularity over time also affected the number of artifacts of given classes that tend to be found per burial (Chapter 4, Sodalities and Ceremonial Societies). Both of these changes in mortuary trait patterning relate in part to shifting notions of whether artifacts were owned individually or corporately, for some artifact classes (Chapter 4, Earspools and Breastplates as Sodality Markers). In addition, shifts over time in the strategies by which alliances were created among local symbolic communities – from dyadic relationships among individuals to relationships among whole communities through their leaders to spiritual alliances among whole communities – altered whether given artifact classes were placed in burials or in other ceremonial deposits, and the number of artifacts of given classes that tend to be found per burial (Chapter 4, Ritual Gatherings and Alliances). Finally, patterns of mortuary trait distribution vary by site according to whether a cemetery was small and used by only a few residential communities or large and used by many residential units within a local symbolic community, and whether the site functioned as a burial place for mainly leaders and other socially important people or for a broader spectrum of persons from a local symbolic community (Chapter 3, Local Symbolic Communities, Sustainable Communities; Chapter 4, Local Symbolic Community Representation at Ceremonial Centers). For all of these reasons, exploring site-specific mortuary patterning and comparing differing patterns among sites is more appropriate than searching for homogenized, global patterns.

Information on the distributions of mortuary traits along the four dimensions of mortuary variability is provided here in two ways. Detailed information reported as the exact numerical distributions of mortuary traits along the dimensions are given in Appendices 12.1–12.4. Qualitative, summary information derived from these tables, having the aim of allowing a researcher to quickly search for patterns relevant to his or her research goal, is reported in a concise way in the text below and in tabular form in the Appendices. The qualitative summary in the text also allows quick comparisons among sites for similarities and differences in their distributions of mortuary traits. Thus, for example, in Appendix 12.3, we discover that at the Mound City earthwork, of the 9 total burials and ceremonial deposits in which mica mirrors were found, 89 % ($n = 8$) of the proveniences were burials and 11 % ($n = 1$) were ceremonial deposits. In the text, this information has been summarized and can be easily compared to patterning at other sites: we find that mica sheets were excavated from largely or exclusively burial proveniences at the Mound City, Esch, Hopeton, Hopewell, Rockhold, Seip, and Turner sites.

Three of the four dimensions of mortuary variability are binary or are summarized in a binary manner. Provenience type is either "burial" or "ceremonial deposit". Sex is either "male" or "female". Age is summarized as either "adult" or "child", with the break between these two age classes placed at around 12 years of age. For each of these three dimensions, the relative proportion of cases falling into one of the binary states or the other is summarized along an ordinal scale with five categories: "exclusively state A", "largely state A", "equally states A and B", "largely state B", and "exclusively state B. These categories are defined as follows:

- exclusively state A: 100 % of the observations at a particular site exhibit state A
- largely state A: greater than 55 % but less than 100 % of the observations exhibit state A
- equally states A and B: 45 %–55 % of the observations exhibit state A.

- largely state B: greater than zero, but less than 45 % of the observations exhibit state A
- exclusively state B: 0 % of the observed proveniences exhibit state A.

Thus, for example, mica mirrors, having been found in burials 89 % of the time and in ceremonial deposits 11 % of the time at Mound City, are characterized for their distribution along the burial-ceremonial deposit dimension as "largely burial" for that site. Also, mica mirrors, having been found 100 % of the time with adults and never with children at Seip, are characterized for their distribution along the age dimension as "exclusively adult" there.

When a given site has less than five observations of a given mortuary trait on a given dimension, the categories along that dimension are defined as follows. For a site with only one observation of a mortuary trait along a particular dimension, the only possible characterizations are "exclusively state A" or "exclusively state B". For a site with only two observations of a mortuary trait, the only possible characterizations are "exclusively state A", "equal" or "exclusively state B". For a site with three observations of a mortuary trait, a 1:2 or 2:1 ratio of the states is considered "equal". All five characterizations are possible for a site with four observations of a mortuary trait. For a site with five observations, a 2:3 or 3:2 ratio of the states is considered "equal".

For the age dimension, information about age categories more specific than "child" or "adult" is reported for a mortuary variable when age-specific patterns occur. For example, if the age distribution for a particular artifact class was not just exclusively adult, but also exclusively older adult, this more detailed information is provided in Appendix 12.1 and in the textual summary. The more specific age categories used in these cases are: (1) young adult, 13–20 years, (2) middle adult, 21–35 years, and (3) older adult, 36+ years. This extra information is recorded only when a mortuary variable has information from two or more proveniences.

The fourth dimension of mortuary variability, which measures the number of artifacts of a given class that tend to be found per burial and which concerns whether artifacts in a grave were owned by the deceased or gifted to the deceased, is summarized in a different fashion. For a given artifact class at a given site, seven categories are defined:

- exclusively one item of the class per individual
- commonly one item of the class per individual
- exclusively X number of items of the class per individual
- commonly X number of items of the class per individual
- exclusively X to Y range of items of the class per individual
- commonly X to Y range of items of the class per individual
- in addition and secondarily, commonly or exclusively Z number of items of the class per individual

Because the patterning of counts of an artifact class among burials of a site can be more complex and diverse than patterning along the binary dimensions of age, sex, and burial or ceremonial deposit, some of the count patterns categorized here have a subjective component to them.

Detailed and summary information on the distributions of a mortuary trait are provided in appendices and the text for the trait as a whole, or for each individual alternative state that the trait can take in the case of multi-state traits. For example, the trait, conch shell, is described as a whole for each of its age, sex, provenience type, and artifact count distributions. In contrast, for the trait, mica sheet, which takes the two states of thin mica sheet and mica book, the two states are each described separately for their age, sex, provenience type, and count distributions.

QUALITATIVE SUMMARIES OF PATTERNS OF DISTRIBUTIONS OF MORTUARY TRAITS

Treatment	
Sex Distribution	
Liberty:	Exclusively female (low N) for partial cremation and cremation. Equal (low N) for inhumation
Floor Prep	
Sex Distribution	
Hopewell, Rutledge, Seip:	Exclusively female (low N) for stone (ST)
Hopewell:	Equal (low N) for gravel (GR)
Seip:	Exclusively male (low N) for gravel (GR)
Ater, Seip:	Equal (low N) for charcoal (CH)
Martin:	Exclusively female (low N) for clay (CL)
North Benton:	Exclusively male (low N) for sand (SD)
Esch, Martin, Turner:	Equal (low N) for hole in floor (HL)
Hopewell, Liberty:	Exclusively male (low N) for hole in floor (HL)
Esch, Turner:	Exclusively male (low N) for no preparation (NP)
Rutledge:	Equal (low N) for no preparation (NP)
Turner:	Exclusively male (low N) for sand and stone (B)
Martin:	Exclusively male (low N) for hole in floor with stone (D)
Age Distribution	
Boyle's Farm, Hazlett, Hopeton, Kohl, Marietta, Rockhold, Rutledge, Shilder, Turner-Marriot, West, Wright:	Exclusively adult (low N) for floor prep
Ater, Esch, Hopewell, McKenzie, N Benton, Pence, Seip, Snake Den, Liberty, Martin, Turner:	Largely adult for floor prep
Finney:	Mixed (low N) for floor prep
Levina Russel:	Exclusively child (low N) for floor prep
Liberty:	Largely adult for floor prep
Hopewell, Rutledge, Seip, Turner, Wright:	Exclusively adult for stone (ST)
Hopewell:	Exclusively adult for gravel (GR)
Seip, Turner:	Mixed (low N) for gravel (GR)
Boyle's Farm, Hopewell, Seip, West:	Exclusively adult for charcoal (CH)
Ater:	Largely adult for charcoal (CH)
Martin, Seip, Turner, West:	Exclusively adult (low N) for clay (CL)
Seip:	Exclusively adult (low N) for mica (MI)
N Benton, Pence:	Exclusively adult (low N) for sand (SD)
Hopewell:	Exclusively adult (low N) for crematory basin (CB)
Esch, Finney, Pence, Seip:	Mixed (low N) for hole (HL)
Hopewell:	Exclusively old adult (low N) for hole (HL)
Liberty, Turner, Martin:	Largely adult for hole (HL)
Turner-Marriot:	Exclusively adult for hold (HL)
Hopewell:	Exclusively adult for gravel and charcoal (GC)
Esch:	Largely adult (low N) for no preparation (NP)
Hazlett, Marietta, McKenzie, Rutledge, Turner, Seip:	Exclusively adult (low N) for no preparation (NP)
N Benton:	Mixed (low N) for no preparation (NP)
Turner:	Exclusively adult (low N) for sand and stone (B)

Turner:	Exclusively adult (low N) for gravel and stone (C)
Martin:	Exclusively adult (low N) for hole in floor with stone (D)

Wall Prep

Sex Distribution

N. Benton, Seip, Turner, Turner-Marriot:	Largely or exclusively male for stone (ST)
Hopewell:	Exclusively female (low N) for stone (ST)
Hopewell:	Largely male (low N) for no logs (NL)
Hopewell, Seip:	Largely male or exclusively male for logs (LG, 2L)
Seip:	Exclusively female (low N) for three logs (3L)
Ater:	Equal (low N) for logs (LG)
Finney, Turner:	Exclusively male (low N) for some stone (SS)
Hopewell, Rutledge:	Equal (low N) for some stone (SS)
Turner:	Exclusively male (low N) for in-wall (IW)
Esch:	Exclusively male (low N) for no prep (NP)
Hopewell:	Equal (low N) for no prep (NP)
Hopewell, Seip:	Equal (low N) for charnel house (MLV)
Seip:	Exclusively female (low N) for B

Age Determination

Ater, Esch, Finney, Hopewell, Liberty, Martin, McKenzie, N Benton, Pence, Seip, Snake Den, Turner:	Largely adult for wall prep
Boyle's Farm, Hazlett, Hopeton, Kohl, Marietta, Rockhold, Rutledge, Shilder, Turner-Marriot West, Wright:	Exclusively adult (low N) for wall prep
Levina Russel:	Exclusively child (low N) for wall prep
Hopewell, Marietta, Turner-Marriot, N Benton:	Exclusively adult (low N) for stone (ST)
Seip, Turner:	Largely adult for stone (ST)
Boyle's Farm, Turner:	Exclusively adult (low N) for clay (CL)
Ater, Hopewell:	Exclusively adult for logs and stone (LS)
Hopewell:	Exclusively adult for no logs (NL); adults largely older
Ater, Hopewell, Seip:	Largely adult for logs (LG)
Liberty, Pence:	Exclusively child (low N) for logs (LG)
N Benton, West:	Exclusively adult (low N) for logs (LG)
Ater, Hopewell:	Exclusively adult (low N) for two logs (2L)
Seip:	Mixed for two logs (2L)
Hopewell:	Exclusively adult (low N) for three logs (3L)
Seip:	Largely adult for three logs (3L)
Ater, Finney, Hopewell, Kohl, Rutledge, Seip:	Exclusively adult (low N) for some stone (SS)
Turner:	Largely adult (low N) for some stone (SS)
Hopewell, Kohl:	Exclusively adult (low N) for stone ring (SR)
Turner:	Exclusively adult (low N) for in-wall (IW)
Esch:	Largely adult for no preparation (NP)
Hopewell, Turner, N Benton:	Mixed (low N) for no preparation (NP)
McKenzie, Seip, West:	Exclusively adult (low N) for no preparation (NP)
Hopewell:	Largely adult (low N) for log vault (MLV)
Seip:	Mixed for log vault (MLV)
Hazlett:	Exclusively adult (low N) for flint enclosure (FL)
Seip:	Exclusively adult (low N) for three logs and stone (A)
Kohl, Seip:	Exclusively adult (low N) for logs and stone (B)
Seip:	Exclusively adult (low N) for two logs and stone (C)

Cover Prep

Sex Distribution

Martin, Rutledge, Turner:	Largely or exclusively male (low N) for stone (ST)
Rutledge:	Equal (low N) for clay (CL)
Turner-Marriot:	Exclusively female (low N) for gravel (GR)
North Benton:	Exclusively male (low N) for sand (SD)
Seip:	Equal (low N) for fabric (FB)
Seip:	Equal for excavated cave (EC)
Seip:	Equal (low N) for primary mound (PM)
Hopewell:	Exclusively female (low N) for primary mound 1 (PM1)
Hopewell:	Exclusively male (low N) for primary mounds 4 and 6 (PM4, PM6)
Hopewell:	Equal for primary mound 5 (PM5)
Ater:	Exclusively male (low N) for gravel and clay (GC)
Seip:	Exclusively male (low N) for stone, fabric, and primary mound (B)
Hopewell:	Equal (low N) for excavated cave and primary mound 5 (C)
Hopewell:	Largely male for excavated cave and primary mound 4 (E)
Seip:	Exclusively male (low N) for stone and primary mound (F)
Turner:	Exclusively male (low N) for stone and sand (I)

Age Distribution

Ater, Esch, Hopewell, Martin, McKenzie, N Benton, Pence, Seip, Snake Den, Turner, Liberty:	Largely adult for cover prep
Bourneville, Boyle's Farm, Hazlett, Hopeton, Marietta, Rockhold, Rutledge, Shilder, Turner-Marriot, West, Wright:	Exclusively adult for cover prep
Kohl:	Exclusively middle adult (low N) for cover prep
Finney:	Mixed (low N) for cover prep
Levina Russel:	Exclusively child (low N) for cover prep
Bourneville, Esch, Hopewell, Marietta, Martin, Seip:	Exclusively adult for stone (ST)
Finney:	Exclusively child (low N) for stone (ST)
Turner:	Largely adult (low N) for stone (ST)
Martin, N Benton, Rutledge Shilder, Turner, West:	Exclusively adult (low N) for clay (CL)
Seip:	Mixed (low N) for clay (CL)
Ater, Turner:	Largely adult for gravel (GR)
McKenzie, N Benton:	Exclusively adult (low N) for sand (SD)
Seip:	Largely adult for fabric (FB)
Hopewell:	Exclusively adult (low N) for mica (MI)
Hopewell:	Exclusively adult (low N) for excavated cave (EC)
Seip:	Largely adult for excavated cave (EC)
Martin, Turner:	Exclusively adult (low N) for some stone (SS)
Seip:	Mixed (low N) for primary mound (PM)
Hopewell:	Exclusively adult (low N) for PM1, PM2, PM4, PM5, and PM6
Esch:	Mixed (low N) for no preparation (NP)
Seip, Turner:	Exclusively adult (low N) for no preparation (NP)
Ater, Hopewell:	Exclusively adult (low N) for gravel and clay (GC)
Seip:	Mixed (low N) for stone, fabric, and primary mound (B)
Hopewell:	Exclusively middle adult (low N) for excavated cave and primary mound 5 (C)
Hopewell:	Exclusively adult (low N) for excavated cave and primary mound 6 (D)
Hopewell:	Largely older adult for excavated cave and primary mound 4 (E)

Seip:	Exclusively adult (low N) for stone and primary mound (F)
Turner:	Mixed (low N) for stone and gravel (H)
Ater:	Exclusively adult (low N) for sand and gravel (J)
Ater:	Exclusively adult (low N) for primary mound and gravel (K)

Body Wrap

Sex Distribution

Ater:	Equal (low N) for bark (BK)
Hopewell:	Exclusively male (low N) for bark (BK)
Hopewell:	Equal (low N) for bark below body (BB)
North Benton:	Exclusively male (low N) for bark cover on body (BC)
Rutledge:	Equal (low N) for bark cover on body (BC)
Hopewell, Esch:	Largely or exclusively male for no wrap (NW)
Seip:	Exclusively female (low N) for no wrap (NW)

Age Distribution

Ater, Esch, Hopewell, Martin, McKenzie, N Benton, Pence, Seip, Snake Den:	Largely adult for body wrap
Boyle's Farm, Hazlett, Hopeton, Kohl, Marietta, Rockhold, Rutledge, Shilder, Turner-Marriot, West, Wright:	Exclusively adult (low N) for body wrap
Finney, Turner:	Mixed adult (low N) for body wrap
Levina Russel:	Exclusively child (low N) for body wrap
Seip:	Exclusively adult (low N) for fabric (FB)
Ater:	Largely adult (low N) for bark (BK)
Hopewell:	Exclusively adult (low N) for bark (BK)
Seip:	Mixed (low N) for bark (BK)
N Benton:	Exclusively child (low N) for skin (SK)
Ater, Hopewell, Pence, Seip:	Exclusively adult for bark below (BB)
Ater, Hopewell, Rutledge:	Exclusively adult (low N) for bark cover (BC)
Seip:	Exclusively adult (low N) for skins below body (SB)
Esch, Hopewell, Seip:	Largely adult (low N) for no wrap (NW)
N Benton:	Exclusively adult (low N) for no wrap (NW)

Platform

Sex Distribution

Hopewell, N Benton:	Largely or exclusively male for present (P)
Rutledge, Seip:	Equal for present (P)

Age Distribution

Ater, Esch, Hopewell, Liberty, Martin, McKenzie, N Benton, Pence, Seip, Snake Den, Turner:	Largely adult for platform
Bourneville, Boyle's Farm, Hazlett, Hopeton, Kohl, Marietta, Rockhold, Rutledge, Shilder, Turner-Marriot, West, Wright:	Exclusively adult for platform
Finney:	Mixed (low N) for platform
Ater, McKenzie, N Benton, Pence, Rutledge, Turner:	Exclusively adult (low N) for present (P)
Hopewell, Seip:	Largely adult (low N) for present (P)

Water[3]

Sex Distribution

Hopewell:	Exclusively female (low N) for pearls (PE)
Seip:	Equal (low N) for pearls (PE)
N Benton, Seip, Turner:	Largely or exclusively male (low N) for light-colored stone (LT)
Hopewell:	Exclusively female (low N) for light-colored stone (LT)

Age Distribution

Ater, Hazlett, Kohl, N Benton:	Exclusively adult (low N) for water barrier
Hopewell, Seip, Turner:	Largely adult for water barrier
Hopewell, Seip:	Exclusively adult (low N) for pearls (PE)
Hopewell, Seip:	Exclusively adult (low N) for mica (MI)
Seip:	Mixed for shell (SH)
Ater, Hazlett, Hopewell, Kohl, N Benton:	Exclusively adult (low N) for light stone (LT)
Martin:	Exclusively child (low N) for light stone (LT)
Seip, Turner:	Largely adult for light stone (LT)
Hopewell, Kohl, Martin, Turner:	Exclusively adult for possible water barrier (P)
Hopewell:	Mixed for light stone and shells (A)

Water Position

Sex Distribution

N Benton:	Exclusively male (low N) for surrounding corpse (A)
Hopewell, Seip:	Equal (low N) for surrounding corpse (A)
Martin, Turner:	Exclusively male (low N) for above corpse (C)
Hopewell:	Exclusively female (low N) for surrounding corpse and below (D)
Seip:	Exclusively male (low N) for surrounding corpse and above (E)
Turner:	Equal (low N) for surrounding corpse and above (E)
Hopewell:	Exclusively male (low N) for near head (H)

Age Distribution

Ater, Hopewell, Kohl, N Benton:	Exclusively adult (low N) for surrounding corpse (A)
Seip:	Largely adult (low N) for surrounding corpse (A)
Turner:	Mixed (low N) for surrounding corpse (A)
Seip, Turner:	Exclusively adult (low N) for below corpse (B)
Hopewell:	Exclusively adult (low N) for above corpse (C)
Martin, Turner:	Mixed (low N) for above corpse (C)
Hopewell:	Exclusively adult (low N) for surrounding corpse and below (D)
Hazlett, Seip:	Exclusively adult (low N) for surrounding corpse and above (E)
Turner:	Mixed (low N) for surrounding corpse and above (E)
Seip:	Exclusively adult (low N) for surrounding, above, and below corpse (F)
Kohl:	Exclusively adult (low N) for beside body (G)
Seip:	Mixed (low N) for beside body (G)
Hopewell:	Exclusively adult (low N) for near head (H)
Hopewell:	Mixed (low N) for platform edge (S)

Water Shape

Sex Distribution

Martin:	Exclusively male (low N) for round or oval (R)
Hopewell:	Equal (low N) for round or oval (R)
Hopewell:	Exclusively female (low N) for square (S)
N Benton, Seip:	Exclusively male (low N) for square (S)
Turner:	Equal (low N) for square (S)
Seip:	Equal (low N) for outlining body (O)

Age Distribution

Ater, Hopewell, Kohl:	Exclusively adult for round or oval (R)
Martin, Turner:	Mixed (low N) for round or oval (R)

Ater, Hazlett, Kohl, N Benton:	Exclusively adult (low N) for square (S)
Hopewell, Seip, Turner:	Largely adult (low N) for square (S)
Seip:	Exclusively adult (low N) for outlining body (O)
Kohl:	Exclusively adult (low N) for line of objects beside body (L)
Seip:	Mixed (low N) for line of objects beside body (L)

Grave Orientation

Sex Distribution

Ater, Hopewell:	Largely or exclusively male for north (N)
Esch, Hopewell, Turner:	Exclusively male (low N) for south (S)
Esch, Hopewell:	Largely or exclusively female (low N) for east (E)
Martin, Seip:	Equal (low N) for east (E)
N Benton, Turner, Ater, Esch, Hopewell, N Benton, Seip:	Largely or exclusively male (low N) for west (W)
Turner:	Equal (low N) for west (W)
Hopewell:	Largely male for northeast (NE)
Ater:	Exclusively female for northwest (NW)
Hopewell:	Equal (low N) for northwest (NW)
Turner:	Exclusively male (low N) for northwest (NW)
Hopewell:	Largely male for southeast (SE)
Turner:	Equal (low N) for southeast (SE)
Ater:	Exclusively female (low N) for southwest (SW)
Hopewell:	Largely male (low N) for southwest (SW)
Turner:	Equal (low N) for southwest (SW)
Seip:	Largely male for north-south (NS)
Seip:	Largely female for east-west (EW)
Seip:	Exclusively male for northeast-southwest (NESW)

Age Distribution

Ater:	Mixed (low N) for north (N)
Hopewell, Turner:	Largely adult (low N) for north (N)
Kohl, McKenzie, Snake Den:	Exclusively adult for north (N)
Esch:	Mixed (low N) for south (S)
Hopewell, McKenzie, Turner:	Largely adult for south (S)
Esch, Martin:	Mixed for east (E)
Hopewell, Seip, Turner:	Largely adult for east (E)
N Benton, Pence:	Exclusively adult (low N) for east (E)
Snake Den:	Exclusively child (low N) for east (E)
Ater, Esch, Hopeton, Hopewell, Kohl, N Benton, Snake Den:	Exclusively adult for west (W)
Seip:	Exclusively child (low N) for west (W)
Turner:	Largely adult for west (W)
Esch, Turner:	Exclusively adult (low N) for northeast (NE)
Hopewell:	Largely adult (low N) for (NE)
Ater, Hopewell, McKenzie:	Exclusively adult for northwest (NW)
Turner:	Largely adult for northwest (NW)
Hopewell, Snake Den:	Exclusively adult for southeast (SE)
Turner:	Largely adult for southeast (SE)
Ater, Marietta, Turner:	Exclusively adult for southwest (SW)
Hopewell:	Largely adult for southwest (SW)
Ater:	Exclusively adult for north-south (NS)
Seip:	Largely adult for north-south (NS)
Ater, West:	Exclusively adult (low N) for east-west (EW)

Seip:	Largely adult for east-west (EW)
Ater:	Exclusively adult (low N) for northeast-southwest (NESW)
Seip:	Mixed (low N) for northeast-southwest (NESW)
Ater:	Mixed for northwest-southeast (NWSE)
Seip:	Largely adult for northwest-southeast (NWSE)

Mica Sheets

Burial/Ceremonial Deposit Distribution

Esch, Hopeton, Hopewell, Mound City, Rockhold, Seip, Turner:	Largely or exclusively burial for mica sheets
Liberty, N Benton, Tremper:	Exclusively deposit (low N) for mica sheets
Hopewell:	Equal (low N) for mica books (MB)
Turner:	Exclusively burial (low N) for mica books (MB)
Esch, Hopeton, Hopewell, Mound City, Rockhold, Seip, Turner:	Largely or exclusively burial for cut mica sheets (MC)
Esch, Hopewell, Mound City, Seip:	Largely or exclusively burial for sheets of mica (MS)
N Benton, Tremper:	Exclusively deposit (low N) for sheets of mica (MS)
Turner:	Equal (low N) for sheets of mica (MS)

Sex Distribution

Hopeton, Rockhold, Turner:	Exclusively female (low N) for mica sheet
Hopewell:	Exclusively male (low N) for mica sheet
Hopeton, Rockhold:	Exclusively female (low N) for cut mica sheets (MC)
Turner:	Exclusively female (low N) for mica sheets (MS)
Hopewell:	Exclusively male (low N) for mica sheets (MS)

Age Distribution

Esch, Hopeton, Hopewell, Rockhold, Seip, Shilder, Turner:	Exclusively adult for mica sheet
Shilder:	Exclusively adult (low N) for mica books (MB)
Esch, Hopeton, Hopewell Rockhold, Seip, Turner:	Exclusively adult (low N) for cut mica sheets (MC)
Esch, Hopewell, Seip, Turner:	Exclusively adult (low N) for mica sheets (MS)

Quartz Discoids

Burial/Ceremonial Deposit Distribution

Hopewell:	Exclusively deposit (low N) for quartz discoids

Quartz Cones

Burial/Ceremonial Deposit Distribution

Hopewell:	Exclusively deposit (low N) for quartz cones

Cones, Hemispheres

Burial/Ceremonial Deposit Distribution

Hopewell:	Equal for cones, hemispheres
Kohl, Seip:	Exclusively burial (low N) for cones, hemispheres
Tremper, Turner:	Exclusively deposit (low N) for cones, hemispheres

Sex Distribution

Hopewell:	Exclusively male (low N) for cones, hemispheres
Seip:	Exclusively female (low N) for cones, hemispheres

Age Distribution

Hopewell, Kohl, Seip:	Exclusively adult (low N) for cones, hemispheres

Ownership/Gifting Association

Hopewell, Kohl, Seip:	Exclusively one or three (low N) for cones, hemispheres

Quartz Boatstones	
Burial/Ceremonial Deposit Distribution	
Hopewell, Seip:	Exclusively deposit (low N) for quartz boatstones
Boatstones	
Burial/Ceremonial Deposit Distribution	
Hopewell, Tremper, Turner:	Largely or exclusively deposit (low N) for boatstones
Seip:	Equal (low N) for boatstones
Seip:	Exclusively burial (low N) for plain (PL)
Hopewell:	Exclusively burial (low N) for effigy beaver (EB)
Seip:	Exclusively burial (low N) for effigy duck (ED)
Hopewell:	Exclusively deposit (low N) for effigy crow and effigy eagle (A)
Seip:	Exclusively deposit (low N) for effigy owl and effigy vulture (B)
Turner:	Exclusively deposit (low N) for horned serpent (C)
Hopewell:	Exclusively deposit (low N) for effigy salamander, plain, and effigy owl (D)
Tremper:	Exclusively deposit (low N) for plain and effigy beaver, and effigy beetle (E)
Sex Distribution	
Seip:	Exclusively female (low N) for plain (PL)
Age Distribution	
Hopewell, Seip:	Exclusively adult (low N) for boatstones
Seip:	Exclusively adult (low N) for plain (PL)
Hopewell:	Exclusively adult (low N) for effigy beaver (EB)
Seip:	Exclusively adult (low N) for effigy duck (ED)
Quartz Cups	
Burial/Ceremonial Deposit Distribution	
Hopewell:	Exclusively deposit (low N) for quartz cups
Quartz, Other Colored Pebbles	
Burial/Ceremonial Deposit Distribution	
Ater, Hopewell:	Exclusively burial (low N) for quartz, other colored pebbles
Ater, Hopewell:	Exclusively burial (low N) for quartz pebbles (Q)
Age Distribution	
Hopewell:	Exclusively adult (low N) for quartz, other colored pebbles
Hopewell:	Exclusively adult (low N) for quartz pebbles (Q)
Ownership/Gifting Association	
Ater:	Exclusively several (low N) for quartz, other colored pebbles
Hopewell:	Exclusively 25 (low N) for quartz, other colored pebbles
Seip:	Exclusively many (low N) for quartz, other colored pebbles
Seip:	Exclusively many (low N) for colored pebbles (C)
Ater:	Exclusively several (low N) for quartz pebbles (Q)
Hopewell:	Exclusively 25 (low N) for quartz pebbles (Q)
Marbles	
Burial/Ceremonial Deposit Distribution	
Seip:	Exclusively deposit (low N) for marbles
Copper Balls	
Burial/Ceremonial Deposit Distribution	
Hopewell:	Equal (low N) for copper balls
N Benton:	Exclusively burial (low N) for copper balls
Age Distribution	
Hopewell, N Benton:	Exclusively adult (low N) for copper balls

Ownership/Gifting Association	
Hopewell, N Benton:	Exclusively one (low N) for copper balls
Plummets	
Burial/Ceremonial Deposit Distribution	
Hopewell, Seip:	Exclusively deposit (low N) for plummets
Age Distribution	
Marietta:	Exclusively adult for plummets
Ownership/Gifting Association	
Marietta:	Exclusively one (low N) for plummets
Fossils, Concretions	
Burial/Ceremonial Deposit Distribution	
Hopewell:	Exclusively deposit (low N) for fossils, concretions
Mound City, Turner:	Equal (low N) for fossils, concretions
Turner:	Exclusively burial (low N) for concretions (CN)
Hopewell, Turner:	Exclusively deposit (low N) for fossils (FS)
Mound City:	Equal (low N) for fossils (FS)
Turner:	Exclusively deposit (low N) for fossils and concretions (FC)
Age Distribution	
Turner:	Exclusively child for concretions (CN)
Tube, Function Unknown	
Burial/Ceremonial Deposit Distribution	
Mound City:	Equal (low N) for tube of unknown function
N Benton, Seip:	Exclusively burial (low N) for tube of unknown function
Seip:	Exclusively burial (low N) for wood (WD)
Mound City:	Equal (low N) for copper (CP)
N Benton:	Exclusively burial (low N) for wood with silver cover (WS)
Sex Distribution	
N Benton:	Exclusively male (low N) for tube of unknown function
N Benton:	Exclusively male (low N) for wood with silver cover (WS)
Age Distribution	
Hazlett, Marietta, N Benton, Seip:	Exclusively adult (low N) for tube of unknown function
Seip:	Exclusively adult (low N) for tube wood (WD)
Marietta:	Exclusively adult (low N) for copper (CP)
Hazlett:	Exclusively adult (low N) for wood with copper cover (WC)
N Benton:	Exclusively adult (low N) for wood with silver cover (WS)
Barracuda Jaws	
Burial/Ceremonial Deposit Distribution	
Hopewell:	Exclusively burial (low N) for barracuda jaws
Sex Distribution	
Hopewell:	Exclusively male (low N) for barracuda jaws
Age Distribution	
Hopewell:	Exclusively adult (low N) for barracuda jaws
Ownership/Gifting Association	
Hopewell:	Exclusively one (low N) for barracuda jaws
Shark Teeth	
Burial/Ceremonial Deposit Distribution	
Hopewell, Liberty, Mound City, Seip:	Equal (low N) for shark teeth
Turner:	Exclusively deposit (low N) for shark teeth
Age Distribution	
Hopewell, Seip:	Exclusively adult (low N) for shark teeth

Ownership/Gifting Association	
Hopewell:	Exclusively one (low N) for shark teeth
Alligator Power Parts	
Burial/Ceremonial Deposit Distribution	
Mound City:	Exclusively burial (low N) for alligator power parts
Seip:	Equal (low N) for alligator power parts
Turner:	Exclusively deposit (low N) for alligator power parts
Turner:	Exclusively deposit (low N) for teeth (TE)
Seip:	Exclusively deposit (low N) for drilled teeth (TD)
Mound City, Seip:	Exclusively burial (low N) for effigy teeth of copper (ETC)
Age Distribution	
Seip:	Exclusively adult (low N) for alligator power parts
Seip:	Exclusively adult (low N) for effigy teeth of copper (ETC)
Rattles	
Burial/Ceremonial Deposit Distribution	
Mound City:	Exclusively burial (low N) for rattles
Turner:	Exclusively deposit (low N) for rattles
Mound City:	Exclusively burial (low N) for turtle effigy belt (TU)
Turner:	Exclusively deposit (low N) for all types of tinklers (A)
Fans	
Burial/Ceremonial Deposit Distribution	
Hopewell:	Exclusively deposit (low N) for fans
Hopewell:	Exclusively deposit (low N) for copper (CP)
Hopewell:	Exclusively deposit (low N) for stone (ST)
Copper Nose Inserts	
Burial/Ceremonial Deposit Distribution	
Hopewell, Seip:	Exclusively burial (low N) for copper nose inserts
Sex Distribution	
Seip:	Exclusively female (low N) for copper nose inserts
Hopewell:	Equal (low N) for copper nose inserts
Age Distribution	
Hopewell:	Exclusively older adult (low N) for copper nose inserts
Seip:	Exclusively adult (low N) for copper nose inserts
Ownership/Gifting Association	
Hopewell, Seip:	Exclusively one (low N) for copper nose inserts
Mushrooms	
Burial/Ceremonial Deposit Distribution	
Hopewell:	Exclusively deposit (low N) for mushrooms
Mound City:	Exclusively burial (low N) for mushrooms
Hopewell:	Exclusively deposit (low N) for stone (MP)
Mound City:	Exclusively burial (low N) for copper effigy (C)
Flying Humans	
Burial/Ceremonial Deposit Distribution	
Hopewell:	Exclusively deposit (low N) for flying humans
Hopewell:	Exclusively deposit (low N) for copper
Owls	
Burial/Ceremonial Deposit Distribution	
Hopewell, Seip:	Exclusively deposit (low N) for owls
Seip:	Exclusively deposit (low N) for owl pipe (PIP)
Seip:	Exclusively deposit (low N) for owl effigy, non-pipe (EFF)
Hopewell:	Exclusively deposit (low N) for effigy owl eyes of mica and boatstone (EEM)
Hopewell:	Exclusively deposit (low N) for effigy owl eyes of copper (EEC)

Supernaturals

Burial/Ceremonial Deposit Distribution

Turner:	Equal (low N) for supernaturals
Turner:	Exclusively deposit (low N) for horned serpents (H)
Turner:	Exclusively burial (low N) for fish with rattle tails (A)

Awls

Burial/Ceremonial Deposit Distribution

Ater, Esch, Hopewell, Liberty, Martin, Mound City, N Benton, Seip, Turner:	Largely or exclusively burial for awls

Sex Distribution

Hopewell, Seip:	Exclusively male (low N) for awls
Turner:	Equal (low N) for awls

Age Distribution

Ater, Bourneville, Hopewell, N Benton, Seip:	Exclusively adult for awls
Esch, Martin, Snake Den:	Exclusively child (low N) for awls
Turner:	Largely adult (low N) for awls

Ownership/Gifting Association

Ater, Esch, Mound City, Snake Den:	Exclusively one (low N) for awls
Bourneville, N Benton, Turner:	Exclusively or largely several (low N) for awls
Liberty, Martin, Seip:	Exclusively or largely many for awls
Hopewell:	Equally one or several for Hopewell

Quartz Bifaces

Burial/Ceremonial Deposit Distribution

Hopewell:	Exclusively deposit (low N) for quartz bifaces
Mound City, N Benton:	Largely or exclusively burial for quartz bifaces
N Benton:	Exclusively burial (low N) for points/knives(PK)
Hopewell:	Exclusively deposit (low N) for points/knives (PK)
Mound City:	Exclusively burial (low N) for unknown bifaces (UB)
Hopewell:	Exclusively deposit (low N) for unknown bifaces (UB)
Mound City:	Equal (low N) for unknown bifaces (UB)
Mound City:	Exclusively deposit (low N) for symmetrical bifaces, unknown bifaces, and points/knives (A)

Sex Distribution

N Benton:	Exclusively male (low N) for quartz bifaces
N Benton:	Exclusively male (low N) for points/knives (PK)

Age Distribution

N Benton:	Exclusively adult (low N) for quartz bifaces
N Benton:	Exclusively adult (low N) for points/knives (PK)

Ownership/Gifting Association

Mound City, N Benton:	Exclusively one or several (low N) for quartz bifaces
N Benton:	Exclusively one (low N) for points/knives (PK)
Mound City:	Exclusively one or several (low N) for unknown bifaces (UB)

Gem Bifaces

Burial/Ceremonial Deposit Distribution

Hopewell:	Exclusively burial for gem bifaces
Mound City:	Exclusively deposit (low N) for gem bifaces
Hopewell:	Exclusively burial (low N) for points/knives (PK)
Hopewell:	Exclusively burial (low N) for symmetrical bifaces (SB)
Hopewell:	Exclusively burial (low N) for Ross-barbed (RB)

Hopewell:	Exclusively burial (low N) for unknown bifaces (UB)
Mound City:	Exclusively deposit (low N) for unknown bifaces (UB)
Sex Distribution	
Hopewell:	Exclusively male (low N) for gem bifaces
Hopewell:	Exclusively male (low N) for points/knives (PK)
Hopewell:	Exclusively male (low N) for Ross-barbed (RB)
Hopewell:	Exclusively male (low N) for unknown bifaces (UB)
Age Distribution	
Hopewell:	Exclusively older adult (low N) for gem bifaces
Hopewell:	Exclusively adult (low N) for symmetrical bifaces (SB)
Hopewell:	Exclusively adult (low N) for Ross-barbed (RB)
Hopewell:	Exclusively adult (low N) for unknown bifaces (UB)
Ownership/Gifting Association	
Hopewell:	Exclusively one for gem bifaces
Hopewell:	Exclusively one (low N) for points/knives (PK)
Hopewell:	Exclusively one for symmetrical bifaces (SB)
Hopewell:	Exclusively one (low N) for Ross-barbed (RB)
Hopewell:	Exclusively one for unknown bifaces (UB)

Other Translucent Bifaces

Burial/Ceremonial Deposit Distribution	
Ater, Hopewell:	Exclusively burial (low N) for other translucent bifaces
Ater:	Exclusively burial (low N) for points/knives (PK)
Hopewell:	Exclusively burial (low N) for symmetrical bifaces (SB)
Sex Distribution	
Ater:	Exclusively female (low N) for other translucent bifaces
Ater:	Exclusively female (low N) for points/knives (PK)
Age Distribution	
Ater, Hopewell:	Exclusively adult (low N) for other translucent bifaces
Ater, Hopewell:	Exclusively adult (low N) for points/knives (PK)
Ownership/Gifting Association	
Ater, Hopewell:	Exclusively one (low N) for other translucent bifaces
Ater:	Exclusively one (low N) for points/knives (PK)
Hopewell:	Exclusively one for symmetrical bifaces (SB)

Obsidian Bifaces

Burial/Ceremonial Deposit Distribution	
Hopewell, Turner:	Largely or exclusively deposit for obsidian bifaces
Mound City:	Largely burial for obsidian bifaces
Seip:	Equal (low N) for obsidian bifaces
Mound City, Turner:	Exclusively deposit (low N) for points/knives (PK)
Hopewell:	Exclusively burial (low N) for points/knives (PK)
Hopewell:	Exclusively deposit (low N) for Ross-barbed (RB)
Mound City:	Exclusively burial (low N) for Ross-barbed (RB)
Seip:	Exclusively deposit (low N) for symmetrical bifaces (SB)
Seip:	Exclusively burial (low N) for odd bifaces (OB)
Mound City:	Exclusively burial (low N) for unknown bifaces (UB)
Mound City:	Exclusively burial (low N) for unknown bifaces (UB)
Hopewell:	Exclusively deposit (low N) for Ross-barbed, symmetrical bifaces, and odd bifaces (A)
Hopewell:	Exclusively deposit (low N) for symmetrical bifaces and points/knives (B)
Mound City:	Exclusively burial (low N) for symmetrical bifaces and Ross-barbed (C)
Mound City:	Exclusively deposit (low N) for odd bifaces and unknown bifaces (E)

Age Distribution

Hopewell:	Exclusively adult (low N) for obsidian bifaces
Hopewell:	Exclusively adult (low N) for points/knives (PK)
Hopewell:	Exclusively adult (low N) for Ross-barbed (RB)

Ownership/Gifting Association

Hopewell:	Exclusively many (low N) for obsidian bifaces
Mound City:	Largely one for obsidian bifaces
Seip:	Exclusively four (low N) for obsidian bifaces
Hopewell:	Exclusively many (low N) for points/knives (PK)
Mound City:	Exclusively one or two (low N) for Ross-barbed (RB)
Mound City:	Exclusively one (low N) for symmetrical bifaces (SB)
Seip:	Exclusively four (low N) for odd bifaces (OB)
Mound City:	Exclusively one (low N) for unknown bifaces (UB)

Fancy Points

Burial/Ceremonial Deposit Distribution

Ater, Liberty:	Exclusively burial (low N) for fancy points
Hopewell:	Equal (low N) for fancy points
Turner:	Exclusively deposit (low N) for fancy points
Ater, Hopewell, Liberty:	Exclusively burial (low N) for mica (MI)
Hopewell:	Exclusively deposit (low N) for copper (CP)
Turner:	Exclusively deposit (low N) for mica schist (MS)

Sex Distribution

Ater, Hopewell:	Exclusively male (low N) for fancy points
Ater, Hopewell:	Exclusively female (low N) for mica (MI)

Age Distribution

Ater, Hopewell:	Exclusively adult (low N) for fancy points
Ater, Hopewell:	Exclusively adult (low N) for mica (MI)

Ownership/Gifting Association

Ater, Liberty, Hopewell:	Exclusively one or three (low N) for fancy points
Ater, Liberty, Hopewell:	Exclusively one or three (low N) for mica (MI)

Weapons

Burial/Ceremonial Deposit Distribution

Hopewell:	Equal (low N) for weapons
Hopewell:	Exclusively deposit (low N) for mica (MC)
Hopewell:	Exclusively burial (low N) for atl-atl shaped tortoise shell comb (TC)

Age Distribution

Hopewell:	Exclusively adult (low N) for weapons
Hopewell:	Exclusively adult (low N) for atl-atl shaped tortoise shell comb (TC)

Fancy Prismatic Blades

Burial/Ceremonial Deposit Distribution

Ginther:	Exclusively deposit (low N) for fancy prismatic blades
Hopewell:	Equal (low N) for fancy prismatic blades
Liberty, N Benton, Turner:	Exclusively burial (low N) for fancy prismatic blades
Ginther:	Exclusively deposit (low N) for gem (GM)
Hopewell, Turner:	Exclusively burial (low N) for gem (GM)
Hopewell:	Exclusively deposit (low N) for gem (GM)
Hopewell:	Exclusively deposit (low N) for other translucent (OT)
Hopewell, Liberty:	Exclusively burial (low N) for odd bifaces (OB)
N Benton:	Exclusively burial (low N) for gem and other translucent (OT)

Sex Distribution

Hopewell, N Benton:	Exclusively male (low N) for fancy prismatic blades
Turner:	Exclusively female (low N) for fancy prismatic blades

Hopewell:	Exclusively male (low N) for gem (GM)
Turner:	Exclusively female (low N) for gem (GM)
N Benton:	Exclusively male (low N) for gem and other translucent (OT)

Age Distribution

Hopewell, Levina Russell, N Benton, Turner:	Exclusively adult (low N) for fancy prismatic blades
Hopewell, Turner:	Exclusively adult (low N) for gem (GM)
Hopewell:	Exclusively adult (low N) for odd bifaces (OB)
Liberty:	Exclusively adult (low N) for odd bifaces (OB)
N Benton:	Exclusively adult (low N) for gem and other translucent (OT)

Ownership/Gifting Association

Hopewell:	Exclusively seven or many (low N) for fancy prismatic blades
Liberty, N Benton, Turner:	Exclusively one or three (low N) for fancy prismatic blades
Hopewell:	Exclusively seven (low N) for gem (GM)
N Benton, Turner:	Exclusively one (low N) for gem (GM)
N Benton:	Exclusively three (low N) for other translucent (OT)
Hopewell:	Exclusively many (low N) for odd bifaces (OB)
Liberty:	Exclusively one (low N) for odd bifaces (OB)

Big Pipes

Burial/Ceremonial Deposit Distribution

Esch, Seip:	Exclusively deposit (low N) for big pipes
Seip:	Exclusively deposit (low N) for owls, miscellaneous birds, dogs/wolves, and bears (A)
Esch:	Exclusively deposit (low N) for alligators (AL)

Small Pipes

Burial/Ceremonial Deposit Distribution

Ater, Esch, Hopeton, Hopewell, Liberty, Martin, N Benton, Seip, Turner:	Largely or exclusively burial for small pipes
Mound City:	Equal for small pipes
Tremper:	Exclusively deposit (low N) for small pipes
Seip:	Exclusively burial (low N) for short-beaked raptor (SB)
Turner:	Exclusively burial (low N) for non-platform pipe (NP)
Ater, Esch, Hopewell, Liberty, Martin, Mound City, N Benton, Seip, Turner:	Exclusively burial for plain (PL)
Mound City:	Exclusively deposit (low N) for various unspecified types (VU)
Mound City:	Exclusively deposit (low N) for various animal and human types (VT)
Hopewell:	Exclusively deposit (low N) for plain and duck and serpent (A)
Hopewell:	Exclusively deposit (low N) for plain and bird on fish's back and roseate spoonbill (B)
Mound City:	Exclusively deposit (low N) for miscellaneous bird and unknown (C)
Mound City:	Exclusively burial (low N) for plain, otter, rabbit, frog, misc. bird, and pheasant (D)
Tremper:	Exclusively deposit (low N) for multiple forms (E)
Tremper:	Exclusively deposit (low N) for plain and unknown (F)
Mound City:	Exclusively burial (low N) for plain, frog, crow, and misc. bird (G)

Sex Distribution

Esch, Hopewell, N Benton:	Exclusively male (low N) for small pipes
Hopeton:	Exclusively female (low N) for small pipes
Esch, Hopewell, N Benton:	Exclusively male (low N) for plain (PL)

Age Distribution

Ater, Esch, Hopeton, Hopewell, N Benton, Seip, Turner, Wright:	Exclusively adult for small pipes
Martin:	Exclusively child (low N) for small pipes
Seip:	Exclusively adult (low N) for stone (ST)
Turner:	Exclusively adult (low N) for no prep (NP)
Ater, Esch, Hopewell, N Benton, Seip, Turner, Wright:	Exclusively adult (low N) for plain (PL)
Martin:	Exclusively child (low N) for plain (PL)

Ownership/Gifting Association

Ater, Esch, Hopeton, Hopewell, Liberty, Martin, Mound City, N Benton, Seip, Turner, Wright:	Largely or exclusively one for small pipes (28/31 have one only)

Panpipe

Burial/Ceremonial Deposit Distribution

Ater, Circleville, Kohl, N Benton, Turner:	Exclusively burial (low N) for panpipes
Hopewell:	Equal for panpipes
Ater, Hopewell, Kohl, N Benton:	Exclusively burial (low N) for tubular, long copper, 3 tubes (1A)
Hopewell:	Exclusively burial (low N) for tubular, probably long, copper, 3 tubes (1B)
Hopewell:	Exclusively deposit (low N) for tubular, long, copper-iron, 4 tubes (1C)
Esch:	Exclusively burial (low N) for tubular, long, copper-silver, 3 tubes (1D)
Turner:	Exclusively deposit (low N) for tubular, long, iron, 3 tubes (1G)
Turner:	Exclusively burial (low N) for copper band (2)

Sex Distribution

Ater, N Benton:	Exclusively male (low N) for panpipe
Hopewell:	Exclusively female (low N) for panpipe
Turner:	Equal (low N) for panpipe
Ater, N Benton:	Exclusively male (low N) for tubular, long, copper, 3 tubes (1A)
Hopewell:	Exclusively female (low N) for tubular, probably long, copper, 3 tubes (1B)
Turner:	Equal (low N) for copper band (2)

Age Distribution

Ater, Hopewell, Kohl, Marietta, N Benton, Turner:	Exclusively adult (low N) for panpipes
Esch:	Exclusively child (low N) for panpipes
Ater, Kohl, N Benton:	Exclusively adult (low N) for tubular, long, copper, 3 tubes (1A)
Hopewell:	Exclusively adult (low N) for tubular, probably long, copper, 3 tubes (1B)
Esch:	Exclusively child (low N) for tubular, long, copper-silver, 3 tubes (1D)
Turner:	Exclusively adult (low N) for copper band (2)
Marietta:	Exclusively adult (low N) for silver band (3)

Flute

Burial/Ceremonial Deposit Distribution

Hopewell, Rockhold: Exclusively burial (low N) for flute

Sex Distribution

Hopewell: Exclusively female (low N) for flute

Age Distribution

Hopewell: Exclusively adult (low N) for flute

Ownership/Gifting Association

Hopewell, Rockhold: Exclusively one (low N) for flute

Painting Equipment

Burial/Ceremonial Deposit Distribution

Seip, Turner: Exclusively burial (low N) for painting equipment
Tremper: Exclusively deposit (low N) for painting equipment
Seip: Exclusively burial (low N) for cup (CU)
Turner: Exclusively burial (low N) for cup with ochre (CO)

Age Distribution

Seip: Exclusively adult (low N) for painting equipment
Turner: Exclusively child (low N) for painting equipment
Seip: Exclusively adult (low N) for cup (CU)
Turner: Exclusively child (low N) for cup with ochre (CO)

Stone Tablets

Burial/Ceremonial Deposit Distribution

Hopewell, Liberty, Tremper: Largely or exclusively deposit for stone tablets
Kohl, Seip: Exclusively burial (low N) for stone tablets

Age Distribution

Kohl, Seip: Exclusively adult (low N) for stone tablets

Ownership/Gifting Association

Hopewell, Kohl, Seip: Exclusively one or two for stone tablets

Fancy Pottery

Burial/Ceremonial Deposit Distribution

Esch, Martin: Exclusively burial (low N) for fancy pottery
Hopewell, Liberty, Seip: Equal (low N) for fancy pottery
Mound City, Turner, Turner-Marriot: Largely or exclusively deposit (low N) for fancy pottery

Age Distribution

Esch, Martin: Exclusively child (low N) for fancy pottery
Seip: Exclusively adult (low N) for fancy pottery

Ownership/Gifting Association

Esch, Liberty, Martin: Exclusively one or three for fancy pottery

Tortoise Shell Ornaments

Burial/Ceremonial Deposit Distribution

Hopewell, Martin, Seip: Largely or exclusively burial for tortoise shell ornaments
Turner: Exclusively deposit (low N) for tortoise shell ornaments
Seip: Exclusively burial (low N) for comb (CB)
Hopewell: Exclusively burial (low N) for scroll shape (SC)
Hopewell: Exclusively burial (low N) for spatula shape (SP)
Turner: Exclusively deposit (low N) for spatula shape (SP)
Hopewell: Exclusively burial (low N) for tablet (TB)
Hopewell: Exclusively deposit (low N) for pendant like (PD)
Martin: Exclusively burial (low N) for pendant like (PD)
Seip: Exclusively burial (low N) for bird carving (BC)

Sex Distribution

Hopewell:	Exclusively male (low N) for tortoise shell ornaments
Seip:	Exclusively female (low N) for tortoise shell ornaments
Hopewell:	Exclusively male (low N) for scroll shaped (SC)
Hopewell:	Exclusively male (low N) for tablet (TB)
Seip:	Exclusively female (low N) for bird carving (BC)

Age Distribution

Hopewell:	Exclusively adult (low N) for tortoise shell ornaments
Martin:	Exclusively child (low N) for tortoise shell ornaments
Hopewell:	Exclusively adult (low N) for scroll shaped (SC)
Hopewell:	Exclusively adult (low N) for tablet (TB)
Martin:	Exclusively child (low N) for pendant-like (PD)

Trophy Skulls, Jaws

Burial/Ceremonial Deposit Distribution

Ater, Hopewell, Kohl, Liberty, N Benton, Turner:	Largely or exclusively burial for trophy skulls, jaws
Tremper, Turner-Marriot:	Exclusively deposit (low N) for trophy skulls, jaws
Ater, Hopewell, Liberty:	Exclusively burial (low N) for jaws (JW)
Tremper:	Exclusively deposit (low N) for jaws (JW)
Hopewell:	Exclusively burial (low N) for maxilla (MX)
Ater, Hopewell, Kohl, Liberty, N Benton, Turner:	Exclusively burial for skulls (SK)
Turner-Marriot:	Exclusively deposit (low N) for skulls (SK)
Hopewell:	Equal (low N) for jaws and maxillae (A)

Sex Distribution

Ater, Hopewell, Liberty, N Benton:	Largely or exclusively male for trophy skulls, jaws
Hopewell:	Exclusively female (low N) for jaws (JW)
Ater, Hopewell, Liberty, N Benton:	Exclusively male (low N) for skulls
Hopewell:	Exclusively male (low N) for skulls and maxillae (B)

Age Distribution

Ater, Hopewell, Kohl, N Benton, Turner:	Exclusively adult for trophy skulls, jaws
Liberty:	Mixed (low N) for trophy skulls, jaws
Ater, Hopewell:	Exclusively adult (low N) for jaws (JW)
Liberty:	Exclusively child (low N) for jaws (JW)
Hopewell:	Exclusively adult (low N) for maxillae (MX)
Ater, Hopewell, Kohl, Liberty, N Benton, Turner:	Exclusively adult for skulls (SK)
Hopewell:	Exclusively adult (low N) for jaws and maxillae (A)
Hopewell:	Exclusively adult (low N) for skulls and maxillae (B)

Ownership/Gifting Association

Hopewell, Kohl, Liberty:	Largely or exclusively one for trophy skulls and jaws (14/17 are one only)
N Benton:	Exclusively one or two (low N) for trophy skulls and jaws.

Trophy Fingers

Burial/Ceremonial Deposit Distribution

Hopewell:	Equal for trophy fingers

Age Distribution

Hopewell:	Exclusively adult (low N) for trophy fingers

Ownership/Gifting Association

Hopewell:	Exclusively one (low N) for trophy fingers

Trophy Hands

Sex Distribution

Hopewell:	Exclusively male (low N) for trophy hands

Age Distribution

Hopewell:	Exclusively adult (low N) for trophy hands

Ownership/Gifting Association

Hopewell, Mound City:	Exclusively one or two (low N) for trophy hands

Female Human Effigy

Burial/Ceremonial Deposit Distribution

Hopewell:	Exclusively burial (low N) for female human effigy
Turner:	Exclusively deposit (low N) for female human effigy

Sex Distribution

Hopewell:	Exclusively male (low N) for female human effigy

Age Distribution

Hopewell:	Exclusively adult (low N) for female human effigy

Ownership/Gifting Association

Hopewell:	Exclusively one (low N) for female human effigy

Male Human Effigy

Burial/Ceremonial Deposit Distribution

Turner:	Exclusively deposit (low N) for male human effigy

Human Effigy, Sex Unknown

Burial/Ceremonial Deposit Distribution:

Hopewell, Turner:	Exclusively deposit (low N) for human effigy of unknown sex
Mound City:	Equal (low N) for human effigy of unknown sex
Seip:	Exclusively burial (low N) for human effigy of unknown sex

Age Distribution

Seip:	Exclusively adult (low N) for human effigy of unknown sex

Ownership/Gifting Association

Mound City, Seip, Snake Den:	Exclusively one (low N) for human effigy of unknown sex

Animal Carvings[4]

Burial/Ceremonial Deposit Distribution:

Hopewell:	Equal for animal carvings
Liberty, N Benton, Seip, Turner:	Exclusively deposit (low N) for animal carvings
Mound City, Tremper:	Largely or exclusively burial (low N) for animal carvings
Hopewell, Mound City:	Exclusively burial (low N) for eagles (EG)
Tremper:	Exclusively burial (low N) for bear (BR)
Hopewell:	Exclusively deposit (low N) for snake (SN)
Seip:	Exclusively deposit (low N) for insects (IN)
Hopewell:	Exclusively deposit (low N) for fish (FI)
Hopewell:	Exclusively burial (low N) for misc. birds (MB)
Liberty, North Benton:	Exclusively deposit (low N) for misc. birds (MB)
Mound City:	Exclusively deposit (low N) for turtle (TU)
Hopewell:	Exclusively burial (low N) for misc. birds and bears (A)
Turner:	Exclusively deposit (low N) for misc. birds and bears (A)
Hopewell:	Exclusively deposit (low N) for spoonbills and misc. birds (B)

Age Distribution

Hopewell:	Exclusively adult (low N) for animal carvings
Hopewell:	Exclusively adult (low N) for eagles (EG)
Hopewell:	Exclusively adult (low N) for miscellaneous birds (MB)
Hopewell:	Exclusively adult (low N) for misc. birds and bears (A)

Carved Bones

Burial/Ceremonial Deposit Distribution

Hopewell, Turner:	Largely or exclusively deposit (low N) for carved bones
Turner:	Exclusively deposit (low N) for human parietals (PH)
Turner:	Exclusively deposit (low N) for human ulna and ribs (A)

Age Distribution

Hopewell:	Exclusively adult (low N) for carved bones

Headplates

Burial/Ceremonial Deposit Distribution

Ater, Marrietta Area, Mound City, Seip:	Exclusively burial for headplates
Turner:	Equal (low N) for headplates
Hopewell, Mound City:	Exclusively burial (low N) for plain (PL)
Hopewell:	Exclusively burial (low N) for antler stubs (AS)
Hopewell, Mound City:	Exclusively burial (low N) for antler rack (RA)
Hopewell:	Exclusively burial (low N) for cat paw (CP)
Mound City:	Exclusively burial (low N) for dog (DG)
Hopewell:	Exclusively burial (low N) for winged bird (WB)
Hopewell:	Exclusively burial (low N) for shell and/or pearl attachments (SP)
Mound City:	Exclusively burial (low N) for headless human (HH)
Hopewell:	Exclusively burial (low N) for feather-like (FL)
Turner:	Exclusively deposit (low N) for Iron (IR)
Hopewell:	Exclusively burial (low N) for antler stubs and iron (A)

Sex Distribution

Hopewell:	Exclusively male for headplates
Hopewell:	Exclusively male (low N) for plain (PL)
Hopewell:	Exclusively male (low N) for antler rack (RA)
Hopewell:	Exclusively male (low N) for cat paw (CP)
Hopewell:	Exclusively male (low N) for winged bird (WB)
Hopewell:	Exclusively male (low N) for shell and/or pearl attachments (SP)

Age Distribution

Ater, Boyle's Farm, Hopewell, Turner:	Exclusively adult for headplates
Hopewell:	Exclusively adult (low N) for plain (PL)
Hopewell:	Exclusively adult (low N) for antler stubs (AS)
Hopewell:	Exclusively adult (low N) for antler rack (RA)
Hopewell:	Exclusively adult (low N) for cat paw (CP)
Hopewell:	Exclusively adult (low N) for winged bird (WB)
Hopewell:	Exclusively adult (low N) for shell and/or pearl attachments (SP)
Hopewell:	Exclusively adult (low N) for feather-like (FL)
Hopewell:	Exclusively adult (low N) for antler stubs and iron (A)

Ownership/Gifting Association

Ater, Boyle's Farm, Hopewell, Marietta area, Mound City, Turner:	Largely or exclusively one for headplates (19/20 cases)

Copper Celts

Burial/Ceremonial Deposit Distribution

Ater, Esch, Hopewell, Levina Russel, Liberty, Mound City, N Benton, Rockhold, Seip, Turner:	Largely or exclusively burial for copper celts

Sex Distribution

Ater:	Exclusively male (low N) for copper celts
Hopewell, Liberty, Seip:	Exclusively female (low N) for copper celts

Age Distribution	
Ater:	Exclusively adult (low N) for copper celts
Esch, Levina Russel, N Benton:	Exclusively child (low N) for copper celts
Hopewell, Seip, Turner:	Largely adult for copper celts
Liberty:	Mixed (low N) for copper celts
Ownership/Gifting Association	
Esch, Hopewell, Levina Russel, Liberty, N Benton, Rockhold, Seip, Turner:	Largely or exclusively one for copper celts
Iron Celts	
Burial/Ceremonial Deposit Distribution	
Hopewell:	Equal (low N) for iron celts
Age Distribution	
Hopewell:	Exclusively adult (low N) for iron celts
Ownership/Gifting Association	
Ater:	Exclusively one (low N) for iron celts
Stone Celts	
Burial/Ceremonial Deposit Distribution	
Esch, Mound City, N Benton, Seip, Turner:	Exclusively burial for stone celts
Hopewell:	Equal for stone celts
Martin:	Exclusively deposit for stone celts
Sex Distribution	
Esch:	Equal (low N) for stone celts
Hopewell, N Benton:	Exclusively male (low N) for stone celts
Age Distribution	
Esch, Hopewell, N Benton:	Exclusively adult (low N) for stone celts
Turner:	Exclusively child (low N) for stone celts
Ownership/Gifting Association	
Esch, Hopewell, McKenzie, Snake Den, Turner:	Largely or exclusively one for stone celts
N Benton:	Exclusively four (low N) for stone celts
Conch Shells	
Burial/Ceremonial Deposit Distribution	
Ater, Esch, Hopeton, Hopewell, Liberty, Mound City, Rockhold, Seip, Turner:	Largely or exclusively burial for conch shells
Sex Distribution	
Ater, Hopewell:	Largely or exclusively male (low N) for conch shells
Hopeton, Seip, Turner:	Exclusively female (low N) for conch shells
Age Distribution	
Ater, Bourneville, Hopeton:	Exclusively adult (low N) for conch shells
Esch, Liberty:	Exclusively child (low N) for conch shells
Hopewell, Seip, Turner:	Largely adult for conch shells
Ownership/Gifting Association	
Ater, Bourneville, Esch, Hopeton, Hopewell, Liberty, Turner, Wright:	Largely or exclusively one for conchs
Mound City:	Exclusively seven (low N) for conchs

Shell Spoons

Burial/Ceremonial Deposit Distribution	
Ater, Hopewell, Turner:	Exclusively burial for shell spoons
Sex Distribution	
Hopewell:	Exclusively male (low N) for shell spoons
Turner:	Exclusively female (low N) for shell spoons
Age Distribution	
Ater, Hopewell:	Exclusively adult (low N) for shell spoons
Turner:	Largely adult (low N) for shell spoons
Ownership/Gifting Association	
Ater, Hopewell, Rockhold, Seip, Turner:	Largely or exclusively one for shell spoons

Wands, Batons

Burial/Ceremonial Deposit Distribution	
Hopewell:	Equal for wands, batons
Liberty, Seip:	Exclusively burial (low N) for wands, batons
Turner:	Exclusively deposit (low N) for wands, batons
Hopewell:	Exclusively deposit (low N) for triangular, dark (TD)
Hopewell, Liberty:	Exclusively burial (low N) for carved femur (FM)
Turner:	Exclusively deposit (low N) for carved femur (FM)
Seip:	Exclusively burial (low N) for horned mammal of copper (HM)
Hopewell:	Exclusively deposit (low N) for human effigy in antler (ANH)
Hopewell:	Exclusively deposit (low N) for triangular dark and human effigy in antler (A)
Age Distribution	
Hopewell, Seip:	Exclusively adult (low N) for wands, batons
Hopewell:	Exclusively adult (low N) for femur (FM)
Seip:	Exclusively adult (low N) for horned mammal (HM)

Breastplates

Burial/Ceremonial Deposit Distribution	
Ater, Hopewell, Liberty, Mound City, N Benton, Rockhold, Seip, Stone, Turner-Marriot:	Largely or exclusively burial for breastplates
Turner:	Equal (low N) for breastplates
Sex Distribution	
Ater, Hopewell, Turner-Marriot:	Largely or exclusively male for breastplates
Liberty, Seip, Turner:	Equal for breastplates
Age Distribution	
Ater, Seip:	Largely adult for breastplates
Bourneville, Hopewell, Liberty, Turner, Turner-Marriot:	Exclusively adult for breastplates
N Benton:	Exclusively child (low N) for breastplates
Ownership/Gifting Association	
Ater, Bourneville, Hopewell, Liberty, Mound City, N Benton, Rockhold, Seip, Stone, Turner, Turner-Marriot:	Largely or exclusively one for breastplates

Earspools

Burial/Ceremonial Deposit Distribution

Ater, Esch, Hopewell, Liberty, Martin, Mound City, Seip, Turner, Turner-Marriot:	Largely or exclusively burial for earspools
N Benton, Rockhold, Tremper:	Equal (low N) for earspools
Ater, Hopewell, Liberty, Martin, Mound City, Rockhold, Seip, Tremper:	Largely or exclusively burial for copper (CP)
N Benton:	Equal (low N) for copper (CP)
Hopewell, Mound City:	Exclusively burial (low N) for copper overlaid with silver (CS)
Ater:	Exclusively burial (low N) for copper overlaid with iron (CI)
Esch:	Exclusively burial (low N) for copper with some silver (SD)
Hopewell, Seip:	Exclusively burial (low N) for stone (N)
Tremper:	Exclusively deposit (low N) for stone (N)
Hopewell:	Exclusively burial (low N) for earspools of copper, silver, and iron (A)
Turner:	Exclusively deposit (low N) for copper and pottery and copper overlaid with silver, and copper overlaid with iron (B)
Ater, Turner, Turner-Marriot:	Exclusively burial (low N) for copper and copper overlaid with iron (C)
Hopewell:	Exclusively deposit (low N) for copper and copper overlaid with iron (C)
Hopewell:	Exclusively deposit (low N) for copper, pottery, copper overlaid with silver, copper overlaid with iron, and stone pulley type (D)
Hopewell:	Exclusively deposit (low N) for copper and stone pulley type (E)

Sex Distribution

Ater, Hopewell, Liberty, N Benton:	Largely or exclusively male for earspools
Rockhold:	Exclusively female (low N) for earspools
Seip, Turner:	Equal for earspools
Ater, Hopewell, Liberty, N Benton:	Largely or exclusively male for copper (CP)
Rockhold:	Exclusively female (low N) for copper (CP)
Seip, Turner:	Equal for copper (CP)
Hopewell:	Exclusively male (low N) for copper overlaid with silver (CS)
Hopewell:	Exclusively female (low N) for stone (N)
Hopewell:	Exclusively female (low N) for earspools composed of copper, silver, and iron (A)
Ater:	Exclusively male (low N) for copper and copper overlaid with iron (C)

Age Distribution

Ater, Bourneville, Hazlett, Liberty, Marietta, N Benton, Rockhold, Seip, Turner-Marriot, Wright:	Exclusively adult for earspools
Esch, Martin:	Exclusively child (low N) for earspools
Hopewell, Turner:	Largely adult for earspools
Ater, Bourneville, Hazlett, Liberty, N Benton, Seip, Rockhold, Wright, Turner:	Exclusively adult for copper (CP)
Hopewell:	Largely adult for copper (CP)
Martin:	Exclusively child (low N) for copper (CP)
Hopewell, Marietta:	Exclusively adult (low N) for copper overlaid with silver (CS)
Ater:	Exclusively adult (low N) for copper overlaid with iron (CI)

Esch:	Exclusively child (low N) for copper with some silver (SD)
Hopewell, Seip:	Exclusively adult (low N) for stone pulley type (N)
Hopewell:	Exclusively adult (low N) for earspools of copper, silver, and iron (A)
Ater, Turner-Marriot:	Exclusively adult (low N) for copper and copper overlaid with iron (C)

Ownership/Gifting Association

Bourneville:	Largely one (low N) for earspools
Ater, Esch, Hazlett, Hopewell, Liberty, Mound City, N Benton, Rockhold, Seip, Turner, Wright:	Largely or exclusively two for earspools
Marietta, Tremper, Turner-Marriot, West:	Exclusively several (low N) for earspools

Copper Cutouts

Burial/Ceremonial Deposit Distribution

Hopewell, Mound City, Seip, Turner:	Equal for copper cutouts
Rockhold, Rutledge:	Exclusively burial (low N) for copper cutouts
Hopewell:	Exclusively burial (low N) for ring (RG)
Hopewell:	Exclusively burial (low N) for grid of bosses (GB)
Hopewell:	Exclusively burial (low N) for G-clef form (G)
Hopewell:	Exclusively burial (low N) for disk (DK)
Mound City:	Exclusively deposit (low N) for disk (DK)
Seip:	Equal (low N) for disk (DK)
Rockhold:	Exclusively burial (low N) for crescent shape with arms and hands (HA)
Hopewell:	Exclusively burial (low N) for flying human (FH)
Rutledge:	Exclusively burial (low N) for frog or salamander effigy (FE)
Hopewell:	Exclusively burial (low N) for shield shape (SH)
Hopewell:	Exclusively deposit (low N) for various forms (V)
Mound City:	Exclusively burial (low N) for strips (STR)
Mound City:	Exclusively burial (low N) for star-shaped (ST)
Mound City:	Exclusively deposit (low N) for four armed shapes (AR)
Hopewell:	Exclusively deposit (low N) for multiple forms (A)
Turner:	Exclusively deposit (low N) for rings, flower forms, G-clefs, pear shaped eyes, and grids of holes (B)

Sex Distribution

Hopewell, Seip:	Exclusively male (low N) for copper cutouts
Hopewell:	Exclusively male (low N) for G-clef form (G)
Hopewell:	Exclusively male (low N) for flying human (FH)
Hopewell:	Exclusively male (low N) for shield shape (SH)
Seip:	Exclusively male (low N) for disk (DK)

Age Distribution

Hopewell:	Exclusively older adult (low N) for copper cutouts
Seip:	Exclusively adult (low N) for copper cutouts
Hopewell:	Exclusively adult (low N) for rings (RG)
Hopewell:	Exclusively adult (low N) for G-clef form (G)
Hopewell, Seip:	Exclusively adult (low N) for disk (DK)
Hopewell:	Exclusively adult (low N) for flying human (FH)
Hopewell:	Exclusively adult (low N) for shield shape (SH)

Mica Cutouts

Burial/Ceremonial Deposit Distribution

Ater, Hopewell, Liberty:	Largely or exclusively burial for mica cutouts
Seip:	Equal (low N) for mica cutouts
Turner:	Exclusively deposit (low N) for mica cutouts
Seip:	Exclusively burial (low N) for links (L)

Hopewell:	Exclusively burial (low N) for pear-shaped eyes (P)
Hopewell:	Exclusively burial (low N) for shield shape (SH)
Hopewell:	Exclusively burial (low N) for circles (CR)
Ater, Hopewell:	Exclusively burial (low N) for strips (ST)
Hopewell:	Exclusively deposit (low N) for G-clefs (G)
Hopewell:	Exclusively deposit (low N) for various forms (V)
Liberty:	Exclusively burial (low N) for various forms (V)
Turner:	Exclusively deposit (low N) for rings, circles, ovals, and unknown (A)
Hopewell:	Exclusively deposit (low N) for strips and various forms (B)
Hopewell:	Exclusively burial (low N) for beak-like form and circle (C)

Sex Distribution

Ater, Hopewell:	Exclusively male (low N) for mica cutouts
Hopewell:	Exclusively male (low N) for pear-shaped eyes (P)
Hopewell:	Exclusively male (low N) for shield shape (SH)
Hopewell:	Exclusively male (low N) for beak-like form and circle (C)

Age Distribution

Ater, Hopewell:	Exclusively adult (low N) for mica cutouts
Seip:	Mixed (low N) for mica cutouts
Seip:	Exclusively adult (low N) for links (L)
Hopewell:	Exclusively adult (low N) for pear shaped eyes (P)
Hopewell:	Exclusively adult (low N) for shield shape (SH)
Hopewell:	Exclusively adult (low N) for circles (CR)
Ater:	Exclusively adult (low N) for strips (ST)
Hopewell:	Exclusively adult (low N) for beak-like forms and circles (C)

Shell Cutouts

Burial/Ceremonial Deposit Distribution

Hopewell, Mound City, Seip:	Exclusively burial (low N) for shell cutouts
Hopewell, Mound City:	Exclusively burial (low N) for disks (DK)
Seip:	Exclusively deposit (low N) for disks and rectangular (A)

Sex Distribution

Hopewell:	Exclusively male (low N) for shell cutouts
Hopewell:	Exclusively male (low N) for disks (DK)

Age Distribution

Hopewell, Seip:	Exclusively adult (low N) for shell cutouts
Hopewell:	Exclusively adult (low N) for disks (DK)
Seip:	Exclusively adult (low N) for disks and rectangular (A)

Crescents

Burial/Ceremonial Deposit Distribution

Ater, Hopewell, Liberty, Seip, Tremper:	Exclusively burial (low N) for crescents
Turner:	Exclusively deposit (low N) for crescents
Hopewell, Seip:	Exclusively burial (low N) for copper (CP)
Turner:	Exclusively deposit (low N) for copper (CP)
Tremper:	Exclusively burial (low N) for mica (MI)

Sex Distribution

Ater, Hopewell, Seip:	Exclusively male (low N) for crescents
Ater, Hopewell, Seip:	Exclusively male (low N) for copper (CP)

Age Distribution

Ater, Seip:	Exclusively adult (low N) for crescents
Hopewell:	Mixed (low N) for crescents
Ater, Seip:	Exclusively adult (low N) for copper (CP)
Hopewell:	Mixed (low N) for copper (CP)

Ownership/Gifting Association	
Liberty:	Exclusively one for crescents
Pendants, Gorgets[5]	
Burial/Ceremonial Deposit Distribution	
Esch, Hopewell, Levina Russel, Martin, Mound City, Seip:	Largely or exclusively burial for pendants, gorgets
N Benton, Tremper:	Exclusively deposit (low N) for pendants, gorgets
Hopewell, Mound City:	Exclusively burial for pipestone gorgets and reel-shaped gorgets of slate (C)
Seip:	Exclusively burial (low N) for claw shaped gorgets (CL)
Hopewell, Mound City, Seip:	Largely or exclusively burial (low N) for spoon-shaped of copper (TS)
Esch:	Exclusively burial (low N) for rectangular gorgets of unknown material (RU)
N Benton:	Exclusively deposit (low N) for rectangular gorgets of unknown material (RU)
Hopewell, Mound City, Hopewell:	Exclusively deposit (low N) for bar-shape, stone (B)
Seip:	Exclusively burial (low N) for bar-shape, stone (B)
Hopewell:	Exclusively deposit (low N) for bar-shape of unknown material (BU)
Martin, Mound City:	Exclusively burial (low N) for pendant of slate, pendant of stone (A)
Sex Distribution	
Esch, Seip:	Exclusively male (low N) for pendants, gorgets
Esch:	Exclusively male (low N) for reel-shape of unknown material (RU)
Age Distribution	
Esch:	Largely adult for pendants, gorgets
Hopewell, Wright:	Exclusively adult (low N) for pendants, gorgets
Levina Russel, Martin:	Exclusively child (low N) for pendants, gorgets
Hopewell:	Exclusively adult (low N) for pipestone gorgets and reel-shaped gorgets of slate (C)
Hopewell:	Exclusively adult (low N) for spoon-shaped of copper (TS)
Esch:	Exclusively adult (low N) for reel-shape of unknown material (RU)
Hopewell:	Exclusively adult (low N) for ovate-shape (O)
Martin:	Exclusively child (low N) for pendant of slate, pendant of stone (A)
Ownership/Gifting Association	
Esch, Hopewell, Levina Russel, Martin, Seip, Wright:	Largely or exclusively 1–2 pendants, gorgets
Mound City:	Largely several to many for pendants, gorgets
Buttons	
Burial/Ceremonial Deposit Distribution	
Hopewell, Liberty, Mound City, Seip:	Largely or exclusively burial for buttons
Turner:	Exclusively deposit (low N) for buttons
Hopewell, Liberty, Mound City, Seip:	Largely or exclusively burial for copper (CP)
Turner:	Exclusively deposit (low N) for copper (CP)
Seip:	Exclusively burial (low N) for iron (IR)
Seip:	Exclusively burial (low N) for silver (SI)
Hopewell:	Exclusively burial (low N) for silver and unknown (A)

Sex Distribution

Hopewell, Seip:	Equal (low N) for buttons
Hopewell:	Equal (low N) for copper (CP)
Seip:	Exclusively male (low N) for copper (CP)
Seip:	Exclusively female (low N) for iron (IR)
Seip:	Exclusively female (low N) for silver (SI)

Age Distribution

Hopewell, McKenzie:	Exclusively adult for buttons
Hopewell, McKenzie:	Exclusively adult for copper (CP)

Raptor Power Parts

Burial/Ceremonial Deposit Distribution

Ater, Hopewell, Mound City, Seip:	Exclusively burial (low N) for raptor power parts
Ater:	Exclusively burial (low N) for claws (CL)
Hopewell:	Exclusively burial (low N) for effigy claws of mica (ECM)
Seip:	Exclusively burial (low N) for effigy claws of bone (ECB)
Mound City:	Exclusively burial (low N) for effigy claws of copper (ECC)

Sex Distribution

Ater, Hopewell:	Exclusively male (low N) for raptor power parts
Ater:	Exclusively male (low N) for claws (CL)
Hopewell:	Exclusively male (low N) for effigy claws of mica (ECM)

Age Distribution

Ater, Hopewell, Seip:	Exclusively adult (low N) for raptor power parts
Ater:	Exclusively adult (low N) for claws (CL)
Hopewell:	Exclusively adult (low N) for effigy claws of mica (ECM)
Seip:	Exclusively adult (low N) for effigy claws of bone (ECB)

Wolf, Dog Power Parts

Burial/Ceremonial Deposit Distribution

Ater, Hopewell, Mound City, Seip:	Largely or exclusively burial for wolf/dog power parts
Turner:	Equal (low N) for wolf/dog power parts
Ater, Hopewell, Mound City, Seip, Turner:	Largely or exclusively burial for jaws (JW)
Hopewell, Mound City:	Exclusively burial (low N) for drilled teeth (TD)
Mound City:	Exclusively burial (low N) for teeth (TE)
Mound City:	Exclusively burial (low N) for claws (CL)

Sex Distribution

Ater, Hopewell, Seip:	Exclusively male (low N) for wolf, dog power parts
Ater, Hopewell, Seip:	Exclusively male (low N) for jaws (JW)

Age Distribution

Ater, Hazlett, Hopewell, Seip:	Exclusively adult (low N) for wolf, dog power parts
Ater, Hazlett, Hopewell, Seip:	Exclusively adult (low N) for jaws (JW)
Hopewell:	Exclusively adult (low N) for drilled teeth (TD)

Big Cat Power Parts

Burial/Ceremonial Deposit Distribution

Hopewell, Liberty, Mound City, Seip:	Largely or exclusively burial for big cat power parts
Tremper, Turner:	Exclusively deposit (low N) for big cat power parts
Hopewell, Liberty, Seip:	Exclusively burial for jaws (JW)
Tremper:	Exclusively deposit (low N) for jaws (JW)
Hopewell:	Exclusively deposit (low N) for teeth (TE)
Liberty:	Exclusively burial (low N) for teeth (TE)

Seip, Turner:	Exclusively deposit (low N) for drilled teeth (TD)
Mound City:	Exclusively burial for effigy tooth of unknown material (ETU)

Sex Distribution

Hopewell, Seip:	Exclusively male for big cat power parts
Hopewell, Seip:	Exclusively male for jaws (JW)

Age Distribution

Hopewell, Seip:	Exclusively adult for big cat power parts; primarily older adult for Hopewell
Hopewell, Seip:	Exclusively adult for jaws (JW); primarily older adult for Hopewell

Fox Power Parts

Burial/Ceremonial Deposit Distribution

Hopewell:	Exclusively burial (low N) for fox power parts
Seip, Turner:	Exclusively deposit (low N) for fox power parts
Hopewell:	Exclusively burial (low N) for jaws (JW)
Hopewell:	Exclusively burial (low N) for drilled teeth (TD)
Seip, Turner:	Exclusively deposit (low N) for drilled teeth (TD)

Sex Distribution

Hopewell:	Exclusively male (low N) for fox power parts
Hopewell:	Exclusively male (low N) for jaws (JW)

Age Distribution

Hopewell:	Exclusively adult (low N) for fox power parts
Hopewell:	Exclusively adult (low N) for jaws (JW)
Hopewell:	Exclusively adult (low N) for drilled teeth (TD)

Elk Power Parts

Burial/Ceremonial Deposit Distribution

Ater, Mound City:	Largely or exclusively burial (low N) for elk power parts
Ater:	Exclusively burial (low N) for teeth (TE)
Mound City:	Equal (low N) for drilled teeth (TD)
Mound City:	Exclusively burial (low N) for drilled tooth and effigy tooth of unknown material (A)

Age Distribution

Ater:	Exclusively adult (low N) for elk power parts
Ater:	Exclusively adult (low N) for teeth (TE)

Antlers[6]

Burial/Ceremonial Deposit Distribution

Hopewell:	Exclusively deposit (low N) for antlers
Mound City:	Exclusively burial (low N) for antlers
Hopewell:	Exclusively deposit (low N) for deer (DR)
Mound City:	Exclusively burial (low N) for deer (DR)
Mound City:	Exclusively burial (low N) for goat (GT)
Mound City, Seip:	Exclusively burial (low N) for effigy teeth of copper (ETC)

Raccoon Power Parts

Burial/Ceremonial Deposit Distribution

Hopewell, Mound City:	Exclusively burial (low N) for raccoon power parts
Liberty, Turner:	Exclusively deposit (low N) for raccoon power parts
Seip:	Equal (low N) for raccoon power parts
Seip:	Exclusively burial (low N) for teeth (TE)
Hopewell, Mound City:	Exclusively burial (low N) for drilled teeth (TD)
Liberty, Turner:	Exclusively deposit (low N) for drilled teeth (TD)
Seip:	Exclusively deposit (low N) for drilled teeth and penis bone (A)

Sex Distribution

Hopewell:	Exclusively female (low N) for raccoon power parts
Hopewell:	Exclusively female (low N) for drilled teeth (TD)

Age Distribution

Hopewell:	Exclusively older adult (low N) for raccoon power parts
Seip:	Exclusively child (low N) for raccoon power parts
Seip:	Exclusively child (low N) for teeth (TE)
Hopewell:	Exclusively older adult (low N) for drilled teeth (TD)

Opossum Power Parts

Burial/Ceremonial Deposit Distribution

Seip, Turner:	Exclusively deposit (low N) for opossum power parts
Seip, Turner:	Exclusively deposit (low N) for drilled teeth (TD)

Beaver Power Parts

Burial/Ceremonial Deposit Distribution

Ater, Esch, Hopewell, Martin, Seip:	Exclusively burial (low N) for beaver power parts
Seip:	Exclusively burial (low N) for jaws (JW)
Ater, Esch, Hopewell, Martin:	Exclusively burial (low N) for maxillae (MX)

Sex Distribution

Ater, Esch, Hopewell:	Exclusively male (low N) for beaver power parts
Ater, Esch, Hopewell:	Exclusively male (low N) for teeth (TE)

Age Distribution

Ater, Esch, Hopewell, Seip:	Exclusively adult (low N) for beaver power parts; primarily older adults
Martin:	Exclusively child (low N) for beaver power parts
Seip:	Exclusively adult (low N) for jaws (JW)
Ater, Esch, Hopewell:	Exclusively adult (low N) for teeth (TE); All are older adults
Martin:	Exclusively child (low N) for maxillae (MX)

Bear Power Parts

Burial/Ceremonial Deposit Distribution

Ater, Esch, Liberty, Martin, Mound City, Rockhold, Seip, Turner, Turner-Marriot, Tremper:	Exclusively deposit (low N) for bear power parts
Tremper:	Exclusively deposit (low N) for jaws (JW)
Turner:	Exclusively burial (low N) for jaws (JW)
Hopewell, Liberty, Rockhold, Seip, Turner, Turner-Marriot:	Exclusively burial for teeth (TE)
Hopewell, Liberty, Mound City, Seip, Turner:	Exclusively burial (low N) for drilled teeth (TD)
Ater, Hopewell, Seip, Turner:	Largely or exclusively burial for pearl-set teeth (TP)
Ater, Hopewell, Mound City:	Largely or exclusively burial (low N) for claws (CL)
Seip:	Equal (low N) for claws (CL)
Hopewell:	Exclusively burial (low N) for effigy tooth of mica (ETM)
Esch:	Exclusively burial (low N) for effigy tooth of bone (ETB)
Mound City:	Exclusively deposit (low N) for effigy tooth of bone (ETB)
Seip:	Exclusively burial (low N) for effigy claw of bone (ECB)
Hopewell:	Exclusively burial (low N) for effigy tooth of copper (ETC)
Hopewell:	Exclusively burial (low N) for effigy teeth of bone and pearl set teeth (B)
Turner:	Exclusively deposit (low N) for pearl set teeth, effigy teeth of bone, drilled teeth, and effigy teeth of shell (C)

Hopewell:	Exclusively deposit (low N) for claws and effigy teeth of unknown material (D)
Hopewell:	Exclusively deposit (low N) for claws and jaws (E)
Hopewell:	Exclusively burial (low N) for jaws, claws, teeth and pearl set teeth (F)
Hopewell:	Exclusively burial (low N) for effigy teeth of antler, teeth, and pearl set teeth (G)
Hopewell:	Exclusively deposit (low N) for claws, teeth, and effigy teeth of shell (H)
Hopewell, Turner-Marriot, Turner:	Exclusively burial (low N) for pearl set teeth and teeth (I)
Ater, Hopewell:	Exclusively burial (low N) for drilled teeth and pearl set teeth (J)
Seip:	Exclusively deposit (low N) for drilled teeth and pearl set teeth (J)
Hopewell:	Exclusively deposit (low N) for effigy teeth of stone, claws, and drilled teeth (K)
Hopewell:	Exclusively deposit (low N) for effigy paws and teeth of copper (L)
Mound City:	Exclusively burial (low N) for effigy teeth of unknown material and drilled teeth (N)
Martin:	Exclusively burial (low N) for drilled teeth and effigy teeth of bone (P)
Sex Distribution	
Ater, Esch, Hopewell, Seip, Turner-Marriot:	Exclusively male for bear power parts
Turner:	Equal (low N) for bear power parts
Hopewell, Seip:	Exclusively male (low N) for drilled tooth (TD)
Turner:	Exclusively female (low N) for drilled tooth (TD)
Ater, Hopewell, Seip:	Exclusively male (low N) for pearl-set tooth (TP)
Esch:	Exclusively male (low N) for effigy tooth of bone (ETB)
Hopewell:	Exclusively male (low N) for effigy teeth of bone and pearl set teeth (B)
Hopewell, Turner, Turner-Marriot:	Exclusively male (low N) for pearl teeth and teeth (I)
Ater, Hopewell:	Exclusively male (low N) for drilled teeth and pearl set teeth (J)
Age Distribution	
Ater, Bourneville, Esch, Turner, Turner-Marriot:	Exclusively adult for bear power parts
Hopewell:	Exclusively older adult for bear power parts
Seip:	Largely adult for bear power parts
Martin:	Exclusively child (low N) for bear power parts
Turner:	Exclusively adult (low N) for jaws (JW)
Hopewell, Seip, Turner, Turner-Marriot:	Exclusively adult (low N) for teeth (TE)
Bourneville, Hopewell, Seip, Turner:	Exclusively adult (low N) for drilled teeth (TD)
Bourneville, Hopewell, Turner:	Exclusively adult (low N) for pearl-set tooth (TP)
Seip:	Mixed (low N) for pearl-set tooth (TP)
Ater, Hopewell, Seip:	Exclusively adult (low N) for claws (CL)
Hopewell:	Exclusively adult (low N) for effigy teeth of mica (ETM)
Esch:	Exclusively adult (low N) for effigy tooth of bone (ETB)
Seip:	Exclusively adult (low N) for effigy claw of bone (ECB)
Hopewell:	Exclusively adult (low N) for effigy tooth of copper (ETC)
Hopewell:	Exclusively adult (low N) for effigy teeth bone and pearl set teeth (B)

Hopewell:	Exclusively adult (low N) for jaws, claws, teeth, and pearl set teeth (F)
Hopewell:	Exclusively adult (low N) for effigy teeth of antler, teeth, and pearl set teeth (G)
Hopewell:	Exclusively older adult (low N) for pearl set teeth and teeth (I)
Turner, Turner-Marriot:	Exclusively adult (low N) for pearl set teeth and teeth (I)
Ater, Hopewell:	Exclusively adult (low N) for drilled teeth and pearl set teeth (J)
Martin:	Exclusively child (low N) for drilled teeth and effigy teeth of bone (P)

Ownership/Gifting Association

Bourneville, Hopewell, Seip:	Largely or exclusively four for for bear canines
Ater:	Exclusively three or four (low N) for bear canines
Turner, Turner-Marriot:	Exclusively several to many for bear canines
Liberty:	Exclusively one or ten (low N) for bear canines
Martin:	Exclusively eight (low N) for bear canines
Mound City:	Exclusively two or five (low N) for bear canines

Species Number

Ownership/Gifting Association

Hazlett, Hopewell, Liberty Mound City, Rockhold, Seip, Turner:	Largely or exclusively one species number (50/67 are one)
Esch:	Exclusively two (low N) for species number
Ater:	Exclusively one or four (low N) for species number

Beads

Burial/Ceremonial Deposit Distribution

Ater, Esch, Hopewell, Kohl, Liberty, Martin, Mound City, Rockhold, Rutledge, Seip, Turner:	Largely or exclusively burial for beads
Turner-Marriot:	Equal (low N) for beads
Esch, Hopewell, Kohl, Martin, Mound City, Seip, Turner:	Exclusively burial (low N) for copper (CP)
Seip:	Exclusively burial (low N) for iron (IR)
Esch, Hopewell, Liberty, Rockhold, Seip, Turner, Turner-Marriot:	Largely or exclusively burial for pearl (PE)
Ater, Hopewell, Mound City, Rutledge, Seip, Turner:	Largely or exclusively burial for shell (SH)
Liberty:	Equal (low N) for shell (SH)
Hopewell, Mound City, Rockhold, Rutledge, Seip:	Largely or exclusively burial for pearl and shell (PS)
Turner:	Exclusively deposit (low N) for copper, iron, pearl, shell, and wood (A)
Seip:	Exclusively deposit (low N) for stone, shell, copper, and pearl (B)
Martin:	Exclusively burial (low N) for bone and copper (C)
Turner:	Exclusively deposit (low N) for bone and copper (C)
Hopewell:	Exclusively burial for bone and pearl (D)
Hopewell:	Exclusively deposit (low N) for pearl, shell, iron, and bone (E)
Hopewell:	Exclusively deposit (low N) for iron, bone, pearl, copper, silver, and shell (F)
Turner:	Exclusively deposit (low N) for pearl and copper (G)
Turner-Marriot:	Exclusively deposit (low N) for clay and shell (H)
Mound City:	Exclusively deposit (low N) for pearl, shell and galena (I)
Mound City:	Exclusively deposit (low N) for pearl and shell and bone (J)
Hopewell:	Equal (low N) for shell and bone (K)

Sex Distribution

Ater, Hopewell, Martin:	Largely or exclusively male for beads
Rockhold, Rutledge, Seip:	Largely or exclusively female for beads
Turner:	Equal (low N) for beads
Martin:	Exclusively male (low N) for copper (CP)
Seip:	Exclusively female (low N) for iron (IR)
Hopewell:	Largely male for pearl (PE)
Rockhold, Seip:	Largely or exclusively female for pearl (PE)
Ater, Hopewell:	Largely or exclusively male for shell (SH)
Rutledge:	Exclusively female (low N) for shell (SH)
Turner:	Equal (low N) for shell (SH)
Seip:	Exclusively male (low N) for bone (BN)
Hopewell:	Largely male for pearl and shell (PS)

Age Distribution

Hopewell, Seip, Turner:	Largely adult for beads
Bourneville, Kohl, McKenzie, Rockhold, Rutledge, Turner-Marriot:	Exclusively adult (low N) for beads
Ater, Esch, Martin:	Mixed (low N) for beads
Esch:	Mixed (low N) for copper (CP)
Hopewell, Kohl, Martin, Seip, Turner:	Exclusively adult (low N) for copper (CP)
Seip:	Exclusively adult (low N) for iron (IR)
Bourneville, Hopewell, Rockhold, Turner, Turner-Marriot:	Exclusively adult for pearl (PE)
Esch:	Exclusively child (low N) for pearl (PE)
Seip:	Largely adult for pearl (PE)
Ater:	Mixed (low N) for shell (SH)
Hopewell, Rutledge, Seip, Turner:	Exclusively adult for shell (SH)
McKenzie, Seip:	Exclusively adult (low N) for bone (BN)
Hopewell:	Exclusively adult for pearl and shell (PS)
Seip:	Mixed (low N) for pearl and shell (PS)
Martin:	Exclusively child (low N) for bone and copper (C)
Hopewell:	Exclusively adult (low N) for bone and pearl (D)
Hopewell:	Exclusively adult (low N) for pearl, shell, iron, and bone (E)
Hopewell:	Exclusively adult (low N) for shell and bone (K)

Bead Necklaces

Burial/Ceremonial Deposit Distribution

Ater, Hopewell, Martin, Mound City:	Exclusively burial for bead necklaces
Ater, Hopewell, Martin, Mound City:	Exclusively burial (low N) for pearl (PE)
Mound City:	Exclusively burial for shell (SH)
Hopewell, Mound City:	Exclusively burial (low N) for bone (BN)
Ater, Mound City:	Exclusively burial (low N) for pearl and shell (A)
Mound City:	Exclusively burial (low N) for copper and pearl (B)

Sex Distribution

Ater:	Equal (low N) for bead necklaces
Hopewell, Martin:	Exclusively male (low N) for bead necklaces
Ater:	Exclusively female (low N) for pearl (PE)
Hopewell, Martin:	Exclusively male (low N) for pearl (PE)
Ater:	Exclusively male (low N) for pearl and shell (A)

Age Distribution

Ater, Hazlett, Hopewell, Martin:	Exclusively adult for bead necklaces
Ater, Hopewell, Martin:	Exclusively adult (low N) for pearl (PE)

Hazlett:	Exclusively adult (low N) for shell (SH)
Hopewell:	Exclusively adult (low N) for bone (BN)
Ater:	Exclusively adult (low N) for pearl and shell (A)

Bracelets, Anklets

Burial/Ceremonial Deposit Distribution

Ater, Hopewell, Seip:	Largely or exclusively burial for bracelets, anklets
Rutledge, Turner:	Equal (low N) for bracelets, anklets
Hopewell, Rutledge:	Largely or exclusively burial for copper (CP)
Turner:	Exclusively deposit (low N) for copper (CP)
Ater, Hopewell, Seip:	Exclusively burial (low N) for pearl (PE)
Turner:	Exclusively burial (low N) for shell (SH)
Turner:	Exclusively deposit (low N) for copper and silver (A)
Ater:	Exclusively burial (low N) for copper and pearl (B)

Sex Distribution

Ater:	Equal (low N) for bracelets, anklets
Hopewell, Seip:	Exclusively female (low N) for bracelets, anklets
Hopewell:	Exclusively female (low N) for copper (CP)
Ater:	Equal (low N) for pearl (PE)
Seip:	Exclusively female (low N) for pearl (PE)
Ater:	Exclusively male (low N) for copper and pearl (B)

Age Distribution

Ater, McKenzie, Seip, Turner:	Exclusively adult (low N) for bracelets, anklets
Hopewell:	Largely adult (low N) for bracelets, anklets
Hopewell:	Mixed (low N) for copper (CP)
McKenzie:	Exclusively adult (low N) for copper (CP)
Ater, Hopewell, Seip:	Exclusively adult (low N) for pearl (PE)
Turner:	Exclusively adult (low N) for shell (SH)
Ater:	Exclusively adult (low N) for copper and pearl (B)

Bead Strings

Burial/Ceremonial Deposit Distribution

Hopewell, Liberty, Seip:	Largely or exclusively burial for bead strings
Hopewell:	Largely burial (low N) for bone (BN)
Hopewell, Seip:	Exclusively burial (low N) for pearl (PE)

Age Distribution

Hopewell, Seip, West:	Exclusively adult (low N) for bead strings
Hopewell:	Exclusively adult (low N) for bone (BN)
Hopewell:	Exclusively adult (low N) for pearl (PE)
West:	Exclusively adult (low N) for shell (SH)

Hair Skewers

Burial/Ceremonial Deposit Distribution

Hopewell:	Exclusively older adult (low N) for hair skewers

Sex Distribution

Hopewell:	Equal (low N) for hair skewers
Seip:	Exclusively female (low N) for hair skewers

Ownership/Gifting Association

Hopewell, Seip:	Exclusively two (low N) for hair skewers

Containers

Burial/Ceremonial Deposit Distribution

Ater, Esch, Hopeton, Mound City, Seip, Turner:	Largely or exclusively burial for containers
Ginther, Liberty:	Largely or exclusively deposit for containers
Hopewell, Martin, Turner-Marriot:	Equal for containers

Sex Distribution

Ater, Hopeton, Seip:	Exclusively female (low N) for containers
Martin, Turner-Marriot:	Exclusively male (low N) for containers
Turner:	Equal (low N) for containers

Age Distribution

Ater, Bourneville, Hopewell, Hopeton, Turner-Marriot:	Exclusively adult (low N) for containers
Martin:	Mixed for containers
Esch, Turner:	Largely adult for containers

Ownership/Gifting Association

Hopeton, Mound City, Snake Den:	Exclusively one (low N) for containers
Turner-Marriot:	Exclusively three (low N) for containers

Needle, Bodkin

Burial/Ceremonial Deposit Distribution

Ater, Hopeton, Hopewell, Liberty, Mound City, Seip, Turner:	Largely or exclusively burial for needles, bodkins

Sex Distribution

Ater, Hopewell, Turner:	Exclusively male (low N) for needle, bodkin
Hopeton:	Exclusively female (low N) for needle, bodkin

Age Distribution

Ater, Hopeton, Hopewell:	Exclusively adult (low N) for needle, bodkin
Turner:	Mixed (low N) for needle, bodkin

Ownership/Gifting Association

Ater, Hopeton, Mound City, Seip:	Exclusively or largely 1–2 (low N) for needles, bodkins
Hopewell, Turner:	Exclusively or largely several (low N) for needles, bodkins
Liberty:	Exclusively many (low N) for needles, bodkins

Bone, Antler Points and Knives

Burial/Ceremonial Deposit Distribution

Esch, Hopewell, Mound City, Turner:	Exclusively burial (low N) for bone/antler points or knives

Sex Distribution

Circleville, Hopewell:	Exclusively adult (low N) for bone/antler points or knives

Age Distribution

Esch, Hopewell, Turner:	Exclusively male (low N) for bone/antler points or knives

Ownership/Gifting Association

Esch, Hopewell:	Exclusively several (low N) for bone/antler points or knives
Mound City, Turner:	Exclusively one (low N) for bone/antler points or knives

Copper Rods

Burial/Ceremonial Deposit Distribution

Esch, Seip:	Exclusively burial (low N) for copper rods

Sex Distribution

Esch:	Exclusively male (low N) for copper rods

Age Distribution

Esch:	Exclusively adult (low N) for copper rods

Ownership/Gifting Association

Esch, Seip:	Exclusively one (low N) for copper rods

Other Flint Bifaces

Burial/Ceremonial Deposit Distribution

Ater, Esch, Mound City, Rockhold, Seip, Turner-Marriot, Wells:	Exclusively burial for other flint bifaces
Ginther, Martin, McKenzie Area, N Benton:	Exclusively deposit (low N) for other flint bifaces
Hopewell, Tremper, Turner:	Equal for other flint bifaces
Ater, Hopewell, Mound City, Rockhold, Seip, Tremper, Turner, Turner-Marriot, Wells:	Largely or exclusively burial for points/knives (PK)
Ginther, Martin, N Benton:	Exclusively deposit (low N) for points/knives (PK)
Hopewell:	Exclusively burial (low N) for points/knives (PK)
Mound City:	Exclusively burial (low N) for points/knives (PK)
Turner:	Exclusively deposit (low N) for points/knives (PK)
Mound City:	Exclusively burial (low N) for unknown bifaces (UB)
Hopewell:	Exclusively deposit (low N) for symmetrical bifaces (SB)
Seip, Tremper:	Exclusively burial (low N) for odd bifaces (OB)
Hopewell, Tremper:	Exclusively deposit (low N) for points/knives and unknown bifaces (C)

Sex Distribution

Esch, Hopewell, Seip, Turner, Turner-Marriot,	
Esch, Hopewell, Seip, Turner, Turner-Marriot:	Exclusively male (low N) for points/knives (PK)

Age Distribution

Ater, Esch, Hopewell, McKenzie, Seip, Turner, Turner-Marriot:	Exclusively adult for flint bifaces
Ater, Esch, Hopewell, McKenzie, Seip, Turner, Turner-Marriot:	Exclusively adult for points/knives (PK)
McKenzie:	Exclusively adult (low N) for unknown bifaces (UB)
Hopewell:	Exclusively adult (low N) for points/knives and unknown bifaces (C)

Ownership/Gifting Association

Ater, Esch, McKenzie, Mound City, Rockhold, Seip, Tremper, Turner, Turner-Marriot, Wells:	Largely or exclusively 1–3 for other flint bifaces
Hopewell:	Exclusively one or several (low N) for other flint bifaces
Circleville:	Exclusively several (low N) for other flint bifaces
Ater, Esch, McKenzie, Mound City, Rockhold, Seip, Tremper, Turner, Turner-Marriot, Wells:	Largely or exclusively 1–3 for points/knives (PK)
Hopewell:	Exclusively one or several (low N) for points/knives (PK)
Circleville:	Exclusively several (low N) for points/knives (PK)
Circleville:	Exclusively several (low N) for unknown bifaces (UB)
McKenzie:	Exclusively 20 (low N) for unknown bifaces (UB)
Mound City:	Exclusively one (low N) for unknown bifaces (UB)
Seip, Tremper:	Exclusively one (low N) for odd bifaces (OB)

Other Flint Prismatic Blades

Burial/Ceremonial Deposit Distribution

Ater, Hopewell, Liberty, Mound City, Seip, Turner:	Largely or exclusively burial for other flint prismatic blades

Ginther, Tremper:	Exclusively deposit (low N) for other flint prismatic blades
N Benton:	Equal (low N) for other flint prismatic blades
Sex Distribution	
Ater:	Exclusively male (low N) for other flint prismatic blades
Hopewell:	Largely female (low N) for other flint prismatic blades
Turner:	Equal (low N) for other flint prismatic blades
Age Distribution	
Ater, Hopewell, Liberty, N Benton, Seip, Shilder:	Exclusively adult for other flint prismatic blades
Turner:	Largely adult for other flint prismatic blades
Ownership/Gifting Association	
Ater, Hopewell, N Benton, Shilder, Turner:	Largely or exclusively 1–3 for other flint prismatic blades
Liberty, Seip:	Largely several to many for other flint prismatic blades
Mound City:	Equally two or several (low N) for other flint prismatic blades
Miscellaneous Iron Tools	
Burial/Ceremonial Deposit Distribution	
Hopewell:	Exclusively deposit (low N) for miscellaneous iron tools
Seip:	Exclusively burial (low N) for miscellaneous iron tools
Hopewell:	Exclusively deposit (low N) for perforator (PF)
Seip:	Exclusively burial (low N) for drill (DR)
Hopewell:	Exclusively deposit (low N) for drill (DR)
Miscellaneous Copper Tools	
Burial/Ceremonial Deposit Distribution	
Hopewell:	Exclusively deposit (low N) for miscellaneous copper tools
Mound City:	Largely burial (low N) for miscellaneous copper tools
Hopewell:	Exclusively deposit (low N) for perforator (PF)
Hopewell:	Exclusively deposit (low N) for awl (AW)
Mound City:	Exclusively burial (low N) for awl (AW)
Mound City:	Exclusively deposit (low N) for chisel (CH)
Raw Shell[7]	
Burial/Ceremonial Deposit Distribution	
Ginther, Mound City, Turner, Turner-Marriot:	Exclusively deposit (low N) for raw shell
Hopewell, Liberty:	Exclusively burial (low N) for raw shell
Hopewell, Liberty:	Exclusively burial (low N) for little (LT)
Mound City:	Exclusively deposit (low N) for little (LT)
Turner-Marriot:	Exclusively deposit (low N) for large amount (LG)
Turner:	Exclusively deposit (low N) for thousands (TH)
Age Distribution	
Hopewell:	Exclusively adult (low N) for raw shell
Hopewell:	Exclusively adult (low N) for light (L)
Raw Obsidian[8]	
Age Distribution	
Hopewell:	Exclusively adult (low N) for raw obsidian
Hopewell:	Exclusively adult (low N) for large amount (LG)
Raw Cannel Coal	
Burial/Ceremonial Deposit Distribution	
Turner:	Exclusively deposit (low N) for raw cannel coal
Turner:	Exclusively deposit (low N) for large amount (LG)
Raw Copper	
Burial/Ceremonial Deposit Distribution	
Hopewell, Mound City:	Equal (low N) for raw copper
Turner:	Exclusively deposit (low N) for raw copper

Hopewell:	Equal (low N) for little (LT)
Mound City:	Exclusively deposit (low N) for little (LT)
Hopewell, Mound City:	Exclusively burial (low N) for large amount (LG)
Turner:	Exclusively deposit (low N) for large amount (LG)
Age Distribution	
Hopewell:	Exclusively adult (low N) for raw copper
Hopewell:	Exclusively adult (low N) for light (L)
Hopewell:	Exclusively adult (low N) for large amount (LG)
Raw Flint	
Burial/Ceremonial Deposit Distribution	
Ater, Hopewell:	Exclusively burial for raw flint
Ginther:	Exclusively deposit (low N) for raw flint
Ater:	Exclusively burial for little (LT)
Hopewell:	Exclusively burial for large amount (LG)
Age Distribution	
Ater, Hopewell, Seip:	Exclusively adult (low N) for raw flint
Ater, Seip:	Exclusively adult (low N) for light (L)
Hopewell:	Exclusively adult (low N) for large amount (LG)
Raw Galena	
Burial/Ceremonial Deposit Distribution	
Ater, Liberty, Rockhold, Seip, Turner:	Exclusively burial (low N) for raw galena
Hopewell, Mound City:	Equal (low N) for raw galena
N Benton, Tremper:	Exclusively deposit (low N) for raw galena
Hopewell, Rockhold, Turner:	Exclusively burial (low N) for little (LT)
N Benton:	Exclusively deposit (low N) for little (LT)
Ater, Liberty, Seip, Turner:	Exclusively burial (low N) for large amount (LG)
Hopewell, Tremper:	Exclusively deposit (low N) for large amount (LG)
Mound City:	Equal (low N) for large amount (LG)
Sex Distribution	
Rockhold:	Exclusively female (low N) for raw galena
Rockhold:	Exclusively female (low N) for little (LT)
Age Distribution	
Ater, Bourneville, Hopewell, Rockhold, Seip, Turner:	Exclusively adult (low N) for raw galena
Bourneville, Hopewell, Rockhold, Turner:	Exclusively adult (low N) for little (LT)
Ater, Seip, Turner:	Exclusively adult (low N) for large amount (LG)
Raw Gold	
Burial/Ceremonial Deposit Distribution	
Turner:	Exclusively deposit (low N) for raw gold
Turner:	Exclusively deposit (low N) for large amount (LG)
Raw Graphite	
Burial/Ceremonial Deposit Distribution	
Hopewell:	Exclusively deposit (low N) for raw graphite
Hopewell:	Exclusively deposit (low N) for large amount (LG)
Age Distribution	
Snake Den:	Exclusively child (low N) for raw graphite
Snake Den:	Exclusively child (low N) for little (LT)

Raw Hematite

Burial/Ceremonial Deposit Distribution

Hopewell:	Exclusively deposit (low N) for raw hematite
Kohl:	Exclusively burial (low N) for raw hematite
Hopewell:	Exclusively deposit (low N) for large amount (LG)
Kohl:	Exclusively burial (low N) for little (LT)

Age Distribution

Kohl:	Exclusively adult (low N) for raw hematite
Kohl:	Exclusively adult (low N) for little (LT)

Raw Iron

Burial/Ceremonial Deposit Distribution

Hopewell:	Exclusively burial (low N) for raw iron
Turner:	Exclusively deposit (low N) for raw iron
Hopewell:	Exclusively burial (low N) for little (LT)
Turner:	Exclusively deposit (low N) for large amount (LG)

Age Distribution

Hopewell, Marietta:	Exclusively adult (low N) for raw iron
Hopewell, Marietta:	Exclusively adult (low N) for little (LT)

Raw Mica[9]

Burial/Ceremonial Deposit Distribution

Ater, Esch, Hopeton, Hopewell, Liberty, Martin:	Largely or exclusively burial (low N) for raw mica
Ginther, Turner-Marriot:	Exclusively deposit (low N) for raw mica
Mound City, Turner:	Equal (low N) for raw mica
Ater, Esch, Hopeton, Liberty, Martin:	Exclusively burial (low N) for little (LT)
Ginther, Turner-Marriot:	Exclusively deposit (low N) for little (LT)
Hopewell, Turner:	Equal (low N) for little (LT)
Mound City:	Exclusively burial (low N) for large amount (LG)

Sex Distribution

Ater, Martin:	Exclusively male (low N) for raw mica
Ater, Martin:	Exclusively male (low N) for little (LT)

Age Distribution

Ater, Hopewell, Turner:	Exclusively adult (low N) for raw mica
Esch, Martin:	Mixed (low N) for raw mica
Ater, Hopewell, Turner:	Exclusively adult (low N) for little (LT)
Esch, Martin:	Mixed (low N) for little (LT)

Mica Scrap

Burial/Ceremonial Deposit Distribution

Ater, Esch, Liberty, Mound City:	Exclusively burial (low N) for mica scrap
Ginther:	Exclusively deposit (low N) for mica scrap
Ater, Esch, Liberty:	Exclusively burial (low N) for cut fragments (FC)
Ginther:	Exclusively deposit (low N) for broken fragments (FB)

Age Distribution

Ater, Esch, Shilder:	Exclusively adult (low N) for mica scrap
Ater, Esch:	Exclusively adult (low N) for cut fragments (FC)
Shilder:	Exclusively adult (low N) for broken fragments (FB)

Raw Pearls

Burial/Ceremonial Deposit Distribution

Hopewell, Turner:	Equal (low N) for raw pearls
Seip:	Exclusively burial (low N) for raw pearls

Sex Distribution
Seip: Equal (low N) for raw pearls

Age Distribution
Hopewell, Seip, Turner: Exclusively adult (low N) for raw pearls

Ownership/Gifting Association
Hopewell, Turner: Exclusively several (low N) for raw pearls
Seip: Exclusively nine or hundreds (low N) for raw pearls

Raw Pyrite

Burial/Ceremonial Deposit Distribution
Hopewell: Exclusively deposit (low N) for raw pyrite
Hopewell: Exclusively deposit (low N) for little (LT)

Raw Silver

Burial/Ceremonial Deposit Distribution
Hopewell: Equal (low N) for raw silver
Hopewell: Equal (low N) for little (LT)

Age Distribution
Hopewell: Exclusively adult (low N) for raw silver
Hopewell: Exclusively adult (low N) for little (LT)

Raw Tortoise Shell

Burial/Ceremonial Deposit Distribution
Ater, Esch, Seip: Exclusively burial (low N) for raw tortoise shell
Ater, Esch, Seip: Exclusively burial (low N) for little (LT)

Sex Distribution
Ater: Exclusively male (low N) for raw tortoise shell
Seip: Exclusively female (low N) for raw tortoise shell
Ater: Exclusively male (low N) for little (LT)
Seip: Exclusively female (low N) for little (LT)

Age Distribution
Ater, Seip: Exclusively adult (low N) for raw tortoise shell
Esch: Exclusively child (low N) for raw tortoise shell
Ater, Seip: Exclusively adult (low N) for little (LT)
Esch: Exclusively child (low N) for little (LT)

Raw Quartz[10]

Burial/Ceremonial Deposit Distribution
Ginther, Mound City: Exclusively deposit (low N) for raw quartz
Hopewell: Equal (low N) for raw quartz

Ownership/Gifting Association
Hopewell: Exclusively several (low N) for raw quartz
Snake Den: Exclusively one (low N) for raw quartz

Worked Quartz[11]

Burial/Ceremonial Deposit Distribution
Hopewell: Exclusively deposit (low N) for worked quartz

Reel Gorgets[12]

Burial/Ceremonial Deposit Distribution
Hopewell, Tremper, Turner: Exclusively deposit (low N) for reel gorgets
Turner: Exclusively deposit (low N) for stone (ST)
Hopewell: Exclusively deposit (low N) for shell (SH)
Tremper: Exclusively deposit (low N) for copper and shell (A)

Age Distribution
Hazlett: Exclusively adult (low N) for reel gorget
Hazlett: Exclusively adult (low N) for copper (CP)

NOTE

1. The one major exception to this pattern is at the early Scioto Hopewell site of Mound City, where eleven individuals in three mounds were buried with obsidian and/or quartz bifaces.
2. Aside from involving fewer variables, observations, and sites, the older version of the HOPEBIOARCH data base analyzed here differs from the current version in some other ways. Six of the variables in the older version were subdivided, or were combined, or were split and their different parts joined with different variables, compared to those in the current HOPEBIOARCH data base. One variable in the old data base was heavily reworked for its variable states when creating the new data base. Three of the variables were renamed. The variables in the current HOPEBIOARCH data base that resulted from these alterations are discussed in subsequent Notes 3–12. In addition, a few variables in the old data base were reworked in minor ways for their variable states when developing the new data base. Their new variable states are not considered here. Further, since the time of analysis of the old data base, some of the published and unpublished documents on its sites have been resurveyed and some new documents have been examined, resulting in some additions and modifications to entries in the variables in the old data base, and the addition of a few more burials or ceremonial deposits to a few sites. These additions and modifications are not reflected in the study reported here.
3. Variable: Water. For this variable, the current version of the HOPEBIOARCH data base includes an additional variable state (PLT: possible water barrier of light stone) that was not coded in the old version of the data base. The consequence of this change is a considerable increase in the number of proveniences with entries (see Water, Chapter 8).
4. Variable: Animal Carvings. This old variable is called AnimImage in the current HOPEBIOARCH data base. The new variable has a broader definition than the old one. It includes various forms of animal cutouts in addition to figurines and carvings that depict animals (see Chapter 8, AnimImage).
5. Variable: Pendants/Gorgets. The variable states of this variable were substantially changed when developing the current version of the HOPEBIOARCH data base. Many new states were added, and some older states were subdivided (see Chapter 8, Pendant/Gorget). However, the distributions of the old variable states provide insights into the distributions of pendants and gorgets generally, and are relevant in a number of instances where an old state matches a new one.
6. Variable: Antlers. This old variable was removed from the current version of the HOPEBIOARCH data base and its constituent elements were distributed among the new variables, DeerPP and GoatHorn.
7. Variable: Raw Shell. This old variable was renamed MiscShellObj in the current version of the HOPEBIOARCH data base and now includes a number of items in addition to unworked shells (see Chapter 8, MiscShellObj).
8. Variable: Raw Obsidian. This old variable was renamed MiscObsid in the current version of the HOPEBIOARCH data base and now includes some items in addition to unworked obsidian (see Chapter 8, MiscObsid.)
9. Variable: Raw Mica. This old variable has been renamed MicaScrap in the current version of the HOPEBIOARCH data base. Its variable states are the same as those of MicaRaw – light and heavy/large amounts of mica fragments, bits, and flakes.
10. Variable: Raw Quartz. This old variable was renamed QuartzCryst in the current version of the HOPEBIOARCH data base.
11. Variable: Worked Quartz. This old variable was renamed QuartzScrap in the current version of the HOPEBIOARCH data base.
12. Variable: Reel Gorgets. This old variable was relocated as a variable state under the Pendant/Gorget variable in the current version of the HOPEBIOARCH data base.

Chapter 13

Contextualizing Preanalyses of the Ohio Hopewell Mortuary Data, II: Associations of Artifact Classes across Burials

CHRISTOPHER CARR

The social and ritual lives of a past people can sometimes be known through the paraphernalia and symbols that individuals used in the course of their social relations and in performing their social roles. Ohio Hopewell diviners, for example, used mica mirrors, reflective galena cubes, transparent quartz and gem bifaces, and obsidian bifaces, individually and together in various combinations. Both the ceremonial functions of the individual artifact classes and the ceremonial use of multiple artifact classes as a set to accomplish particular ritual goals reveal the workings of diviners in Ohio Hopewell societies.

This chapter continues the contextualizing preanalyses that are needed by a researcher to reconstruct the social and ritual lives of Ohio Hopewell peoples and that were begun in Chapter 12. Here, patterns of association and dissociation of many kinds of Ohio Hopewell ritual paraphernalia and symbols of social roles are documented across burials from multiple ceremonial centers. The associations and dissociations are useful to archaeologists in two ways. First, they can help to identify and confirm the ritual functions and social role associations of the artifact classes. A piece of ritual paraphernalia or a social role marker, by its symbolic nature, may not have a function or role association that is obvious from its form and material composition. Also, an individual kind of Ohio Hopewell paraphernalia or role marker may have historic Woodland Native American analogs that had a wide diversity of uses and role associations and that consequently do not give clear insight into the specific function(s) and role association(s) that the Hopewell artifact class might have had. This situation is very much evident in Table 11.3 and Appendix 11.8. However, if an archaeologist can suggest a range of possible functions of an artifact class from ethnohistoric analogs and/or archaeological hints, and if the artifact class associates systematically in burials with another class of a known specific function, then the range of possible functions of the unknown class can be narrowed to ones equivalent to or complementary to that of the known artifact class. The presumption in this case is that the two artifact classes were used together by people in some one kind of ritual or social role, or set of closely related roles. Similarly, if each of a suite of artifact classes can be identified for its function only generally, and if the different artifact classes associate regularly with one another across burials, then the likely function of each artifact class can be narrowed to the one(s) that the artifact classes share in common. Again, it is presumed that the suite of artifact classes were used together by people in some one kind of ritual or social role or set of closely related roles. Both kinds of preanalyses, by contextualizing artifact classes in relation to one another, allow the researcher to bootstrap him or herself through a maze of possible functions and role associations of a set of artifact classes to clearer identifications of their probable function(s) and role association(s). As mentioned in Chapter 11, this strategy is close to Turner's (1969) idea of constructing the "positional meaning" of a symbol within a suite of associated symbols and their meanings.

The second way in which patterns of association and dissociation among ritual paraphernalia and social symbols of various kinds can be useful is in laying the foundation for analyses of social organization – in particular, by defining the basic social roles that constituted a past society's operations. A social role – as a suite of rights, duties, and the tasks or actions implied by them – can be identified archaeologically by the artifact class(es) used in the course of carrying it out. The artifacts may be utilitarian tools, ritual paraphernalia, symbols of the social role, and/or symbols of the prestige of the role. When a role uses multiple artifact classes, an association among them archaeologically, and their dissociation from other artifact classes, can help to reveal the role. When a role uses only one artifact class, its dissociation from all other classes helps to reveal that role. Once the basic roles within a past society have been identified, then more interesting questions can be asked, such as what roles were bundled or not together in defining social positions, whether roles tended to be centralized within a few social positions or segregated among many social positions, the degree of synergy or conflict among the roles embodied in a social position and how conflicts in their goals were resolved, the criteria by which personnel were recruited into social roles, the degree to which social roles were institutionalized, the social scheduling/cycling of operation and quiescence of social roles over a year, changing patterns of role organization over longer periods of time, and how these aspects of social organization relate to other cultural and environmental matters (e.g., Carr and Case 2005b).

This chapter is intended to help researchers in their efforts to dentify the ritual functions and social role associations of Ohio Hopewell artifact classes, and to define the basic social roles within Ohio Hopewell societies. The chapter does so by presenting a number of preanalyses that document various patterns of association and dissociation among classes of ritual paraphernalia and symbols of social roles.

METHODS

Patterns of association and dissociation among artifact classes are presented here for two different kinds of archaeological deposits: burials, and ceremonial deposits that lack human remains. Ohio Hopewell burials and ceremonial deposits have different cultural origins and are useful for revealing different aspects of Ohio Hopewell societies (Chapter 4). Artifact patterning across burials can be used to identify in great detail a wide range of roles that constituted Ohio Hopewell societies: leadership roles, other prestigious roles, gender roles, age-specific roles, and roles defined by membership in sodalities, clan-based ceremonial societies, and specialized shaman-like professional societies. The roles had by specific individuals can also be identified. (See Table 4.2 for a listing of leadership roles and some others.) Fine-grained resolution of the roles in Ohio Hopewell societies is possible with burial data because an Ohio Hopewell burial commonly allows the analytic isolation of an individual and the accoutrements of some of his or her particular social roles. Roles of multiple individuals are sometimes, but not overwhelmingly, confounded in a single Ohio Hopewell burial through mourners having placed artifacts that marked their own social roles in the grave of the deceased person (Carr et al. 2005).

Artifact patterning across Ohio Hopewell ceremonial deposits that lack human remains is predisposed to identifying a more limited range of social roles and tends to be less clear in the roles that it does reveal. Ohio Hopewell ceremonial deposits were commonly produced by the gathering of a sodality, a clan-based society, or a shaman-like professional society that held a ceremony and then decommissioned the paraphernalia and/or role symbols of its members together in a deposit. Social roles in one or another of these three kinds of social units are the roles most commonly represented by artifacts in ceremonial deposits; other social roles are less well represented (Chapter 4, Sodalities and Ceremonial Societies; Ritual Gatherings and Alliances: The Diverse Sociocultural Contexts of Gatherings). In addition, patterns of association among artifact classes across deposits tend to muddle social roles because deposits frequently contain some paraphernalia or social role markers that are extraneous to the sodality, clan-based society, or shaman-like professional society that gathered, celebrated, and decommissioned their ceremonial artifacts together (Chapter 4, Table 4.8; Carr et al. 2005:490–494, Table 13.3). The extraneous artifact classes may represent additional social roles that sodality or ceremonial society members had, or the actual participation of additional persons who had roles outside that of the sodality or ceremonial society. Further, two Ohio Hopewell ceremonial deposits were extraordinarily diverse in the artifact classes and social roles that they encompassed, representing the gathering and celebrating of many people of many roles from multiple local symbolic communities (Altar 1 under Mound 25 at the Hopewell earthwork; the Central Altar under Mound 3 at the Turner earthwork). These two ceremonial deposits have little utility in clearly defining individual social roles through association analysis. In general, patterns of association and dissociation among ritual paraphernalia and social role markers found within ceremonial deposits are better suited to exploring the nature, social composition, and organization of ritual gatherings (e.g., Carr et al. 2005) once social roles have been already identified through the analysis of burials, than the patterns are to identifying social roles from scratch.

There are a small number of kinds of Ohio Hopewell ceremonial paraphernalia and social role markers that apparently were placed only in ceremonial deposits, not burials. These artifact classes include: a quartz cup, a quartz disk, quartz cones, knapped quartz debris, marbles, copper and mica atlatl/owl effigies, other owl effigies, plummets, one or two small triangular wands, copper and stone effigy fans, large "Copena-style" smoking pipes, real alligator teeth (in contrast to effigy ones), raw pyrite, and raw cannel coal. For these artifact classes, patterns of association and dissociation among them and other classes across ceremonial deposits are among the few kinds of contextual evidence available for gaining insight into or corroborating the social roles that they represent. Consequently, the patterns have a special potential importance. However, for the associations and dissociations to be useful in this manner, it is necessary to carefully focus analysis on those ceremonial deposits that are fairly homogeneous in the social roles that are represented by them, in order to minimize the muddling of social roles. This cannot always be attained, because these artifact classes are rare and the selection of ceremonial deposits with them is limited. The infrequency of ceremonial deposits with these artifact classes also poses the problem of finding chance associations and dissociations rather than culturally stable ones. Caution is warranted in deciding whether to place more weight on the form and material nature of these artifact classes or on their patterns of association or dissociation with other artifact classes when trying to identify their functions and the social roles that they indicate.

The measure that is used here to document the degree of association or dissociation among classes of paraphernalia and social role markers is the Jaccard similarity coefficient. The coefficient has the form:

$$J_{xy} = a/(b+c)$$

where a is the counts of positive matches and b and c are counts of mismatches of two artifact classes x and y in a four cell, two-way contingency table of counts of burials or ceremonial deposits that share and do not share the two artifact classes. This coefficient is chosen because it eliminates negative matches from consideration (the d cell of a four cell, two-way contingency table). Thus, a pair of artifact classes is not considered strongly associated when both are absent from the same burials or ceremonial deposits.

In all, nine matrices of Jaccard coefficients of association among classes of paraphernalia and social role markers are presented, in Appendices 13.3, 13.4, 13.5B, 13.6B, 13.7B, 13.8B, 13.9B, 13.10B, and 13.11B. The matrices were calculated in SYSTAT 7.0. from the matrix of burials, ceremonial deposits, and their artifact classes, as given in Appendix 13.1. The Jaccard matrices differ from one another in whether they consider burials or ceremonial deposits, in the selection of variables they encompass, and in the ceremonial centers to which they pertain. Details are as follows.

Appendix 13.1 is an occurrence matrix (presence-absence values) of 81 classes of artifacts found in 782 burials in 16 Ohio Hopewell ceremonial sites and 57 ceremonial deposits in 11 Ohio Hopewell ceremonial sites. The matrix is a subset of the HOPEBIOARCH data base presented in Chapter 6 (Appendix 6.1) and provides information as it had been assembled by March, 2002, when the Jaccard similarity matrices were calculated. The sites and artifact classes included in the matrix are listed in Appendix 13.1. Correspondences and not between the smaller matrix in Appendix 13.1 and the larger HOPEBIOARCH data base in Appendix 6.1 are of the same kinds discussed in Chapter 12 (Documentation Methods, and Note 2). The matrices of Jaccard coefficients presented in Appendices 13.3–13.10 were all derived from the matrix in Appendix 13.1 or various subsets of it.

Appendix 13.2 lists the abbreviated names of all of the variables (artifact classes) in Appendix 13.1 and their correspondences to variables and variable states (artifact classes and class states) in the HOPEBIOARCH data base. Appendix 13.2 shows that some variables in Appendix 13.1 are combinations of others and quantitatively redundant with them. For example, the variable MUSIC is the presence of either a panpipe or a flute, and is redundant with the variable PANPIPE and the variable FLUTE. When analyzing associations among artifact classes through multidimensional scaling, cluster analysis, or other grouping routines, only one of a suite of redundant variables should be selected (e.g., just MUSIC, or PANPIPE and FLUTE, or PANPIPE, or FLUTE, but not MUSIC and PANPIPE, or MUSIC and FLUTE, or MUSIC and PANPIPE and FLUTE). To include redundant variables in a grouping analysis will undesirably give that suite of variables more influence over grouping results than other variables.

Appendix 13.3 is a matrix of Jaccard similarity coefficients derived from a subset of the matrix in Appendix 13.1, using only burials (observations 2–783), not ceremonial deposits (observations 784–840). Appendix 13.4 is a matrix of Jaccard similarity coefficients derived from a subset of the matrix in Appendix 13.1, using only ceremonial deposits (observations 784–840), not burials (observations 2–783). Redundant variables are included in both Appendix 13.3 and 13.4. Redundancies should be removed in one fashion or another, and in accord with research goals, before analyzing either matrix with a grouping routine.

Appendix 13.5B is a matrix of Jaccard similarity coefficients derived from a subset of the matrix in Appendix 13.1, using only artifact types that occur in two or more burials. A total of 41 artifact types meet this criterion. Appendix 13.6B is a matrix of Jaccard similarity coefficients derived from a subset of the matrix in Appendix 13.1, using only artifact types that occur in two or more ceremonial deposits. A total of 21 artifact types meet this criterion. By focusing on artifact types that occur in two or more burials or two or more caches, these Jaccard matrices possibly reflect more stable patterns of association among artifact types than the patterns in Appendices 13.3 and 13.4. Redundant variables have been eliminated in both Appendices 13.5B and 13.6B. The occurrence matrices from which Appendices 13.5B and 13.6B were derived are given in Appendices 13.5A and 13.6A, respectively. Appendix 13.5A contains information on 767 burials at 15 ceremonial centers. These proveniences and the 41 artifact classes are listed in the matrix. Appendix 13.6A contains information on 56 ceremonial deposits at 11 ceremonial centers. These proveniences and the 21 artifact classes are listed in the matrix

Appendices 13.7B–13.10B are matrices of Jaccard similarity coefficients that pertain to four different ceremonial centers or mounds that differ in their age and patterns of association among artifact classes (Chapter 4, The Process of Segregation of Leadership Roles over Time, Tables 4.3, 4.4). The four centers are: Mound City (Appendix 13.7B), Hopewell Mound 25 (Appendix 13.8B), Seip-Pricer mound (Appendix 13.9B), and Ater mound (Appendix 13.10B). Each matrix has the same 45 artifact classes, which occur at one or more of the four ceremonial centers. Each matrix includes only artifact types that occur in two or more burials at one center or another. Redundant variables have been excluded from all of the matrices. These matrices allow the examination of changing patterns of association among artifact classes over time. The occurrence matrices from which Appendices 13.7B–13.10B were derived are given in Appendices 13.7A–13.10A, respectively. These appendices contain information on 106, 102, 123, and 60 burials, respectively, at the four ceremonial centers. The burials and centers are listed in the matrices.

The global analysis of the organization of social roles at 15 Ohio Hopewell ceremonial centers, which is reported in this book in Table 4.2 and in *Gathering Hopewell* in Table 5.5 (Carr and Case 2005b:216–218), is based on a multidimensional scaling of the Jaccard matrix in Appendix 13.5B for artifact classes found in burials, supplemented by a multidimensional scaling of the Jaccard matrix in Appendix 13.6B for artifact classes found only in ceremonial deposits.[1] The site-specific analyses of the organization of social roles at each of Mound City, Hopewell Mound 25, the Seip-Pricer mound, and the Ater mound, which are reported in this book in Table 4.3 and in *Gathering Hopewell* in Table 5.7 (Carr and Case 2005b:225–227), are based on multidimensional scalings of the matrices in Appendices 13.7B, 13.8B, 13.9B, and 13.10B for artifact classes found in burials.

Appendices 13.11A and 13.11B concern the association of artifact markers of clans with other kinds of artifacts. They are useful for examining the particular social roles associated with particular clans, and with prestigious clan members in contrast to less prestigious ones. Appendix 13.11A lists the occurrences of 15 classes of clan markers or possible clan markers and 48 other artifact classes among 786 burials at 16 ceremonial centers. The proveniences and artifact classes are listed in the matrix. Clan markers are broken down into two kinds: prestigious ones that are animal power-part effigies made of copper, mica, or occasionally stone, bone, or antler; and ones that perhaps indicated less prestige and that are real animal power parts. The 48 other artifact classes are ones that could be organized by their associations (Appendices 13.5B, 13.6B) across burials within 15 ceremonial centers into sets that marked various social roles (Table 4.2). Appendix 13.11B is a matrix of Jaccard similarity coefficients among the clan markers and other artifact classes and is derived from the occurrence matrix in Appendix 13.11A.

The study of the different social roles into which various Ohio Hopewell clans were recruited, as presented in this book in Chapter 4 (Clan Organization, Table 4.6) and in *Gathering Hopewell* in Table 8.14 (Thomas et al. 2005:372–373), is based on a multidimensional scaling of the Jaccard matrix in Appendix 13.11B.[2]

NOTES

1. The global analysis includes only 15 sites, rather than the 16 sites in the matrix in Appendix 13.1, from which the matrix in Appendix 13.5B was derived. This is the case because the burials at one site, the Westenhaver site, in the matrix in Appendix 13.1 had no artifacts, other than clan markers. Practically in the global analysis, it is as if the Westenhaver site were excluded, leaving only 15 sites.
2. Thomas et al. (2005:371) report that 767 burials from 15 ceremonial centers were used in their analysis of the social roles of clans. In actuality, the 782 burials from the 16 ceremonial centers reported in Appendix 13.11A were analyzed. Thomas et al. mistakenly did not report the use of burials from the Westenhaver site. However, because burials at the Westenhaver site had no artifacts, other than clan markers, its makes no contribution to the analysis of associations between clan markers and other artifacts. This is good, because the Westenhaver site dates to the Early Woodland period rather than the Middle Woodland, and should not have been included in the analysis.

Chapter **14**

Data Accuracy and Precision: A Comparison of the HOPEBIOARCH Data Base to N. Greber's and T. Lloyd's Data Bases

Christopher Carr, Beau J. Goldstein, and D. Troy Case

Accurate reconstruction of the social and cultural lives of Ohio Hopewell peoples requires sound bioarchaeological data. Assessing the quality of the information presented in the HOPEBIOARCH data base is thus a necessary precursor to using it successfully to search for and analyze socially and culturally significant material patterns.

There are at least four essential domains from which inaccuracies, biases, and gaps in the information in the data base have arisen: field sampling, field and laboratory observation and reporting, curation, and data coding. This chapter briefly overviews the first three of these problematic areas, enumerating many of the specific factors of which a researcher must be aware when working with the HOPEBIOARCH data base. The chapter then goes on to consider in detail the fourth area of concern – quality of data coding based on extant sources of information. Several potential sources of variation in the way the information might have been coded by different persons are discussed. The actual magnitude of this inter-observer variation is then estimated by comparing the HOPEBIOARCH data set to data sets previously assembled by N. Greber (1976) and T. Lloyd (n.d.) for the Seip-Pricer mound, the Ater Mound, the Burial Place within the Great Enclosure of the Turner earthwork, and mounds within the Hopewell earthwork. In this way, the precision or replicability of our coding of extant information into the HOPEBIOARCH data set, as opposed to the accuracy and completeness of the base information, itself, is assessed.

FIELD SAMPLING

The issue of field sampling involves the kinds of Ohio Hopewell ceremonial centers and the portions of them that were selected or not for excavation and reporting by previous researchers. The implications of extant field samples and coverage for reconstructing Hopewell social life have been addressed in detail by Carr (2005a:271–273, 277–280, 293–304, 321–323). In brief, within each of the major regions of Hopewellian occupation in Ohio, a number of social and ritual patterns led to the construction of a complicated ceremonial and mortuary landscape that usually cannot be characterized adequately by the excavation of only a single Ohio Hopewell ceremonial center or mound, or a portion of one. This is true even for a large earthwork like Seip or Hopewell, or a large mound like the Pricer mound at Seip or Mound 25 at Hopewell. The complicating social and ritual patterns that make this the case include: functional differentiation of Hopewellian ceremonial centers, the use of multiple centers by a single society for burying its different social segments, the use of a single center by multiple societies for their burial programs, functional differentiation of mounds within a center, the use of multiple mounds within a center by a single society for burying its different social segments, and the use of a single mound by multiple societies to bury their dead (Chapter 3; Carr 2005a; Ruby et al. 2005). To the extent that various mounds of specific social and ritual functions, or portions of them, have not been excavated in a region, social analysis of extant bioarchaeological remains may be incomplete or skewed. Lists of the mounds and parts of mounds that have and have not been excavated at each site coded in the HOPEBIOARCH data base are presented in detail in the site descriptions in Chapter 7.

FIELD AND LABORATORY OBSERVATIONS

Inaccuracies, biases, and gaps in field and laboratory observations and reports of Ohio Hopewell ceremonial sites comprise a second problematic area that affects the quality of information in the HOPEBIOARCH data base. These difficulties are a product of primarily nascent archaeological practice during the 1880s–1930s, when many of the sites were explored. Observations made standardly in the field and lab and reported today were noted differentially then, both within and among excavators and sites. Internal mound proveniences of graves and their associated human and artifactual remains, the age and sex of skeletons, forms of tombs, counts of artifacts within graves, positions of artifacts within graves, and the forms of artifacts were each recorded with varying degrees of precision, from quite good to entirely missing information. Archaic names for some artifact classes, which preclude their certain identification in modern terms, are also problematic. These issues are discussed in Chapter 1 (Empirical Significance of the Data Bases). Chapter 7 provides for each site in the HOPEBIOARCH data base subjective evaluations of the adequacy of reporting of age and sex information on human remains, the stratigraphic and horizontal locations of human remains and artifacts, and the positions of artifacts within graves.

CURATION IN MUSEUMS

A third arena that has affected the information reported in the HOPEBIOARCH data base is constituted by a variety of curatorial problems. Incomplete information in the data base can be attributed in part to missing field notes and maps; incomplete or missing museum accession records; human remains that were not brought in from the field, were commingled when stored, were not stored by grave, and/or were deaccessioned from museums at a later time; pottery, prismatic blades, and other utilitarian artifacts that were left in the field; and artifacts that were not stored by grave. These difficulties are reviewed in Chapter 1 (Empirical Significance of the Data Bases.

Problems in field and laboratory observation and recording and in museum curation were routinely uncovered while we constructed the HOPEBIOARCH data base. To the extent possible, these issues were amended. Our methods of detecting and amending the problems included critically comparing basic observations to each other, looking for inconsistencies among observations made by the same and different researchers, noting patterned biases of given researchers, and to a degree, reexamining archaeological remains in museum collections. Some additional increase in the accuracy and specificity of certain categories in the HOPEBIOARCH data base could have been reaped had we examined all of the extant archaeological remains from all sites in the data base in relation to field notes and publications; however, available resources did not allow us this level of cross-checking. The various means that we used to critically evaluate Ohio Hopewell archaeological data while constructing the HOPEBIOARCH data base were pioneered by Greber (1976; Greber and Ruhl 1989) as she assembled large mortuary data sets on the sites of Seip, Turner, Ater, and Hopewell.

The forensics-like approach that we used to discover empirical problems with burial assemblages and to reconstruct more accurate pictures of them is illustrated by our probing into the frequency of log tombs in Mound 25 of the Hopewell earthwork. From this work, we inferred that the number of individuals recorded to have been buried in log tombs in Mound 25 is much too low, as a result of their having been underreported by Moorehead. Moorehead (1891, 1922) reported log enclosures for only 11 % of the 47 individuals that he excavated from Mound 25. In contrast, Shetrone (1922, 1923, 1924, 1925, 1926a) observed log enclosures or a log-walled vault for 72 % of the 54 individuals that he recovered from the mound. The low percentage of log enclosures reported by Moorehead compared to Shetrone almost certainly does not result from merely the different treatment of individuals in the different portions of Mound 25 dug by the two excavators. Moorehead sampled throughout the mound with a series of "cuts" or trenches distributed discontinuously along its length. Shetrone later dug the interstitial areas of the mound. Through comparisons of this kind and others, errors in reported field and laboratory observations were discovered. In this case, the missing data on log tombs could not be recovered for individual graves. In other cases, such as differences between field notes, published reports, and/or museum accession records and collections in the artifacts attributed to a grave, the inaccuracies could sometimes be traced to their origin with greater specificity and amended. Field photographs of graves, when they existed, were helpful in this regard.

A good example of how cross-checking sources of information led to improvements in the documentation of a specific provenience is found in Katharine Ruhl's estimation of the number of earspools contained in Altar 1 of Mound 25 at the Hopewell site. W. K. Moorehead, who had excavated portions of Mound 25, including Altar 1, as part of his 1891–1892 exploration of the site (Moorehead 1922:116), reported that "While no one has yet counted the multitudinous objects in the Field Museum collection, it is estimated that there are about two thousand one hundred copper ear-ornaments or busks in storage" – most of which would have come from the massive deposit of earspools in Altar 1. Moorehead (1922:113) gave no estimate of the number of earspools specifically found in Altar 1 in his published report on the Hopewell site. In contrast, Charles Willoughby, who between 1892 and 1894 carefully analyzed and wrote a 300 page manuscript on the materials that Moorehead had excavated, said that Altar 1 contained "over 500 ear ornaments" (Greber and Ruhl 1989:77). The difference between Moorehead's and Willoughby's estimates is, of course, significant: the number of pairs of earspools placed in the ceremonial deposit implies the likely number of persons who gathered for a ceremony and affirmed their social bonds by mutually decommissioning earspools that marked their common membership in a sodality (Carr et al. 2005). Ruhl (personal communication 2004) resolved the difference and estimated that Altar 1 had held about 1000 earspools based on her confirmation of about 700 earspools in the Field Museum repository for Mound 25, many tens of earspools from Mound 25 at other institutions to where they had been traded, and her observation that not all of the earspools from Altar 1 were apparently recovered from the field because they were embedded in the Altar. In Ruhl's reconstruction, Willoughby's low count relative to her own possibly results from his not having included earspools left in the Altar, and possibly from his not having been sent the entirety of the Mound 25 holdings at the Field Museum when he inventoried and analyzed them at Harvard. Consideration of the history of Ohio Hopewell bioarchaeological collections in curating institutions is key to evaluating the collections' integrity and the value of reports developed from them.

DATA CODING

The fourth area in which inaccuracies, biases, and gaps in the HOPEBIOARCH data base could have arisen is the manner of coding of basic information, including field notes, field maps, field photographs, museum accession records and catalogs, correspondence, newspaper clippings, and paraprofessional and professional publications. Several factors could have led to our having coded basic information differently, or with different thoroughness, than another researcher might have. First, our interpretation of descriptions and comments made about bioarchaeological records in the basic resources, which led to our identifying and coding specific classes of artifacts, bodily attributes, tomb forms, and associations, might differ from another person's reading of the basic resources. For example, an artifact found in a double burial might be attributed to one of the individuals by one researcher and the other individual by another researcher. Burial 10 under the Seip-Pricer mound provides a case in point. The burial included a cremated adult and a cremated child. We did not attribute any of the artifacts in the burial to the adult or the child, even though a number of the artifacts (a headplate, a breastplate, two earspools) marked roles that only an adult would normally be expected to hold, and even though the artifact classes were almost always or always found with adults in the Scioto-Paint Creek area. We did not wish to bring sociological assumptions into the basic data. Another researcher, looking at the strong adult association of those artifact classes over the region might argue it acceptable to link the artifacts with the adult.

Second, the relative reliability and weight that we have attributed to various kinds of basic resources (e.g., field notes versus published reports), and to certain field and laboratory researchers in coding extant information, might differ from another person examining the same material.

Third, in our coding of data, direct examination of artifacts in museum collections in order to cross-check written records and to gain supplemental information played a relatively minor role and was focused on only certain artifact classes (copper celts, breastplates, headplates, bear canines). In contrast, Greber (1976) spent considerable time with artifact collections in constructing her data base, and Lloyd (n.d.) spent only a few days in collections verifying his data base, which was constructed almost entirely from published site reports and unpublished field notes and maps.

Fourth, our classifications of artifacts, bodily attributes, and tomb forms – although based largely on terms used directly in the primary sources of information – might differ from those another researcher might use. In turn, such differences could lead to different human remains and artifacts being grouped differently, counted differently, and associated differently. For example, the HOPEBIOARCH data base codes body treatment into six categories: articulated or largely articulated inhumation, charred inhumation, probably charred inhumation, partial cremation, half cremated/half inhumed, and cremation. Lloyd's data set for the Hopewell site omits the category of partial cremation, and apparently includes individuals treated in this way in his charred category. The result is two somewhat different categorizations of individuals by their body treatment, with potential consequences for social interpretations.

Fifth, the classes we used to code artifacts, bodily variables, and tomb forms reflect the goals we had when we began the project, and our goals might not be fully shared by others interested in Ohio Hopewell mortuary records. Specifically, we defined artifact classes and tomb forms with two most fundamental aims in mind: to investigate the active, on-the-ground, social and ritual roles of individuals in order to describe the dynamics of Hopewell social organization (Chapter 4, The Concept of the Social Role; Carr and Case 2005a:45–47), and to study religious concepts and symbolism in Hopewell culture. Thus, the classification used in the HOPEBIOARCH data base focuses on the specific uses of artifacts in ceremonial or common contexts, and on the potentially symbolic qualities of artifact and tomb forms and materials. In contrast, Greber's goals were to define broad, socially recognized groups of persons, and their horizontal and vertical relationships to one another, in an attempt to construct a group-based description of the static social structures of Ohio Hopewell peoples. She was also interested in measuring the overall, abstract, complexity of single Ohio Hopewellian societies and comparing them for their assessed complexity (Greber 1976:2, 5–7, 1979a:35, 37, 1979b:36; see also Carr 2005a:269–271 for a broader discussion of Greber's paradigm, goals, approach in her mortuary studies). Thus, Greber's classification of artifacts, bodily attributes, and tomb forms in her data base is less specific, more formal-descriptive, and less functional than the classification in the HOPEBIOARCH data base.

Despite all of these potential causes of variation in how basic sources of information might be coded in a data base, the concordance between the HOPEBIOARCH data base and the data bases constructed by Greber or Lloyd for the Seip-Pricer mound, the Ater Mound, the Burial Place in Turner, and the Hopewell site is remarkably high. Where equivalencies can be drawn between the HOPEBIOARCH data set and Greber's and Lloyd's, agreement (precision) falls largely in the 90 %–100 % range.

The remainder of this chapter presents the specific data base comparisons that led to this conclusion. The concordance between the HOPEBIOARCH data base and Greber's data sets for the Seip-Pricer mound, the Ater Mound, and the Burial Place within the Great Enclosure of the Turner earthwork is explored first. This is followed by a study of the agreement between the HOPEBIOARCH data base and Lloyd's data base for mounds within the Hopewell site.

SEIP-PRICER MOUND, ATER MOUND, AND THE TURNER BURIAL PLACE

Four kinds of information are compared here between Greber's mortuary data sets for the Seip-Pricer mound, Ater Mound, and Turner Burial Place within the Great Enclosure of the Turner earthwork (Greber 1976:Tables 1, 2, 3) and the HOPEBIOARCH data base for these sites (Appendix 6.1). Comparisons are made for: (1) the artifact types present with an individual, considering only those individuals shared in common by the two data bases; (2) the counts of given artifact types found with an individual, considering only those individuals shared in common by the two data bases, having the given artifact type, and having count information for that type; (3) the materials of given artifact types found with an individual, considering only those individuals shared in common by the two data bases, having the given artifact type, and having material information for that type; and (4) bodily variables and tomb form attributes for an individual, considering only those individuals shared in common by the two data bases and having information on that variable or attribute.

The comparisons presented here, and in the subsequent section on the Hopewell site, were made using a smaller version of the HOPEBIOARCH data base that was extant in 2002, as a part of the analyses undertaken for writing *Gathering Hopewell* (Carr and Case 2005c). The older version of the data base had only 116 variables that pertain to the specifics of body treatment, tomb form and orientation, and grave goods, whereas the current version has 145 (plus two overview variables on grave goods). Aside from involving fewer variables, 16 of the 116 variables in the older version of the HOPEBIOARCH data base analyzed here differ from variables in the current version in other ways. These differences are described in general terms in Chapter 12, Note 2, and detailed in Table 14.1, Note 2, below.

Methods

To make the four kinds of comparisons between Greber's data set and the 2002 version of the HOPEBIOARCH data base required first constructing a table of equivalencies between the mortuary variables in her data set and ours. Defining equivalencies was necessary because Greber's data set and the HOPEBIOARCH data base sometimes use different terms for the same artifact classes and tomb forms, because

Table 14.1. Equivalencies Defined Between N. Greber's Data Set and the HOPEBIOARCH Data Base for Artifact Classes, Tomb Forms, and Body Treatments

Greber's Variables	gorget/pendant including peirced jaw/canine	material unmodified (bone/teeth)[1]	beads (loose)	beads with hole	beads (unspecified)	earspool	platform pipe (plain)	stone celt/axe/adze	iron celt/axe/adze	copper celt/axe/adze	material unmodified (except bone/teeth)	chunks/hunks/sheets/chips	plating	raw	hemispheres	awl	spoon	points/knives	beads set	bracelet	rectangular plate	conjoined tube
Data Base Variables[2]																						
Artifact Classes																						
panpipes																						X
quartz bifaces																		X				
other translucent bifaces																		X				
copper effigy points[3]																		X				
barrcuda jaw	X																					
shark teeth		X																				
mica mirrors[4]																						
cones/hemispheres															X							
rattlers/tinklers																						
stone tablets																						
marbles																						
wands																						
mushrooms																						
weapon																						
awls/skewers																X						
ocean shell container																						
spoons																	X					
fancy pottery																						
fan effigy																						
flying human																						
portal/pulse points[5]																						
headplate																						
breastplate																					X	
breastplate area all																						
breastplate area largest																						
breastplate area code																						
crescents																						
earspools						X																
stone celts								X														
iron celts									X													
copper celts										X												
celt area largest																						
celt area code																						
copper cutouts																						
mica cutouts																						
shell cutouts																						
big pipes																						

headdress	geometric forms (includes crescents)	effigy human (whole or part)	effigy animal (whole or part)	platform pipe	buttons/button covers	container (clay)	container (marine shell)	hammerstone	comb	container (other than clay and marine shell)	mirror	needles	drill	nonplatform pipe	pins	bands	blades	flake	probable ornament	Inhum	Head	Material	Dtlcst	Const
											X													
							X																	
						X																		
X																								
	X																							
	X																							
	X																							
	X																							

(*Continued*)

Table 14.1. (*continued*)

Greber's Variables	gorget/pendant including peirced jaw/canine	material unmodified (bone/teeth)[1]	beads (loose)	beads with hole	beads (unspecified)	earspool	platform pipe (plain)	stone celt/axe/adze	iron celt/axe/adze	copper celt/axe/adze	material unmodified (except bone/teeth)	chunks/hunks/sheets/chips	plating	raw	hemispheres	awl	spoon	points/knives	beads set	bracelet	rectangular plate	conjoined tube
Data Base Variables[2]																						
necklaces/bracelets																			X	X		
beads			X	X	X																	
rings[6]																						
buttons																						
plummets																						
misc. ornaments[7]																						
misc. utilitarian objects[8]																						
utilitarian knives[9]																		X				
utilitarian points[10]																		X				
trophies–finger effigy																						
trophies–ear effigy																						
trophies–hand effigy																						
small pipe							X															
deer	X	X																				
fox	X	X																				
species unknown																						
antlers, effigy[11]																						
human figure, male																						
human figure, female																						
human figure, unknown																						
animal image																						
supernatural/composite																						
human head with bird[12]																						
copper raw											X	X	X	X								
mica raw											X	X	X	X								
shell raw[13]											X	X		X								
pearl raw											X			X								
galena raw											X	X		X								
iron raw											X	X	X	X								
silver raw											X	X	X	X								
gold raw											X	X	X	X								
pyrite raw											X	X		X								
graphite raw											X	X		X								
cannel coal raw											X	X		X								
obsidian raw[14]											X	X		X								
chert raw[15]											X	X		X								
flint raw											X	X		X								
tortoise shell raw											X	X		X								

headdress	geometric forms (includes crescents)	effigy human (whole or part)	effigy animal (whole or part)	platform pipe	buttons/button covers	container (clay)	container (marine shell)	hammerstone	comb	container (other than clay and marine shell)	mirror	needles	drill	nonplatform pipe	pins	bands	blades	flake	probable ornament	Inhum	Head	Material	Dtlcst	Const
					X																			
															X	X			X					
						X		X	X	X		X	X	X	X			X						
				X																				
		X																						
		X																						
		X																						
			X																					
			X																					

(*Continued*)

Table 14.1. (*continued*)

Greber's Variables	gorget/pendant including peirced jaw/canine	material unmodified (bone/teeth)[1]	beads (loose)	beads with hole	beads (unspecified)	fearspool	platform pipe (plain)	stone celt/axe/adze	iron celt/axe/adze	copper celt/axe/adze	material unmodified (except bone/teeth)	chunks/hunks/sheets/chips	plating	raw	hemispheres	awl	spoon	points/knives	beads set	bracelet	rectangular plate	conjoined tube
Data Base Variables[2]																						
flutes/sucking tubes																						
quartz discoids																						
quartz cups																						
quartz cones																						
quartz boatstones																						
quartz in boatstones[16]																						
quartz crystals																						
quartzscrap																						
obsidian bifaces																						
mica effigy points[17]																						
painting equipment																						
boatstones																						
fossils/concretions																						
owl/owl eye effigies																						
hair skewers																						
breastplate area known																						
copper nose																						
reel-shaped gorgets[18]																						
celt area known																						
pendant/gorget	X	X																				
tortoise shell ornament																						
misc. iron tools																						
misc. copper tools																						
trophies (skulls/jaws)																						
raptor parts																						
big cat parts																						
canine parts																						
raccoon parts																						
elk parts																						
opossum parts																						
bear parts																						
beaver parts																						
alligator parts																						
hematite raw																						
Tomb Form, Grave Form and Treatment																						
body treatment																						
grave orientation																						

headdress	geometric forms (includes crescents)	effigy human (whole or part)	effigy animal (whole or part)	platform pipe	buttons/button covers	container (clay)	container (marine shell)	hammerstone	comb	container (other than clay and marine shell)	mirror	needles	drill	nonplatform pipe	pins	bands	blades	flake	probable ornament	Inhum	Head	Material	Dtlcst	Const
																			X					
																				X				

(*Continued*)

Table 14.1. (*continued*)

Greber's Variables	gorget/pendant including peirced jaw/canine	material unmodified (bone/teeth)[1]	beads (loose)	beads with hole	beads (unspecified)	fearspool	platform pipe (plain)	stone celt/axe/adze	iron celt/axe/adze	copper celt/axe/adze	material unmodified (except bone/teeth)	chunks/hunks/sheets/chips	plating	raw	hemispheres	awl	spoon	points/knives	beads set	bracelet	rectangular plate	conjoined tube
Data Base Variables[2]																						
floor preparation																						
cover preparation																						
wall preparation																						
body wrap																						
platform																						

[1] Parentheses within the variable title indicate that only the specific artifact type or material mentioned was used to match between Greber's data base and the HOPEBIOARCH data base.
[2] See the text of Chapter 14, Note 2 in Chapter 12, and Notes 3–18, below, for differences between some variables listed here and those in the HOPEBIOARCH data base.
[3] This variable in the old version of the HOPEBIOARCH data base is now a variable state (CP) within the FancyPt variable in the current version of the data base.
[4] This variable in the old version of the HOPEBIOARCH data base is now three variable states (MC, MS, A) within the MicaSheet variable in the current version of the data base.
[5] This variable in the old version of the HOPEBIOARCH data base recorded two large, circular, mandala-like stone disks that were placed in the center of each of Offering 1 and Deposit 2 under Mound 17 at the Hopewell site. The two items are recorded in the MiscUtilFancyObj variable of the current version of the data base.
[6] This variable in the old version of the HOPEBIOARCH data base is now a variable state (RG) within the MiscCPObj variable in the current version of the data base.
[7] This variable in the old version of the HOPEBIOARCH data base is now divided among four variables and some of their variable states – MiscUtilFancyObj (descriptions), MiscCPObj (OR, ORS), MiscShellObj (OR), and MiscStone (ORSL) – in the current version of the data base.
[8] This variable in the old version of the HOPEBIOARCH data base is now divided among the variable states (all or some) in the variables Container (all), NeedleBodkin (all), MiscIRTool (all), MiscCPTool (all), MiscNMTool (all), MiscCPObj (all), MiscShellObj (FL, MS, PC, RS, SL), MiscStone (BLS, CLS, DIS, DSK, ELG, LID, A, E), MiscUtilFancyObj (descriptions), and FlintRawScrap (BLK, COR, A, B) in the current version of the data base.
[9] This variable in the old version of the HOPEBIOARCH data base is now divided among the variables OtherFlintBifaces (PK, SB, UB, A, B, C) and BoneAntPointKnife in the current version of the data base.
[10] This variable in the old version of the HOPEBIOARCH data base is now divided among the variables OtherFlintBifaces (PK, SB, UB, A, B, C) and BoneAntPointKnife in the current version of the data base.
[11] This variable in the old version of the HOPEBIOARCH data base is now divided among the variables DeerPP (EAN) and GoatHorn in the current version of the data base.
[12] This variable in the old version of the HOPEBIOARCH data base is now included in TrophSkJw in the current version of the data base.
[13] This variable in the old version of the HOPEBIOARCH data base has been renamed MisShellObj in the current version of the data base.
[14] This variable in the old version of the HOPEBIOARCH data base is now seven variable states (CHK, CHP, DEB, FLK, FRG, A, B) within the MiscObsid variable in the current version of the data base.
[15] This variable in the old version of the HOPEBIOARCH data base is now divided among the variables FlintRawScrap (CHK, CHP, FLK, PEC, B) and MiscStone (FKC) in the current version of the data base.
[16] This variable in the old version of the HOPEBIOARCH data base is now a variable state (Q) within the QuarColorPeb variable in the current version of the data base.
[17] This variable in the old version of the HOPEBIOARCH data base is now a variable state (MI) within the FancyPt variable in the current version of the data base.
[18] This variable in the old version of the HOPEBIOARCH data base is now four variable states (RC, RS, RH, RU) within the Pendant/Gorget variable in the current version of the data base.

headdress	geometric forms (includes crescents)	effigy human (whole or part)	effigy animal (whole or part)	platform pipe	buttons/button covers	container (clay)	container (marine shell)	hammerstone	comb	container (other than clay and marine shell)	mirror	needles	drill	nonplatform pipe	pins	bands	blades	flake	probable ornament	Inhum	Head	Material	Dtlcst	Const
																						X	X	X
																						X	X	X
																						X	X	X
																						X	X	X
																						X	X	X

Greber's data set does not include definitions of its mortuary variables, because Greber's data set has variables that often are more generalized than those in the HOPEBIOARCH data base, and because Greber's data set is more hierarchically structured than the HOPEBIOARCH data base. Table 14.1 lists the equivalencies we defined for artifact classes, tomb forms, and body treatment. Demographic variables (age and sex of an individual, minimum number of persons in an individual's grave) are not listed because they were directly comparable. Problems of restricted scope in defining equivalencies are discussed in Note 1.[1]

Tables 14.2–14.4 summarize the number of equivalencies defined between the two data bases for artifact classes, tomb forms, body treatment, and demographic characteristics (age, sex, MNI in a grave). In all, 38 equivalencies were found. Greber's data base has only two mortuary variables that are not in the 2002 version of the HOPEBIOARCH data base, and

Table 14.2. Number of Equivalencies Defined Between N. Greber's Data Set and the HOPEBIOARCH Data Base, for Demographic Variables

Data set	Ater	Seip	Turner
Equivalencies	3	3	3
Greber +, HOPEBIOARCH −	0	0	0
Greber −, HOPEBIOARCH +	0	0	0

HOPEBIOARCH variables: MNI, SEX, Age; Greber's variables: GRCT, SEX, CD Age

Table 14.3. Number of Equivalencies Defined Between N. Greber's Data Set and the HOPEBIOARCH Data Base, for Tomb Form, Grave Form, and Body Treatment Variables

Data Set	Ater	Seip	Turner
Equivalencies	3	3	6
Greber +, HOPEBIOARCH −	0	0	1
Greber −, HOPEBIOARCH +	5	5	6

HOPEBIOARCH variables: body treatment, grave orientation, floor prep, cover prep, wall prep, body wrap, platform; Greber's variables: inhum, head, material, dtlcst, const

Table 14.4. Number of Equivalencies Defined Between N. Greber's Data Set and the HOPEBIOARCH Data Base, for Artifact Classes

Data set	Ater	Seip	Turner
Equivalencies	32	32	32
Greber +, HOPEBIOARCH −	1	1	1
Greber −, HOPEBIOARCH +	37	37	37

Variables: see Table 14.1.

the HOPEBIOARCH data base has 78 variables that are not in Greber's data base.

The degree of concordance of the two data bases was assessed using one or the other of two kinds of similarity coefficients, depending on the nature of the mortuary variable being assessed. When considering the presence or absence of an artifact type, a simple matching coefficient was used:

$$S = \left(\frac{a+d}{a+b+c+d}\right) \times 100\%$$

where S is the simple matching coefficient, which ranges between 0 and 100 % agreement, a is the number of individuals for which Greber's and our data bases agree that the artifact type is present, d is the number of individuals for which Greber's and our data bases agree that the artifact type is absent, b is the number of individuals for which Greber's data set records the artifact type as present but the HOPEBIOARCH data base records the artifact type as absent, and c is the number of individuals for which Greber's data set records the artifact type as absent but the HOPEBIOARCH data base records the artifact type as present.

When assessing the material of a given artifact type that occurred with an individual, using only those individuals having that artifact type in their grave, a modified simple matching coefficient was use:

$$S_{\text{modified}} = \left(\frac{a}{a+b}\right) \times 100\%$$

where S is the modified similarity coefficient, which ranges between 0 and 100 % agreement, a is the number of individuals for which Greber's and our data bases agree on the material of which the artifact is made, and b is the number of individuals for which Greber's and our data bases disagree on the material of which the artifact is made.

The modified simple matching coefficient was also used when the counts of a given artifact type that was recorded to have occurred with an individual are reported in both data sets, the material(s) of the tomb of an individual are recorded in both data sets, the age or sex of an individual is cited in both data sets, and the minimum number of individuals (MNI) present in an individual's grave is noted in both data sets. For example, evaluating the two data bases for correspondence in the sexes of those individuals for whom sex was recorded in both data bases, a is the number of individuals for which Greber's and our data bases agree on the sex of the individual, and b is the number of individuals for which Greber's and our data bases disagree on the sex of the individual.

Beyond these uniformly applied measures, some context-specific rules for comparing the two data bases had to be devised, in order to accomodate complexities and idiosyncracies posed by particular graves. These particular rules are described in Note 2.[2]

Results

Appendices 14.1–14.3 summarize, respectively for the sites of Seip, Ater, and Turner, areas of agreement and disagreement between Greber's data set and the HOPEBIOARCH data base for the presence of given artifact types with an individual, considering only those individuals shared in common by the two data bases. Appendices 14.4–14.6 show, respectively for the sites of Seip, Ater, and Turner, areas of concordance and discordance between the two data sets for counts of given artifact types found with an individual,

Table 14.5. Agreement Between N. Greber's (1976) Data Set and the HOPEBIOARCH Data Base

Kind of Comparison	Ater (%)		Seip (%)		Turner (%)	
Artifact type presence	mean: 98.3 range: 86–100	median: 100	mean: 95.8 range: 94–100	median: 100	mean: 97.7 range: 82–100	median: 98
Artifact type count	mean: 84.5 range: 0–100	median: 100	mean: 94.9 range: 63–100	median: 100	mean: 87.8 range: 0–100	median: 100
Artifact type material	mean: 88.1 range: 50–100	median: 100	mean: 98.5 range: 74–100	median: 100	mean: 96.9 range: 75–100	median: 100
Bodily variables & tomb forms	mean: 76.4	median: 87	mean: 88.4	median: 85	mean: 76.6	median: 79
Mortuary variables with low correspondence (< 75 % agreement)	range: 43–100 number of beads (67), number of awls (50), number of ocean shell containers (0), earspool material (71), bead material (50), necklace /bracelet material (50), geometrics material (0), age (55), tomb form (43)		range: 74–100 number of pendants/gorgets (63), age (74)		range: 40–100 number of beads (67), number of points/knives (0), sex (40), age (64)	

considering only those individuals shared in common by the two data bases, having the given artifact type, and having count information for that type. Appendices 14.7–14.9 present, respectively for the sites of Seip, Ater, and Turner, areas of agreement and disagreement between the two data sets for the materials of given artifact types found with an individual, considering only those individuals shared in common by the two data bases, having the given artifact type, and having material information for that type. Tomb materials are also considered. Appendices 14.10–14.12 summarize, respectively for the sites of Seip, Ater, and Turner, matches and mismatches between the two data sets in bodily variables for an individual, considering only those individuals shared in common by the two data bases and having information on that variable.

Table 14.5 summarizes the results displayed in Appendices 14.1–14.12. Levels of agreement between the two data bases are shown separately for each of the three sites, for the four separate comparisons of artifact type presence, artifact type count, artifact type material, and bodily variables and tomb forms. Also listed by site are the mortuary variables that are least concordant between the two data sets.

Agreement between the two data bases is excellent for the presence of artifact types with individuals. Average correspondence for the presence of artifact types ranges between 98.3 % and 95.8 % across the three sites, with median correspondence at 100 % for each site. Correspondence for the material of artifact types present is somewhat lower, with the average ranging between 98.5 % and 88.1 % across the sites, and again with median correspondence at 100 % for each of the sites. Agreement for the counts of artifact types is again lower, with the average ranging between 94.9 % and 84.5 % among the three sites, yet with median correspondence at 100 % for each of the sites. Least concordant between the two data bases are the bodily variables and tomb forms. Their average agreements range between 88.4 % and 76.4 % for the three sites, with median correspondence only between 87 % and 79 % across the sites.

The two data bases compare best for the site of Seip, with an average agreement of 96.5 % across all mortuary variables, only slightly less well for Turner, with an average agreement of 92.3 % across variables, and least well for Ater with an average agreement of 87.7 % across variables. Following the same pattern, Seip has only two mortuary variables with a low percent agreement (< 75 % agreement), Turner has four, and Ater has nine. The lesser concordance between the two data sets for Ater possibly reflects the fact that a descriptive report was never written and published for the site, whereas reports were written and published for Seip and Turner. Field notes, compared to a publication, can require more interpretation of basic field observations on the part of a researcher using the notes years or decades later. Field notes also can lend themselves more easily to overlooked information.

The particular mortuary variables that have low percent agreement for a given site vary among sites in no patterned way other than their tending to be variables with low numbers of observations (i.e., a sample size effect). The two exceptions to this tendency are tomb forms at Ater, with only 43 % agreement across 21 individuals, and age at Seip, with only 74 % agreement across 31 individuals. The discordance between the two data bases for age at Seip reflects the fact that information from Konigsberg's (1985) modern demographic study of the human remains from Seip was incorporated in the HOPEBIOARCH data set but not Greber's data base, which was assembled before Konigsberg's work.

Conclusion

Overall, the HOPEBIOARCH data base compares well to Greber's data base. Correspondence of the two data bases considering all compared mortuary variables and all three sites at once averages 92.2 % agreement, with a median agreement of 100 %, and a range of 0–100 %. This degree of concordance was unexpected, but not unwelcome. Although the two data sets were built to answer different kinds of questions and emphasize different kinds of information, the thoroughness of either would be hard to question.

THE HOPEWELL SITE

The second, independently constructed data set to which we compare the HOPEBIOARCH data base is one assembled by Timothy Lloyd (n.d.), on the Hopewell site. Because Lloyd's work was done for his doctoral dissertation, which had not been completed at the time, and our data base had not yet been published, we exchanged and compared only summary information on our data bases. Specifically, we compared the number of burials that had specific mortuary attributes considering the site as a whole or its specific mounds, as opposed to the particular individuals that had those attributes. Five kinds of comparisons were made between the data sets: (1) the number of individuals excavated from each mound; (2) the number of individuals whose bodies were processed by each of several different means; (3) the number of individuals found in tombs of each of several distinct forms; (4) the number of individuals who were associated with artifacts of particular kinds; and (5) the number of individuals of different sex and age categories.

Methods

Comparisons between Lloyd's data base and the HOPEBIOARCH data base were begun by defining equivalencies between the mortuary variables in the two data sets. This was a straightforward procedure, because both data bases used primarily terms taken directly from published reports and field notes, or terms that were very similar. In all, 17 mounds, 6 methods of body processing, 7 forms of tomb construction, 43 kinds of artifact types, and 10 age-sex categories were equated and compared (Appendices 14.13–14.17).

The degree of agreement of the two data bases for a particular attribute was assessed using a measure related to the difference in counts of individuals having that attribute:

$$A = 100\% - \left(\frac{d}{N}\right) \times 100\%$$

where A is the percent agreement between the two data sets, which ranges between 0 and 100 %, d is the difference between the two data bases in counts of individuals having the given attribute, and N is an estimate of the number of individuals having that attribute, equivalent to the numeric average of the number of such individuals in the two data bases.

Results

Appendices 14.13–14.17 summarize for the Hopewell site the points of agreement and disagreement between Lloyd's data base and the HOPEBIOARCH data base. Appendix 14.13 shows the concordance and discordance of the two data bases for the number of individuals excavated from each mound at the site. Several of the smaller mounds were combined and counted together in the summary tables supplied to us by Lloyd, and therefore a full mound-by-mound comparison is not possible. Body counts for both data bases exclude individuals described as intrusive and as trophy skulls. The two data bases differ by only one individual (0.47 %) for the total number of interments inventoried at the Hopewell site. Lloyd's data base contains one more individual in Mound 23, one more in Mound 24, and one less in Mound 30. In the case of Mound 23, Moorehead's (1891) field notes are not very detailed, and are somewhat unclear in places. It is thus not surprising that the two data bases disagree on the number of burials excavated from this mound. It is possible that the difference in counts results from our not counting skeleton S238 among the individuals buried in Mound 23.[3] The difference in body counts for Mound 24 probably represents a difference in the interpretation of a skeleton described on page 104 of Moorehead's field notes.[4] The difference between our data base and Lloyd's for Mound 30 is easy to understand. The difference relates to our having interpreted a deposit of cremated remains in the mound as an intentional burial, and Lloyd having not.[5]

Appendix 14.14 presents the comparison between the two data bases for the number of individuals whose bodies were processed by each of several different means. Information on body treatment is not always stated explicitly in the site reports and field notes, and sometimes had to be inferred from mention of body orientation, artifact associations with skeletal elements, and so on. Body treatment at the Hopewell site can be roughly divided into four kinds: inhumation with no evidence of burning; inhumation with charring, in which a skeleton shows evidence of burning but the bones remain fairly intact; partial cremation, in which it appears that the limbs are well cremated but the trunk is more intact; and cremations, which were apparently fairly thoroughly burned. The other categories of body treatment tabulated in Appendix 14.14 are idiosyncratic. The bundle burial represents the remains of two individuals in a single bundle. The individual that was half cremated and half inhumed may be unique among the Ohio Hopewell.

Most categories of body treatment differ little between the two data bases. The HOPEBIOARCH data base has a category for "partial cremations" that is not present in Lloyd's summary tables. It is assumed here that these individuals were instead included by Lloyd under his "charred" category. Adding the partial cremations to the "charred inhumations" category in the HOPEBIOARCH data base lessens the difference between the two data sets for the "charred inhumations" category, but the disagreement is still substantial. Additional differences between the two data sets in body treatment are discussed in Note 6.[6]

Appendix 14.15 compares the two data sets for the number of individuals found in tombs of each of several forms. As with body treatment, the kinds of tombs in which individuals were interred was not always stated explicitly in the site reports and field notes. The considerable under-reporting by Moorehead of graves with log walls in Mound 25 has already been discussed (see above, Field and Laboratory Observations).

For those burials where grave preparation was described explicitly or could be inferred from maps or other records, the numbers in the two data bases are quite similar.[7] The only significant differences between the two data bases are in the number of individuals associated with a gravel floor, and the fact that Lloyd does not mention crematory basins as a form of preparation.[8]

Appendix 14.16 summarizes the matches and mismatches between the two data sets in the number of individuals who were associated with artifacts of given kinds. Idiosyncratic artifact classes possessed by only a single individual were excluded from the comparison. In both data bases, when particular artifacts could not be definitely associated with one or more individuals in a multiple burial, the artifacts were associated with the individuals at large in the grave. In Appendix 14.16, in the column with Lloyd's counts of individuals, the number in parentheses represents a less certain count, and the other number represents the more likely count. In the column with counts in the HOPEBIOARCH data base, a number in square brackets represents the number that probably compares least well with Lloyd's. The other number compares better with Lloyd's, but required combining artifact classes that we had coded separately. For example, the count for copper nuggets cited for the HOPEBIOARCH data base includes an algodonite nugget (a combination of copper and arsenic), which in the HOPEBIOARCH data base itself was not included in the raw copper category at the time of this study (the nugget now is). In comparing the two data bases, their best possible concordance, considering counts inside or outside of parentheses and counts inside or outside of brackets is reported.

The limited degree of difference between the two data bases for numbers of individuals who were associated with given kinds of artifacts is surprisingly small. In most cases, there are no differences or the two data bases differ by only a single burial. Only 6 of the 44 artifact groups that are compared show differences of greater than one individual: shark teeth, bear claws, copper bracelets, headplates, mica ornaments and cutouts, and unknown kinds of beads.[9] For four artifact classes, the HOPEBIOARCH data base records more individuals having had the class, and for two artifact classes, Lloyd's data base records more individuals. Small differences of one or two individuals probably represent differences in the identification of artifact classes during data coding and differences in decisions on how to assign artifacts to individuals in multiple burials.

Appendix 14.17 compares the data sets for their agreement and disagreement in the number of individuals of different sex and age categories. The primary cause of differences between the two data sets in their counts is most likely the different sources of information employed. The HOPEBIOARCH data base contains not only the excavators' observations, which are repeated in Lloyd's data base, but also recent information from osteological studies made by Cheryl Johnston (1997b) and Paul Sciulli (n.d.), as well as unpublished information from Robert Pickering (1987), Kathleen Reichs (1975), and Charles Snow (1943). In the HOPEBIOARCH data base, these sources of information were combined through their evaluation and fairly strict rules to arrive at the most probable age category and sex category of each individual (Chapter 9).

A statistical summary of the comparisons made in Appendices 14.13–14.17 is presented in Table 14.6. Concordance between the two data sets is excellent for the number of individuals excavated from the Hopewell site as a whole and from particular mounds, with an average correspondence of 98.5 % and a median correspondence of 100 %. Agreement between the two data bases for the numbers of individuals buried with particular kinds of artifacts, the number of individuals buried in specific forms of tombs, and the number of individuals whose bodies were treated in various ways is good, ranging from 85.8 % to 75.0 % in average correspondence and from 100 % to 88.2 % in median correspondence. The two data sets compare less well for the number of individuals they list in various age and sex categories, because of the different sources of information on age and sex that were built into the two data sets (see above, on Appendix 14.17).

Conclusion

The level of correspondence between the HOPEBIOARCH data set and Lloyd's data set on mortuary remains from the Hopewell site is excellent to good. Median agreement between the two data sets ranges between 100 % and 88.2 % for the five groups of variables concerned with the numbers of individuals per mound, body treatment, tomb form, artifact association, and age-sex categories. The comparison of the two data sets demonstrates that good consistency is possible in coding mortuary information from even the most complex of Ohio Hopewell sites, despite

Table 14.6. Agreement Between T. Lloyd's (N.D.) Data Set and the HOPEBIOARCH Data Base for the Hopewell Site

Kind of Comparison	Statistics (%)	
Number of individuals excavated	mean: 98.5 range: 91.3–98.5	median: 100
Number of individuals whose bodies were processed in various ways	mean: 75.00 range: 38–100	median: 97.6
Number of individuals in tombs of various kinds	mean: 84.59 range: 40–100	median: 96.1
Number of individuals associated with artifacts of various kinds	mean: 85.8 range: 0–100	median: 100
Number of individuals in various age-sex categories	mean: 63.1 range: 0–100	median: 88.2
Mortuary variables with low correspondence (< 75 % agreement)	charred inhumation (38), partial cremation (0), gravel floor (40), depression/hole in tomb floor (71), copper nuggets/raw copper (60), copper bracelets (33), beads of unknown material (45), mica ornament/cutout (50), mica spearhead (33), extra femora (60), bear claws (60), shark teeth (0), galena lumps (60), female (44), female? (0), male? (14.3), young adult (10.3)	

problems with the reporting of late nineteenth and early twentieth century excavations and with the curation of their finds in museums. Most of the differences between the two data sets that do exist stem from these difficulties, as well as the varying interpretations that modern researchers have drawn from the reports.

THREE-WAY COMPARISON OF GREBER'S AND LLOYD'S DATA BASES AND THE HOPEBIOARCH DATA BASE

The degree of correspondence between the HOPEBIOARCH data base and Lloyd's data base for the Hopewell site is generally less than the degree of correspondence between the HOPEBIOARCH data base and Greber's data set for the sites of Seip, Ater, and Turner. This is the case when considering the average and median measures of agreement for artifact classes, tomb forms, kinds of body treatment, and age and sex categories (compare Tables 14.5 and 14.6). This pattern is repeated when considering the numbers of variables with low agreement (< 75 %) between data bases. The number of variables with low agreement between the HOPEBIOARCH data base and Lloyd's data base, proportionate to the total number of variables compared, is greater than what is found when comparing the HOPEBIOARCH data base and Greber's data sets on the Seip and Turner sites, and similar to what is found when comparing the HOPEBIOARCH data base to Greber's data set on the Ater site. For the Hopewell site, 19.3 % (17 of 88) of the variables that were compared disagreed between the HOPEBIOARCH data set and Lloyd's data sets. For the Seip, Turner, and Ater sites respectively, 5.0 %, 10.8 %, and 22.5 % of the variables that were compared disagreed between the HOPEBIOARCH data base and Greber's data set. In sum, the level of concordance between the three data sets is thus related more to the particulars of a site and site records than it is to the person who coded a data set.

The specific mortuary variables that have low percent agreement between data bases vary widely from site to site. Three variables are exceptions: age, sex, and beads were found to have low percentages of agreement across two to all four of the sites. The low levels of concordance found for age and sex have been noted above to result from the different sources of information on age and sex that were used to construct the data sets.

CONCLUSION

The cultural reconstructions of Hopewell life that we have made in this book and that we and others made in *Gathering Hopewell* (Carr and Case 2005a) using the HOPEBIOARCH data base, and the new insights that researchers hopefully will glean from the data in the future, depend in their veracity on the quality of the data. This chapter has demonstrated that the quality of the HOPEBIOARCH data base is very good to excellent in regard to coding decisions and inter-observer consistency. In other words, the "precision" or "replicability" of the data set is high.

The accuracy, representativeness, and completeness of the information in the data base are separate issues. They are determined by the kinds and portions of Ohio Hopewell ceremonial centers that have been sampled through excavation, the quality of field and laboratory observations, and the standards of curation of archaeological records and excavated remains in museums. Gaps and biases in information that have arisen in these domains are very real. They are both known and unknown, and when known, have been or can be corrected in some instances and not in others. The biased ages and sexes attributed to human remains from the Hopewell site by its original excavators (Moorehead 1922; Shetrone 1926a), and the reassessment of the skeletal collection by Johnston (Chapter 10; Johnston 2002), which led to new estimates for some but not all excavated individuals, is a case in point. Less encouraging are the ceremonial sites of Liberty and Old Town, which were key among those used by Scioto Hopewell communities bound together in a three-valley alliance during the third and fourth centuries A.D. (Chapter 3; Carr 2005a), but which were poorly excavated and reported by today's standards. Most of the information missing from these sites does not appear recoverable at this time.

In such situations in the HOPEBIOARCH data base, where the quality of the data cannot be improved, the best strategy open to the researcher is to foster in her or himself a critical awareness of the data problem, its likely manifestations, its likely extent, and its possible implications for cultural interpretation. This required approach to the HOPEBIOARCH data base is no different than the mind-set ordinarily applied by archaeologists as they work with the material remains of past peoples. However, the size of the HOPEBIOARCH data base, the rich social and ceremonial interconnections that occurred within Ohio Hopewell communities, and the vocality of the Ohio Hopewell material record bring in this case a special advantage to the researcher for developing critical awareness: the opportunity for broad and deep comparisons and crosschecks within the data base, itself.

NOTES

1. Certain problems of restricted scope arose in trying to define equivalencies between Greber's data set and the HOPEBIOARCH data base in their mortuary variables.
   (1) Because Greber's data set does not include definitions of its mortuary variables, their meanings had to be determined as best as possible through, first, the names she applied to the variables and, second, through an examination of the degree of correspondence between Greber's data set and the HOPEBIOARCH data base for those variables. When the name of a variable in Greber's data set was fairly definitive but not certain as to its meaning, only a rough correspondence between Greber's data set and the HOPEBIOARCH data set for that variable was required to define its equivalence in the HOPEBIOARCH data base. For example, Greber's variable, "beads set", was interpreted to mean a "set of beads", perhaps like a necklace or bracelet and equivalent to "BeadNeck" or "BraceAnklet" in the HOPEBIOARCH data base.
   For a mortuary variable in Greber's data set having less certain meaning in terms of the HOPEBIOARCH data base, equivalence between that variable and one in the HOPEBIOARCH data base was defined only if the two data sets matched each other across all proveniences having the variable present. For example, one might think that a mica effigy point in the "FancyPt" variable in the HOPEBIOARCH data base would fall within the "points/knives" variable in Greber's data set. However, in the one provenience in the Ater mound where a mica effigy point was found, Greber's data set does not list it. Therefore "mica effigy point" in the HOPEBIOARCH data base was not taken to be included within and equivalent to "points/knives" in Greber's data set.
   (2) In Greber's data set and the HOPEBIOARCH data base, sites vary in the nature and amount of information available on tomb form variables. Consequently, different kinds of comparisons of tomb form were sought for different sites. (a) For the Seip-Pricer mound, only the variables "WallPrep" in the HOPEBIOARCH data base and "const" in Greber's data base were considered. "Multi-person log vault" in "WallPrep" in the HOPEBIOARCH data base is equated to log in "const" in Greber's data set. (b) For the Ater mound, "WallPrep" in the HOPEBIOARCH data base is equated with "const" in Greber's data base. "BodyWrap in the HOPEBIOARCH data base is equated to "material" in Greber's data base. (c) For the Turner Burial Place, no comparisons of tomb form were made because the necessary data were not available in the HOPEBIOARCH data base at that time. (d) In general, stone in "WallPrep" in the HOPEBIOARCH data base is equated to stones in "const" in Greber's data set. For a tomb having both log and stone components, both materials must be recorded in both data bases for the case to be considered a match.
2. The following, context-specific rules for comparing Greber's data base to the HOPEBIOARCH data base were devised and applied when applicable, in order to accomodate complexities and idiosyncracies posed by particular graves.
   (1) If either the HOPEBIOARCH data base or Greber's data set has more than one artifact of a kind in a provenience and the other data base has only one artifact of that kind in the provenience, then this provenience is counted as a match for artifact presence, but not for artifact counts. For example, suppose that for a particular provenience, Greber's data set lists one copper pin and two silver pins, whereas the HOPEBIOARCH data base lists three copper pins and one silver pin. In this case, the following would be tabulated: a match based on the artifact type (pin) present in the provenience, no match on the number of artifacts of that kind present, and a match on the materials of that kind of artifact.
   (2) For a grave with multiple individuals, Greber's data set often duplicates artifact types, their counts, and their descriptions for every artifact present in the grave for each skeleton found in it. However, sometimes the artifacts within a grave were split among individuals. For the same interment with multiple individuals, Greber sometimes used one strategy for one artifact class and the other for another artifact class. Neither of these two strategies for associating artifacts with an individual was

used with consistency, as far as we can tell. In cases such as these, when artifacts are duplicated among individuals of a multiple burial in Greber's data set, each artifact is reassigned to one individual or another within the grave, in order to facilitate comparison between Greber's data set and the HOPEBIOARCH data base.

(3) If an artifact occurred in a multiple grave, and all individuals in the grave are recorded in both Greber's data set and the HOPEBIOARCH data base, yet the specific individual that is recorded as having had the artifact varies between the two data bases, then nevertheless, this is counted as a match between the two data bases for the presence of the artifact type. This rule was followed on the justification that determining the specific individual with which a given artifact was associated is often hard, and is a different issue than whether both data sets recorded the artifact's presence. For example, a grave might have three individuals, 47a, 47b, and 47c, all three in both Greber's data set and the HOPEBIOARCH data base. If Greber recorded copper celts present with individuals 47a and 47b, whereas we recorded them present with 47a and 47c, then this case was considered two matches for the presence of celts.

(4) If Greber's data set and the HOPEBIOARCH data base disagree on the number of individuals within a grave, then the individual(s) not shared by data sets were discounted from all comparisons: artifact type presence, artifact type count, artifact type material, and bodily variables and tomb attributes.

(5) It appears as though the CDAGE category of 25–50 years in Greber's data set was used as a catch-all category for most skeletal samples. If the more restricted age attributed to a skeleton in the HOPEBIOARCH data base falls within this broader range in Greber's data set, then this situation is considered an agreement between the two data bases.

3. Regarding skeleton S238, the typewritten version of Moorehead's field notes (which are much easier to read) describe this skeleton as having been found in Mound 23. However, the handwritten notes indicate that S238 was found in Mound 3. Furthermore, the description of this burial suggests that it may have been one of the so-called "trophy skulls" from the site rather than a regular inhumation. In his field notes, Moorehead (1891) describes S238 as "... fragments of a skeleton ..." in which the maxilla was cut, the lower jaw was perforated, and "no inferior extremities or back bone was found. ..." By stating that there were no "inferior" extremities, one could interpret that there were "superior" extremities, in which case this individual would appear to represent a skeleton, despite the "trophy-like" manipulations of the mandible and maxilla. However, we interpreted this passage to mean that no skeletal elements were present except the jaws and perhaps part of the cranium, and coded this provenience as a ceremonial deposit rather than a burial. Thus, we did not include S238 in our counts of individuals buried in Mound 23 when comparing the HOPEBIOARCH data base to T. Lloyd's data.

4. The skeleton in Mound 24 on page 104 of Moorehead's field notes is not numbered, but is described as being charred, and was accompanied by earspools. We believe this skeleton to be S196, which is never described in the field notes or site report by number, although it does appear on the floor plan of Mound 24 (Moorehead 1922). There is an inconsistency, however, between the description of the charred skeleton and the depiction of S196 on the floor plan, in that the floor plan shows an ocean shell container as well as earspools with this skeleton. This difference between the two skeletons is offset by three other kinds of evidence, that suggest that they probably were one in the same: by the location of the description of the charred skeleton in Moorehead's notes (between S193 and S194), by the fact that it is described as having been found in the same general part of the mound where S196 is shown on the plate, and by the fact that S196 is not mentioned elsewhere. It is not known for certain whether this interpretation is correct, and whether the difference in counts between the Lloyd's data base and the HOPEBIOARCH data base sets results from the problem of S196. The details of Lloyd's data base are not yet published at the time of this writing,

5. In his field notes on Mound 30 at the Hopewell site, Shetrone described finding a small amount of cremated bone scattered over a circular area of about six feet across. Several artifacts were found in association with the bone scatter. The association of the artifacts coupled with the somewhat regular sounding arrangement of the cremated bone led us to interpret this cremation as an intentional burial. However, given the good number of burnt areas and ash beds described in various mounds of the Hopewell site, a case could be made for not counting this bone scatter as an intentional burial.

6. Regarding other aspects of the coding of body treatment in the two data sets, as shown in Appendix 14.14, Lloyd placed five additional individuals in the "charred or inhumed" category compared to the HOPEBIOARCH data base. Some of these skeletons may have been charred or burned, but not enough information was given to determine for certain how many were actually in contact with fire or heat. The 25 individuals in this category in the HOPEBIOARCH data base all come from Moorehead's excavations of Mound 23, and represent some or all of the skeletons in the ranges from S197 to S209 and S210 to S227.

The difference between the two data sets in the number of tabulated cremations is only a single individual. However, since we also included a cremated individual from Mound 30 in our count and Lloyd did not (see above, Note 5), the real difference is two individuals. It is unclear why this difference exists.

It may be significant that combining the inhumation and charred inhumation categories largely erases the differences between the two data for these kinds of body treatments. Although combining the two categories does not explain why the two data bases differ for these categories, combining them might actually be appropriate for sociological analysis of the remains. Specifically, Moorehead (1922) seems to have thought that much of the charring of skeletons, at least in Mound 23, may have been caused by placing unburned skeletons in contact with a superheated floor. This particular explanation is difficult to accept: How was the floor heated? Once heated, how were bodies placed on it? However, Moorehead might have the right idea that charring of skeletons may not have been intentional. If this was the case, then the difference in appearance between unburned inhumations and charred ones might have little significance sociologically, and combining them into one category might be appropriate.

7. The HOPEBIOARCH data base contains 48 individuals in log-walled tombs, along with a cluster of four individuals clearly buried separately from one another but apparently interred in a single log-walled structure (Mound 25, burials 4, 6, 7, and 8). Lloyd reports 50 individuals in log-walled tombs. It is unclear whether Lloyd's count includes the four individuals in the log structure or not.
8. In a sense, crematory basins should not be included as grave treatment since they were, in most cases, probably not constructed for a single person. We chose to include the basins as grave forms because we wanted to be able to assess any patterns associated with individuals purposely interred in these basins.
9. The difference between the two data bases in two of the bead categories seems easily explained. Lloyd's data base has three additional burials with pearl beads and three fewer burials with beads of unknown type. It is possible that Lloyd assigned to the pearl bead category three burials that were placed by us into the unknown bead category. Alternatively, it is possible that Lloyd counted individuals that had raw (unperforated) pearls in with individuals that had pearl beads. If the latter was done, the HOPEBIOARCH data base would differ from Lloyd's by only one individual for the pearl bead category, because the HOPEBIOARCH data base records two individuals as having had raw pearls.

Part IV

Future Directions

Part IV

Future Directions

Christopher Carr

A primary reason why we have written this book is to share with other researchers information that will allow them to carry on the detailed, empirical and interpretive work we have begun – to reach out to Ohio Hopewell peoples and try to understand them and their lives in terms authentic to them. Both the summary of Scioto Hopewell life as currently understood, in Part II, and the detailed data upon which that view is based, in Part III, are offered with this aim. Beyond these foundations for future work is a third domain of useful information that we accumulated over the 13 years of working on this project and that we also wish to share. It is a subtler domain, made up of hunches based on observed data patterns remaining to be explored, questions that we found theoretically or contextually interesting but could not answer for lack of current data, and insights into the kinds of data that are necessary to collect to address these hunches and questions.

Often, scientists shy away from writing down and publishing such uncompleted thoughts and potential lines of research, perhaps because these are more subject to criticism than are polished ones, or might reveal erroneous thinking when more data are collected, or might give away one's next strategic and exciting research project. However, to expedite the profession-wide, team process of exploring a subject as complex as the lives of past Ohio Hopewell peoples, it seems critical to us that we present our current hunches and questions on Hopewell life, and thoughts on how to resolve them. These insights, as much as the interpretive summary and the data we offer in Parts II and III, can provide others with a rich, guiding context for planning future research about Ohio Hopewell life and its transformations over time.

Thus, the final chapter of this book, Chapter 15, lays out a large number of topics that appear to have strong research potential, and some pathways for exploring them. The topics span seven broad domains of inquiry: chronology, subsistence and mobility, community organization, ritual organization and alliances, other aspects of social organization, economic organization and its implications for sociopolitical relations, and comparison of these matters among Hopewell peoples in different regions of Ohio. For each topic, current thought and extant data are reviewed, and new methods and data that would shed important light on it are discussed.

Of the many topics raised in Chapter 15, I point out three here that seem especially important to understanding Ohio Hopewell peoples in particular and human diversity in social life in general. One is the relative degrees of competition and cooperation that existed among individuals and among social groups in the Scioto-Paint Creek area and other regions of Ohio. This subject bears on the variety of ways around the world in which the concept of the self is culturally constructed and channeled, and the conditions that produce such self-images. It relates directly to the problem of Western anthropologists unknowingly projecting various fundamental aspects of their own Western cultural and psychological realities onto nonwestern peoples. It also strikes to the heart of archaeological conceptions of the nature of "Hopewell", which historically has been conceived in terms of social-ceremonial interaction among individuals and groups.

A second key topic presented in Chapter 15 is the modes of production of ceremonial paraphernalia, the modes of acquisition of the fancy raw materials from which they were made, and how these actions might or might not relate to sodalities, leaders, others, and their social prestige and power. Who possessed the spiritual knowledge, rights, and skills to safely remove material-spiritual powers from their earthly sources, design the spiritually powerful artifact forms into which those materials would be modified, work the materials into those forms, and use the paraphernalia in ceremonies? Were the acquisition of raw fancy materials and the production of ceremonial items the independent ventures of individuals or ad hoc small groups seeking spiritual power and social prestige, the rites of sodalities, the requirements of young age-sets for their initiation to adulthood, the strategic demonstration of power by aspiring leaders, or the responsibilities of established leaders to their communities? Were acquisition and production open to all or restricted to certain individuals or social segments, and if so, on what basis? Answering each of these questions is prerequisite to considering how ceremony and "economic" relations might (or might not) have been used to sociopolitical advantage.

A third important topic to be researched is the nature of the social and ceremonial relations of peoples in the impressive Newark earthwork area with peoples in the Scioto-Paint Creek area. Newark is the largest Hopewellian earthwork in the Eastern Woodlands and less than a day's canoe trip from the Scioto-Paint Creek concentration of earthworks. Similarities between the two areas in their earthwork geometries and astronomical orientations, likenesses in the spatial layouts of their burial mounds, and the pointing of Newark's long causeway directly toward the Scioto-Paint Creek confluence all suggest very strong ties between peoples of the two areas. Nevertheless, the specific nature of the ties and the impact of the local histories of the two areas on each other remain unknown.

Many of the topics for future research presented in Chapter 15 are ideal in their scope and their significance to Eastern Woodlands prehistory and general anthropology for doctoral dissertations or masters' theses. We hope that students and others will be intrigued by the questions we raise and, along with the summaries of Hopewell life and the data presented in this book, will run with them full tilt.

Chapter 15

Coming to Know Ohio Hopewell Peoples Better: Topics for Future Research, Masters' Theses, and Doctoral Dissertations

Christopher Carr

How does one come to know another? For archaeologists who are students of a past society, its people, and their culture, this is an essential question. Necessarily, understanding people in another culture and arriving at views that are faithful to theirs come from immersing oneself in the details of their lives, and the social, cultural, natural, and historical contexts in which their lives were lived out. Only by situating oneself in their world and developing an awareness of their ideas, actions, responses, and sensitivities in varying contexts can one hope to begin to experience their lives as they did – to gain insight into their motivations and preferences and limitations, and the choices in thought and deed that they made. For an archaeologist, this situating process can be done only by reconstructing the particulars of past people's lives, which means fine-grained, contextualizing, and expansive exploration of archaeological data. To the extent that anthropological theory, crosscultural generalizations, or one's own life insights are used as surrogates for, rather than complements to, empirical immersion, the archaeologist distances him or herself from the past people he or she wishes to know. Knowing others requires sincere listening.

This book and many of the chapters in *Gathering Hopewell* (Carr and Case 2005c) follow this vein. The authors and I attempt to reconstruct and describe the details of the culture, lifeways, environment, and history of Hopewell peoples who lived in the Scioto drainage and broader Ohio, so that we and readers might immerse ourselves in the particulars of their lives and begin to understand their values, motives, limitations, and choices. In addition, both books systematize and present a variety of massive data sets, to aid others in the thick description and immersion process.

There are many aspects of Scioto and broader Ohio Hopewell lifeways that remain to be reconstructed in detail and understood. This chapter enumerates some of these voids, which might be filled through further analysis of the detailed data presented in this book and *Gathering Hopewell,* through additional investigation of extant museum collections, and/or with archaeological field work. Seven broad areas of inquiry are discussed: chronology, subsistence and mobility, community organization, ritual organization and alliances, other aspects of social organization, economic organization and its implications for sociopolitical relations, and the comparison of Hopewell community, social, and ceremonial organization in southwestern Ohio to that in the Scioto drainage. The first section, on chronology, covers several regions of Hopewell peoples across Ohio, the next five sections focus on the Scioto drainage, and the last section considers the Little Miami, Great Miami, and Scioto drainages. The wanting and complex topic of indigenous spiritual knowledge and world view is omitted from consideration here.

In the course of presenting topics for future investigation, for each I review current thought (if any) about it, and critique the limitations of those discussions relative to broader theoretical perspectives in anthropology and/or wider empirical perspectives provided by Hopewell archaeological records or ethnohistories of Woodland Native Americans. For each topic, I also discuss the archaeological data (if any) that have been evoked thus far to bear upon it, where extant data are yet inadequate to wrestle with the subject with some confidence, and new methods and data that would be useful for exploring it. Where I have insights or hunches about a subject, I lay them out for others to explore. They at least provide a place to begin. Some of the studies recommended here would be ideal for Masters' or doctoral projects; others require longer term research programs.

Key subjects that I discuss in detail in this chapter and wish to highlight are:

- the degree of competition and physical violence among individuals and among social groups of the the Scioto-Paint Creek area;
- the analysis of some burial assemblages as ritual dramas in addition to their study as symbols of the roles and prestige of the deceased;
- the wide diversity of cultural goals of Scioto Hopewell suprahousehold ceremonies within mortuary settings, beyond those currently recognized;
- the social and ceremonial relations of peoples in the flamboyant Newark earthwork area with those in the Scioto-Paint Creek area;
- the geographic expansion of the Scioto Hopewell tradition over time within the drainage;
- the history of changes in the means and media used to build alliances among individuals and communities in the Scioto-Paint Creek area;
- the possible roles of sodalities in the long-distance acquisition of fancy raw materials and the production of ritual paraphernalia, as a part of the larger topics of the organization of ritual production and its sociopolitical uses;
- the use of DNA, oxygen isotope, strontium isotope, and skeletal and dental morophological traits to track the residential and life histories of individuals, identify communities and other social groups, and describe their social compositions and interactions among one another;
- the residential and life histories of societal leaders, based on their bone and dental genetic, chemical, and morphological characteristics, as means for revealing how they arose to power, their power bases, and the activities and qualities of their lives;
- the perennial question of social ranking of Scioto Hopewell peoples and where specifically to look for evidence of its existence or not; and
- the chronological potentials of developing seriations for specific artifact classes and applying AMS dating methods to organic artifacts and organics within bone.

CHRONOLOGY, AND ITS IMPLICATIONS FOR DEFINING COMMUNITIES AND COMMUNITY ORGANIZATION

What We Know . . . Probably

In the Scioto drainage, chronological relationships among ceremonial centers with large burial populations, and among certain mounds within the centers, are known broadly. Key studies that have contributed to this understanding are: (1) Prufer's (1961:702–714; 1964a:44–52) site seriation based on the relative degree of resemblance of Hopewell mortuary sites to generally earlier, Adena ones in their artifact types, mortuary architecture, and mortuary practices; (2) DeBoer's (1997) site seriation based on covarying aspects of their morphology and area; (3) Ruhl's (1996; Ruhl and Seeman 1998; see also Greber 2003:109–110) seriation of Ohio Hopewell earspools considering their form and technology; and (4) radiocarbon dates organized by Greber (1983, 2003) and supplemented by obsidian hydration dates (Hatch et al. 1990). (5) Cross-dating of rare artifact classes and (6) various kinds of contextual arguments round out the general picture.

Prufer's and DeBoer's seriations together have established the relative temporal positions of whole ceremonial centers, in the sense of the midpoints of their histories of major construction and use and ignoring their duration. The ordering for centers with large burial populations, from older to younger, is thought to be: Tremper, Mound City, Hopewell, Seip/Liberty/Old Town, and Ater. A finer-grained history of the construction and use of charnel houses and mounds within these sites, drawing upon these frameworks and the other kinds of evidence mentioned above, is summarized by Carr (2005a:305–307, 310–311) and extended here. This review reveals key uncertainties in chronology that need to be addressed yet. All radiocarbon dates reported below are uncalibrated.

It can be said relatively firmly now that the Tremper charnel house and the one or more possible charnel houses under the Carriage Factory mound were the earliest mortuary buildings in the Scioto valley with a distinctively Hopewellian, horizontal layout. The Carriage Factory mound may have had precedence because it was built as a part of a cemetery cluster of late Adena style mounds whereas Tremper was constructed separate from other Adena mounds. However, this evidence for ordering the two sites is weak.

Within about a generation after Tremper, the charnel building under Mound 8 at the Mound City site was built. Significant to this temporal relationship, both Tremper and Mound City Mound 8 share in each having had a large ceremonial deposit of plain and effigy platform pipes that resemble each other in their masterful naturalism, the animals depicted, and the postures of the animals. However, the Tremper pipes are on the whole more refined, somewhat larger, and were made largely of high-grade nonlocal pipestones rather than local materials in contrast to the Mound City pipes (for sourcing information see Emerson et al. 2002, 2005, personal communication 2006; Wisseman et al. 2002). The Mound City pipes thus appear to be derivatives, made in part by the hands and within the memories of those who carved the Tremper pipes. The close date of Mound 8 at Mound City to the Tremper charnel house is suggested more specifically by the occurrence in both locations of Seeman's (1977b:50) Tremper-A type pipes, which have a curved base, high neck, and a tall and relatively narrow recurved bowl. Mounds 1 and 8 at Mound City are also tied closely in time to the Tremper charnel building by the occurrence in the two mounds of a very early copper earspool form that is the sole form found at Tremper (Brown 1994;54; Ruhl 1992:52, 68, table 2). Mound building at Mound City is also known to have extended later than the decommissioning and burial of the Tremper charnel house because certain mounds at Mound City bear Hopewell ware vessels, copper breastplates, and copper headplates, which are lacking in the Tremper assemblage and late Adena sites. Some mounds at Mound City also contain copper celts, which were not found in the Tremper mound and are very rare in late Adena sites, as well as metallic earspools, which are very rare at Tremper and in late Adena sites. In sum, the ordering of the initiation dates of the Carriage Factor charnel house and/or the Tremper charnel house, and then the Mound 8 and 1 charnel buildings at Mound City, appears most likely, with the continued use of Mound City thereafter.

The seriation of Tremper and Mound City is corroborated and they can be placed in absolute time by a suite of radiocarbon dates from them.[1] Tremper most likely dates between 50 B.C. and A.D. 1. From contextual evidence, the Tremper charnel house appears to have been built and used probably over only months or a few years (Weets et al. 2005:549–550). In contrast, the mounds at Mound City were constructed over a long duration of about two centuries, between about A.D. 1 and A.D. 250. There are no radiocarbon dates from the Carriage Factory mound. Interregional cross-dating of pipe forms and ceramic assemblages corroborate the A.D. 1 radiocarbon estimate for the initial use of the Mound City site.[2]

The Hopewell ceremonial center bridged and overlapped with the periods of construction and use of Mound City in the early Middle Woodland period and Seip, Liberty, and Old Town (Frankfort) toward the end of the Middle Woodland. Hopewell's layout of numerous (38+), separate, primarily small mounds, most within the site's embankment, continued in the vein of Mound City's plan, with its many (24+) individual, small mounds encompassed by an embankment. At the same time, the trilobate final form of Hopewell Mound 25, with its side lobe additions to the main mound covering its charnel buidings, foreshadowed or mimicked the tripartite forms of the Pricer and Conjoined charnel houses and their three capping mounds at the Seip site, the tripartite charnel house and three capping stone rings within the Edwin Harness mound at the Liberty Works, and the three conjoined mounds and possibly charnel houses at the Old Town Works.

Radiocarbon and obsidian hydration dates from Mounds 11, 17, and 25 at the Hopewell site (Greber 2003; Hatch et al. 1990) show that it was built over a long period – perhaps two or more centuries, with unclear beginning and ending dates. The burial floor under Mound 25 was also probably used for a considerable time, given many converging lines of evidence: the wide spread of the radiocarbon dates associated it, the repeating of this variability in old and new assays (Greber 2003:102–103,105–106), the wide spread of the obsidian hydration dates from the mound (Hatch et al. 1990), the great diversity of earspool forms found with burials in the mound, and the construction of several charnel buildings or screens rather than one coherent building on the floor (Greber and Ruhl 1989:42–44).

The time of construction of specifically the central, burial-containing portion of Hopewell Mound 25 appears to have been transitional between the building of some mounds at Mound City, and the building of the Pricer and Edwin Harness mounds. The fact that the side lobes of Hopewell Mound 25 were built after its central portion, rather than at the same time as the central portion as a part of the mound's original design, and in contrast to the coherent tripartite design of the Pricer and Edwin Harness mounds, suggests that Mound 25 was constructed before the Pricer and Harness mounds and before their symbolism of an alliance among three local symbolic communities had been elaborated. Also, the possibility that multiple, independent charnel houses were built and covered under Mound 25 (Greber and Ruhl 1989:42–44), rather than one large charnel house with multiple rooms, would place Mound 25 transitional between the design of Mound City, with its multiple, independent charnel houses under multiple, separate mounds (save Mounds 12 and 13), and the design of the Pricer and Harness charnel houses, each with one large structure with multiple rooms under one mound.

Two key pieces of evidence imply that the floor under Mound 25 was still in use and unmounded within at most a generation of the time of use of the Seip-Pricer charnel house floor, which can be reasonably dated to about A.D. 310 (Greber 2003:107). First, Burials 6 and 7 under the Hopewell Mound 25 have copper nostril inserts like Burial 2 under the Seip-Pricer mound. In all of the Ohio Hopewell world, with its over 1,484 documented individuals, Burials 6, 7, and 2 are the only three known to have had copper nostril inserts. In addition, each of the persons was an adult of 20–45 years old, was buried at the margin of their mound floor, had two bone awls, one to three breastplates, and metallic buttons, and lacked almost all forms of shamanic equipment. Both Burial 7 at Hopewell 25 and Burial 2 at Seip-Pricer also were surrounded by equally rare, symbolic water barriers made of hundreds of pearls. Finally, all three burials occurred within or near spatial clusters of graves that contained, on average, the greatest proportion of individuals with items of prestige and wealth relative to other clusters of graves in their mounds and that can probably be attributed to the same local symbolic community in the North Fork of Paint Creek valley (Carr 2005a: 288–290, Table 7.1). This pattern suggests that the persons in these clusters, including the persons with copper nostril inserts, came from the same important community – one apparently located in the North Fork of Paint Creek (Carr 2005a:310–311; Thomas et al. 2005:363–364, table 8.11).[3] The three burials have little that is not in common. All of these shared mortuary features suggest a well-defined social role that was very limited in its time-space distribution and, thus, the very close timing of the Burials 6, 7, and 2. This conclusion is reinforced by a second strong linkage between Hopewell Mound 25 and the Pricer Mound. The two mounds share in each having contained an extraordinarily large copper celt, the two of which are very similar in size and, again, are unique in the Hopewell world. One celt covered skeletons 260 and 261 in Hopewell Mound 25; the other was placed on a clay platform in the Pricer mound. Again, both of these locations fall within clusters of burials affiliated with the same, prestigious and wealthy community, probably in the North Fork of Paint Creek (Carr 2005a:310–311; Thomas et al. 2005:363–364, table 8.11).[4]

The late Middle Woodland age and closely overlapping times of construction and use of the burial floors under the Pricer and Conjoined mounds at Seip, the Edwin Harness mound at Liberty, and the Conjoined (Porter) mounds at Old Town are reasonably established by many lines of evidence: the close similarity and uniqueness of these sites' enclosures in their tripartite shapes, comprised of a square and two circles; the nearly equivalent dimensions of their corresponding squares and circles, within 1.3% to 5.6% of one another other (see Chapter 3, Sustainable Communities, for details); the nearly equivalent total areas of the enclosures (78 acres); the similar lengths, widths, and shapes of the charnel houses under the Pricer and Edwin Harness mounds; the morphologies of earspools found with burials in the mounds (Greber 2003:92; Ruhl and Seeman 1998); the composition of the mounds' artifact assemblages (Prufer 1961, 1964a); and in the case of Seip-Pricer and Edwin Harness, the coincidence of radiocarbon assays from the mound floors (Greber 1983:89, 2003:107). The strong scalar and morphological similarities among the enclosures at the three sites and between the charnel houses under the Pricer and Edwin Harness mounds imply the sharing of design details among closely communicating peoples of the same or adjacent generations. Indeed, three charcoal radiocarbon dates from burials 16 and 32 on the floor of the Seip-Pricer mound average to A.D. 313 (Greber 2003:107), while four charcoal radiocarbon dates from pits and a post mold in the floor of the Edwin Harness mound average to A.D. 309 (Greber 1983:89).

The Conjoined mound at Seip can reasonably be inferred to have been built after the Pricer mound there, probably within a generation or less, based on several considerations. First, the Pricer mound was finalized by placing multiple layers of soil and gravel over the three submounds that covered three clusters of burials, hiding these social divisions. In contrast, the Conjoined mound was left unfinished; only one cap was placed over its three separate charnel house rooms and the primary mounds that covered them, leaving the tripartite social division exposed (Greber 1979a:41, 46; 1979b:32, 37; Mills 1909:276; Shetrone and Greenman 1931:356–359). Likewise, all three rooms of the charnel house under the Pricer mound were filled with burials when the charnel building was decommissioned and the mound built, whereas one room of the charnel house under the Conjoined mound was left empty at the time of it was decommissioned and buried. It is also possible that the depositing of the large quantities of mica in the final capping of the Pricer mound while it was being ceremonially finished was linked in time to the depositing of the large quantities of mica placed on the floor of the Conjoined mound's charnel house while it was still in use (Greber 1979b:37). This cannot be substantiated, however. Finally Ruhl's (1996; Ruhl and Seeman 1998) seriation of earspools shows the one provenienced earspool from the charnel house under the Conjoined mound to be significantly later in rank than earspools attributable to the charnel house under the Pricer mound, hinting at the separation of the two charnel houses in their times of use (Greber 2003:96).

The Ater mound and charnel house lack radiocarbon assays, but can be fairly convincingly dated to the time when the charnel house under the Conjoined mound was being used, or sometime shortly thereafter. Ruhl's (1996; Ruhl and Seeman 1998) seriation of Ohio Hopewell earspools shows those from Ater to be interdispersed in their ranks with the younger half of the ranks of earspools in a mixed sample from the Pricer and Conjoined mounds at Seip. This younger half of the sample probably pertains more to the Conjoined mound than the Pricer mound, placing Ater and the Conjoined mound on a similar time plane. The late Middle Woodland positioning of Ater is in line with Prufer's seriation of its artifact assemblage.

From a sociological standpoint, it appears, more specifically, that the charnel house under the Ater mound was used somewhat after the one under the Seip-Conjoined mound. The charnel house with two burial clusters at Ater appears to be a sociological continuation of the pattern of only two of three rooms having been used for burial in the charnel house at Seip-Conjoined. This temporal sequence also makes sense of the fact that an earthen enclosure was built around the Pricer and Conjoined mounds at Seip whereas no earthwork was built around the Ater mound. Specifically, both the reduction in the number of charnel house rooms used over time, from three to two from Seip-Pricer and Edwin Harness to Seip-Conjoined and Ater, and the anomalously missing earthwork at Ater can be attributed to a reduction in the number of local symbolic communities in the Scioto-Paint Creek area that were allied and participated in joint mortuary and other rites (Chapter 4, Changes in the Number of Allied, Local Symbolic Communities), and a reduction in the labor available to build grand earthen architecture. The charnel house at Ater appears to have been the last, large, intercommunity building project undertaken in area, and one that was not architecturally completed with an enclosure.

What We Don't Know

The above summary of what is known, with fairly good probability, about chronological relationships among the eight excavated Scioto Hopewell sites with large burial populations points out many levels of deficiency in our current understanding of the timing of events in the lives of Scioto Hopewell people. Filling in these chronologically uncertain relationships among sites and among their internal features is absolutely essential if further substantial progress is to be made in understanding Scioto Hopewell community organization, other aspects of social organization, ritual organization, and world view. Studies of these subjects by definition demand information on synchronic relationships among people and among their material records. Studying change in community organization, ritual organization, and world view over time and their causes likewise requires a fairly tight, continuous time scale for ordering events – as Chapter 5's reconstruction of the rise and fall of Scioto Hopewellian social and ritual life demonstrates.

This section enumerates key lacunae in our knowledge of Scioto Hopewell and broader Ohio Hopewell cultural chronology and how they might be filled in methodologically. I begin with the topic of methods.

Methods

From my experience with the mortuary data from Scioto Hopewell sites, three artifact-based methods appear to have substantial promise for improving our control over chronology. First is seriating breastplates by their sizes and shapes. Breastplates are an ideal chronological medium because they occur frequently in burials within the large Scioto charnel houses from the middle of the Middle Woodland period onward. Also, in smaller sites, which commonly have burials that have few to no artifacts, the artifacts that do occur often are breastplates and/or earspools. Further, breastplates differ significantly in size and shape and have good potential for providing a finely divided time seriation. Finally, a good proportion of breastplates, especially those curated at the Ohio Historical Center and Hopewell Culture National Historical Park, have organics adhering to them – especially fabrics, hide, and feathers. AMS dating of select organic samples from breastplates at various portions of a seriation of them might actually allow the construction of an absolute dating algorithm (e.g., Braun 1985). Short of that, combining information on relative breastplate seriated order with relative earspool seriated order (Ruhl 1996; Ruhl and Seeman 1998) into a bivariate seriation of proveniences might prove more powerful than applying the seriations separately. Either a relative or an absolute breastplate seriation has potential for clarifying internal site chronologies, for linking large charnel houses to one another in time, and for associating large and small sites in time.

Second, control over chronology might be improved by seriating platform smoking pipes. One pilot study that covered all of the Eastern Woodlands (Seeman 1977b), including 49 Ohio Hopewell pipes (47 from sites in the Scioto drainage), has already shown the promise of this approach to seriating proveniences. The study could be significantly increased in size and enhanced with more recent statistical methods of seriation. Specifically the HOPEBIOARCH data base includes for Ohio, and largely for the Scioto drainage, 40 pipes from 31 burials in 11 Middle Woodland sites, and 25 pipes in 4 ceremonial deposits in 3 Middle Woodland sites, beyond the many dozens of whole pipes recovered from the three ceremonial deposits of pipes within Mound 13 at the Mound City site and within the Tremper mound.

Third, some chronological uncertainties among sites and among their internal features might be amended by cross-dating rare artifacts or tomb forms. The copper nostril inserts found in three burials and the huge copper celts removed from two proveniences have been mentioned above. Artifacts that are rare in the details of their form and technology are as pertinent as rare whole artifact classes. Finding these kinds of linkages requires familiarizing oneself with the details of site reports and museum collections, and is a process that can be hard to direct systematically, but has potential.

Beyond these three artifact-based methods of resolving chronological deficiencies, AMS radiocarbon means of dating museum-curated artifacts, debris, and human remains, combined with further excavation and radiocarbon dating of features, would be very worthwhile (e.g., see Greber 1983, 2003). AMS dating of collagen in uncremated human bones or teeth dentin, or associated animal bones or teeth dentin, or of organic material extracted from the root or pulp cavities of human or animal remains (e.g., Ambrose 1990; Grün 2006:7–8; King et al. n.d.; see also Hedges et al. 1995; Saliege et al. 1995), if culturally permissible, could make substantial contributions to chronologically ordering both sites and proveniences within them.

Chronological Uncertainties in the Scioto-Paint Creek Area

Inadequate chronological linkages of at least four kinds are significant to and hold back our current understanding of the community and social organizations, ritual organizations, and world views of Scioto Hopewell peoples. First is the temporal relationships among large earthen enclosure sites lacking burial mounds to those with burial mounds and to one another. Placing earthen enclosures that lack mounds into temporal positions more finely and firmly than DeBoer's earthwork seriation remains a largely unsolved problem (e.g., Carr 2005a). The enclosures lacking mounds are largely free of temporally sensitive mortuary artifact classes, and can be dated practically and systematically only by excavation and radiocarbon methods. This tack has been taken by Mark Lynott of the Midwest Archaeological Center, National Park Service, and has allowed the Hopeton earthwork to be dated and equated in time with the Mound City earthwork. The two sites can now be envisioned as co-functioning within the same ritual landscape of one early Middle Woodland local symbolic community (Ruby et al. 2005). Other nearby sites that potentially were contemporaneous and a part of this community's ritual landscape, and that remain to be placed chronologically, include the Shriver Circle just south of Mound City (very likely contemporaneous; see Chapter 3, Note 7), the Cedar Banks complex, including the Cedar Banks square earthwork, an open circular earthwork, two platform mounds (one is Ginther), and the Shilder burial mound, all north of Hopeton, and perhaps the Dunlap earthwork somewhat farther north (see Figure 3.3A; Squier and Davis 1848:Plate 2). The more distant Junction Group of circular earthworks, at the confluence of main Paint Creek and its North Fork, may comprise part of this community on the same time horizon or another community on the same or an earlier time horizon. It requires dating as well.

How the High Bank site with its circle and octagon and the Anderson site with its square and two dwarf circles fit into Scioto Hopewell social geography is not fully clear. DeBoer's (1997) site seriation places High Bank on a time horizon approximately coeval with Hopeton and on the ritual landscape that included Hopeton and Mound City. Six radiocarbon dates from features below and within the wall of High Bank's circle (Greber 1999, 2002, n.d.) cluster around A.D. 100 and support this view. The distance of High Bank from Hopeton and Mound City relative to the know sizes of local symbolic communities in the area (Chapter 3, Local Symbolic Communities, Sustainable Communities) would suggest that it fell within a local symbolic community different than the one that included Hopeton and Mound City.

The Anderson earthwork, which is largely destroyed, possibly also had a place on this early Scioto Hopewell ritual landscape. The 18.6 acre square of Anderson, which falls in size between the 13 acre subrectangular enclosure of Mound City and the 20 acre square of Hopeton, would place it on an early time plane within DeBoer's site seriation. The single radiocarbon date of 60 B.C. from Anderson (Maslowski et al. 1995:30) roughly agrees with the seriation estimate. However, the distance of Anderson from Mound City and Hopeton would suggest that Anderson occurred within a local symbolic community different than the one that contained Mound City and Hopeton. So, too, does Anderson's physiographic separation in a valley (the North Fork of Paint Creek) different from the one where Mound City and Hopeton were built (the main Scioto).

It is possible but unclear that the local symbolic community that included Anderson may also have contained the Hopewell site, which lies just west and upriver of Anderson, and the Junction Group, which lies just east and down river of Anderson. Some parts of the Hopewell site and the Junction Group may have been built and used at the same time as Anderson. Specifically, a number of dates from portions of the Hopewell site are early (Greber 2003:102–103; Prufer 1964a:45), although debated. Also, the subrectangular form of two of nine enclosures in the Junction Group is similar to the shape of the enclosure at Mound City, suggesting that these elements of the two sites might have been built at a similar time. However, the open circular arrangement of the nine enclosures at Junction, and the open circular shape of seven of the enclosures, themselves, are reminiscent of Scioto Adena circular earthworks, which predate Scioto Hopewell ones. If part of the Junction Group and part of the Hopewell site were constructed when Anderson was, and the three were ritual components within one local symbolic community, then that community would probably have been distinct from the one that included Mound City and Hopeton, for the two reasons given just above.

Similarly, on a late time plane, the detailed chronological relationships among certain of the five sites that exhibit tripartite symbolism in the

Scioto and Paint Creek valleys and that may all have been part of one, integrated ritual landscape need to be worked out through further excavation and radiometric dating. The currently uncertain relationships include: the Baum earthwork, lacking burial mounds, in relation to the neighboring Seip earthwork with mounds; the Works East site, lacking burial mounds, in relation to the nearby Liberty earthwork with mounds; and the remnants of the Old Town Works in relation to the neighboring Hopewell site, both with burial mounds. The burial floor of Porter Mound 15 within the Old Town Works is currently estimated to have been used at approximately the same time as the charnel houses at Seip, based on Ruhl's (1996:Figure 9; Ruhl and Seeman 1998) seriation of earspools. How the older High Bank, Anderson, and Junction sites might have been seen and functionally incorporated or not within the ritual landscape defined later by the five earthworks with tripartite symbolism is unknown.

A second kind of chronological linkage in the Scioto-Paint Creek area that needs investigation is the fine-scale temporal developmental sequence of the Carriage Factory site, the Tremper mound, and Mound City. Knowledge about the timing and pace of development of horizontally laid out, Scioto Hopewell style charnel houses and the world view associated with them, and our ability to specify the causes of these developments that mark the origins of "Hopewell" in the Scioto drainage, depend on clarifying the absolute initiation dates of these three sites. To do so would require a combination of excavating for radiocarbon samples in the remnants of the Tremper mound and what may remain of Carriage Factory (precise location unknown) and dating of organic materials within the curated Mound City collection.

A third area requiring further study is the durations of use of certain large sites and their burial mounds: Tremper, Mound City, the Hopewell site, and its Mounds 25 and 23. The short period of use of the Tremper charnel house inferred by Weets et al. (2005:549–550) is debatable. The beginning and ending dates of charnel house and mound construction at the Mound City and Hopewell sites are obscured by the lack of independent dates for most mounds at these sites. It is essential to interpretations of sociological development in the Scioto-Paint Creek area to ascertain whether the initial period of mound building at the Hopewell site extended back to a time coeval with Mound City – a possibility that current dates from Hopewell leave open. Finally, the radiocarbon dates from Mound 25 at the Hopewell site are internally contradictory (Greber 2003:106), as well as out of sync with the obsidian hydration dates from the mound (Hatch et al. 1990:475). Mound 23 has no radiocarbon dates.

The durations of use of Mound City, the Hopewell site, and Mounds 25 and 23 might be addressed by developing and applying the breastplate and pipe seriations mentioned above, by combining the breastplate seriation with Ruhl's earspools seriation, and by radiocarbon dating of organic samples in curated collections or obtained through new excavation. Determining the duration of use of Tremper may be less tractable without re-excavation, given its lack of earspools and breastplates, and given its position at the very beginning of any pipe seriation that might be constructed.

The fourth kind of chronological problem is the connection between small, isolated burial mounds or mound groups and the larger sites with big charnel houses and embankments. Both small and large sites may have been components of more complex, multi-site mortuary programs. Determining whether specific small and large sites were coeval or not is a first, necessary step in exploring for and defining multi-site mortuary programs.

The local symbolic community that encompassed the large ceremonial centers of Seip and Baum in main Paint Creek valley (Chapter 3, An Example of a Local Symbolic Community) may also have included the Rockhold mound group west of Seip, the Bournville mound and enclosure complex east of Baum, and perhaps the West Mound at a significant distance west of Seip. Ruhl (1996:Figure 9; Ruhl and Seeman 1998) found the rank order of earspools from Rockhold to overlap with and on average be somewhat later than the rank order of earspools from Seip. She found the rank orders of three earspools from the Bourneville site to fall late in the seriation, overlapping with the latest style earspools from Seip. However, the two earspools from the West mound that were studied have rank orders consistent with an early time plane, on a par with those from Mound City. Two radiocarbon dates from the West Mound (Prufer 1968:153) are consistent with it dating early but have wide standard deviations.[5] On the other hand, Prufer (1961, 1964:49) placed West and possibly Rockhold on the same time horizon as Seip. The temporal placements of Rockhold and Bourneville might be made more secure by constructing the breastplate seriation suggested above. Rockhold contained three breastplates with two burials, and Bourneville had two breastplates with two burials. The three earspools from West that Ruhl did not analyze might also be seriated to affirm the results of the other two. Rockhold, West, and Bourneville each have curated inhumations that might be dated directly by applying AMS methods to bone collagen and tooth dentin and perhaps organics in teeth root and pulp cavities.[6]

Geographic Expansion of the Scioto Hopewell Cultural Tradition over Time

Taking a broad view of what is known about site chronology in the Scioto-Paint Creek area reveals an interesting pattern in the locations of earthen enclosures of differing forms and ages (Figure 15.1). The pattern suggests a geographic expansion over time of Hopewell ceremonialism within the Scioto drainage. The expansion appears to have been directional, from the southern reaches of the Scioto valley northward, and then into the tributary valleys of the North Fork of Paint Creek and main Paint Creek. The primary evidence for this history of expansion is the dating of charnel house floors and burials by radiocarbon methods (Greber 1983, 2003; Ruby et al. 2005:161), obsidian hydration (Hatch et al. 1990; Stevenson et al. 2004), artifact and architectural seriation (DeBoer 1997; Prufer 1961, 1964a:49–52; Ruhl 1996; Ruhl and Seeman 1998), and crossdating (Carr 2005a:305–307), as discussed above. The inferred sequence of expansion and its possible culture historical interpretations will require evaluation. Some relevant kinds of information for doing so are described at the end of this section.

The patterning of site forms, ages, and locations is as follows. The very early Tremper site, with its small, 3.5 acre, one-part, oval enclosure and unique animal effigy charnel house and mound, was built at the southern end of the Scioto valley, just five miles from its confluence with the Ohio valley (Figure 15.1, #1). The Mound City group of mounds, with its larger, 13 acre, one-part, again unique subrectangular enclosure, was then built farther north, on the Scioto river just north of its junction with main Paint Creek (Figure 15.1, #2). Mound building at Mound City was initiated perhaps a generation or less after the Tremper charnel house was mantled with earth. The 13 acre, one-part, again unique, oblique rectangular earthwork of Dunlap, in the main Scioto valley north of Mound City by about three miles, and the 18.6 acre, one-part, square earthwork of Anderson, west of Mound City by about seven land miles at the south end of the North Fork of Paint Creek, may have been built about the same time as Mound City, considering the similarity of their sizes and one-part formats to those of Mound City (Figure 15.1, #3). The length of the Scioto valley between Tremper and Mound City was then probably filled in somewhat with more earthworks, including the building of the two-part, 13 acre square and 20 acre circle earthwork of Seal, just north of Tremper, the two-part, 18 acre octagon and 20 acre circle earthwork of High Bank south of Mound City, and the two-part, 20 acre square and 20 acre circle earthwork of Hopeton, directly across the Scioto river from Mound City (Figure 15.1, #4). Around this time and afterward, earthwork building ventures expanded up the forks of Paint Creek valley. The Hopewell site, with its huge, 111 acre, subrectangle and 17 acre square earthwork was built on the North Fork of Paint Creek valley, north of the Anderson earthwork by about 2 miles (Figure 15.1, #5). Later, the large 80 acre, tripartite, two circle and one square earthwork of Old Town was built much farther up the North Fork valley, about 25 miles from the confluence of the Paint Creek and Scioto valleys. The similarly

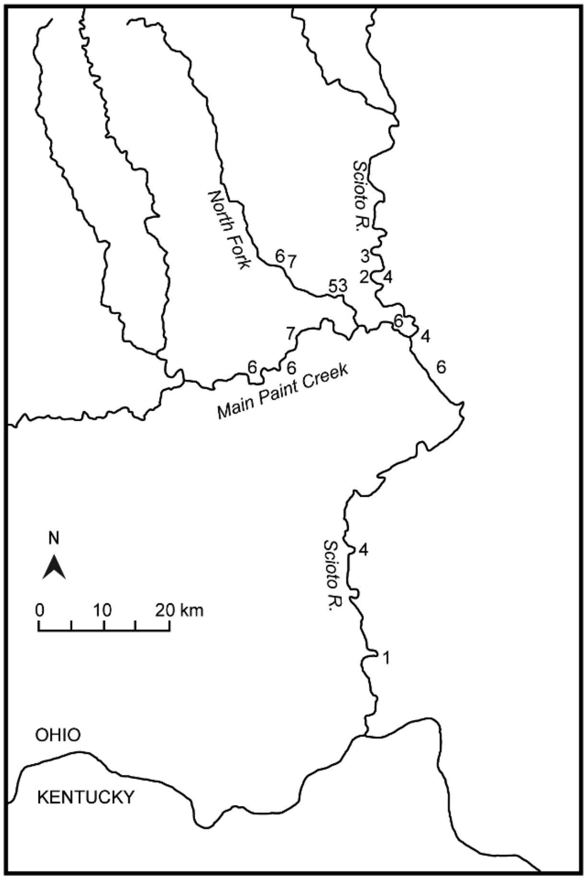


Figure 15.1. A possible geographic expansion over time of Hopewell ceremonialism up the Scioto valley and its tributaries, followed by a slight geographic contraction. Earthworks shown and defining the time trajectory are: (1) Tremper. (2) Mound City. (3) Dunlap and Anderson. (4) Seal, High Bank, and Hopeton. (5) Hopewell. (6) Old Town, Seip, Baum, Liberty, and Works East. (7) Bourneville and Ater mound.

tripartite shaped and same size earthworks of Seip and Baum were built equally far up main Paint Creek valley, Seip being about 24 miles from the confluence of the Paint Creek and Scioto valleys. In the main Scioto valley, the similarly tripartite shaped and same size earthworks of Liberty and Works East were built on either side of the junction of Paint Creek valley with the Scioto (Figure 15.1, #6). The end of the tradition of building large, horizontal-format charnel houses may have been marked by its spatial contraction. The Bourneville charnel house, which likely dates to the tail end of charnel house use at the Seip earthwork (Ruhl 1996:Figure 9), is located downstream from the Seip and Baum earthworks by about 4 miles and 1 mile, respectively, in main Paint Creek (Figure 15.1, #7). The Ater charnel house, which probably dates to after the charnel building(s) under the Conjoined mound in the Old Town earthwork (Ruhl 1996:Figure 9), is located downstream from Old Town by about 2 miles, in the North Fork of Paint Creek (Figure 15.1, #7).[7]

If this pattern of geographic expansion of Hopewell ceremonialism up the Scioto and its tributaries bears up to new research on the chronology of earthworks and mounds, it still remains how to interpret the pattern in culture historical terms. Logically, there are at least three obvious possibilities, not all of which are equally supported empirically at this time. First, the pattern could indicate the spread of the Scioto Hopewell charnel house and earthen enclosure tradition among local symbolic communities in the drainage, with only some communities having participated in the tradition in the early and middle Middle Woodland period while others continued to follow older, Adena ceremonial practices. Current dating of Adena mounds in the Scioto drainage does not support this "late continuity" hypothesis (Carr and Haas 1996:28; Maslowski et al. 1995:29–31), but the number of well-dated Adena mounds there is small. Second, many people up and down and across the Scioto drainage and from different local symbolic communities might have participated in developing the Hopewell charnel house and earthen enclosure tradition from the beginning. The spread of Hopewell charnel houses and earthen enclosures up the Scioto valley and its tributaries over time might indicate only an expansion in the locations of focus of ceremonial activities in the drainage, as the regional ceremonial system became elaborated. A third logical alternative is that the pattern represents shifts in the locations of residence of peoples over time within the Scioto drainage. This interpretation seems unlikely as an explanation of the entire pattern of expansion, given Seeman and Branch's (2006) documentation of the already wide distribution of mounds and probably households over the Scioto drainage by the Early Woodland period. However, shifting residences might have contributed to portions of the observed pattern. One possibility is the aggregating of local groups from small tributaries of the Scioto and Paint Creek valleys, and from portions of the Scioto and Paint Creek valleys peripheral to the Scioto-Paint Creek confluence, into that area during the early Middle Woodland as Hopewellian spiritual ideas and ceremonial rites were elaborated there (Chapter 5, Consequences of the Change in World View). Another possibility is the expansion of local groups from the Scioto-Paint Creek confluence area up main Paint Creek valley and its North Fork during the middle and late Middle Woodland. Any such movement of households, however, would not appear to have resulted from the building of population pressure on land in the Scioto-Paint Creek confluence area. Multiple lines of evidence indicate no significant population packing there (Chapter 5, In the Beginning: A Change in World View).

These alternative culture historical interpretations of the geographic pattern require evaluation. The first two alternative interpretations could be evaluated by comparing the biological diversity of burial populations in charnel houses of different ages and locations. If new communities joined in the tradition over time (interpretation #1), biological diversity of the deceased in large charnel houses that served multiple local symbolic communities should have increased over time. Conversely, if people throughout the Scioto drainage were involved in Hopewell ceremonialism from its beginning and remained involved over time (interpretation #2), biological diversity of the deceased in such charnel houses should not have changed much over time. Dental and skeletal biodistance studies and DNA analyses could provide the necessary information to make this evaluation, and might be supplemented for the better by dental and skeletal chemical analyses. Further dating of Adena mounds, to determine if any were built after about 50 B.C., when Hopewell style charnel houses began to be used in the Scioto valley, would also help to assess the viability of the first and second interpretations. Determining whether shifts in the locations of residences contributed to the pattern of expansion (interpretation #3), rather than a spread of the tradition among more local groups or an increase in the locations where ceremonies were held, would require large-scale survey for Early and Middle Woodland residences in the Scioto drainage as a whole, and excavation and dating of residences. Known or refined geographic distributions of mounds during various Early and Middle Woodland times (Seeman and Branch 2006) are insufficient proxies for the geographic distributions of residences at these different times (e.g., Carr 2005b;94–96; 2005a:286–311; Ruby et al. 2005:159–166).

Beyond the Scioto

In northeastern Ohio, both the Esch mound group and the North Benton mound are positioned at the very end of Ruhl's earspool seriation. Esch was also evaluated by Prufer to have been late, in the sense of coeval with mounds in the tripartite earthworks of Seip, Liberty, and Old Town. The less variable of the two radiocarbon assays from Esch Mound 1 dates it at ca. A.D. 270 (Maslowski et al. 1995:34),[8] in line with Prufer's and Ruhl's estimates. Corroboration of these evaluations could be attempted by seriating the four platform pipes at Esch and the one breatplate and one pipe at North Benton. Animal bones that might be datable by collagen AMS radiocarbon techniques were recovered in good number from Esch Mound 1. Esch also contained 43 inhumations, and North Benton contained five, which have potential for dating. Two pieces of datable buckskin were removed from the North Benton mound, Burial 7. These items were accessioned into the collections of the Ohio Historical Society. The breatstplate from North Benton bears copper pseudomorphs of fabric but apparently no original organic material. The feasibility of collecting new radiocarbon samples by excavating remnants of Esch and North Benton is unknown.

In the central and northern Scioto valley around Circleville and Columbus, Circleville Mound D at the center of the circular enclosure, Snake Den Mounds C and D, McKenzie Mounds A–C, and Melvin Phillips Mounds 1 and 2 would be hard to date from curated collections. Most excavated burials at these sites lacked artifacts and none of the sites contained earspools, breastplates, or smoking pipes. The western mound in the Wright-Holder mound group also contained burials with few or no artifacts, but two burials did include two earspools and a breastplate.

The many components of the Newark site in the Licking valley, northeast of the Scioto-Paint Creek area, are key to date. Newark is the largest earthwork in Ohio, and the communities around it had close social and ceremonial relations with peoples of the Scioto-Paint Creek area, as expressed by diverse kinds of material ties (see below, Ceremonial Integration of the Newark and Scioto-Paint Creek Communities). There is little information and no consensus about the age and duration of construction of the Newark works (Greber 2003:100; Lepper 2004:80). The only radiocarbon dates from relevant proveniences are limited to four.[9] They have means that range between ca. A.D. 100 and 300, well after the earliest Hopewellian charnel structures and earthworks constructed in the Scioto-Paint Creek area at the Tremper and Mound City sites. Two of the dates possibly associated with the construction of the Octagon earthwork range from A.D. 200 to A.D. 300, and fall a century or two after dates from the Scioto valley's High Bank earthwork, which also has an octagon of very similar shape and complementary (perpendicular) orientation (see above, Chronological Uncertainties in the Scioto-Paint Creek Area; and below, Ceremonial Integration of the Newark and Scioto-Paint Creek Communities).

High on the list of components to excavate and date would be the Octagon and Observatory Circle complex and the remnants of the Central mound of the Cherry Valley mound cluster under the Central Ohio Railroad bed (B. Lepper, personal communication 2007). Dating these features of the site would help to resolve the specific kinds of social and ceremonial relationships that tied together the peoples of the Newark and Scioto-Paint Creek areas (see below, Ceremonial Integration of the Newark and Scioto-Paint Creek Communities). Excavation and dating of the Great Circle and its associated Square, and the Oval earthwork, along with the Octagon and Observatory Circle, would provide a solid picture of the duration over which Newark was built.

In southwestern Ohio, in the Little and Great Miami valleys, of the 18 mound or mound-earthen enclosure sites with burials and/or ceremonial caches that we report in the HOPEBIOARCH data base, only four have radiocarbon dates: the Turner, Stubbs, and Fort

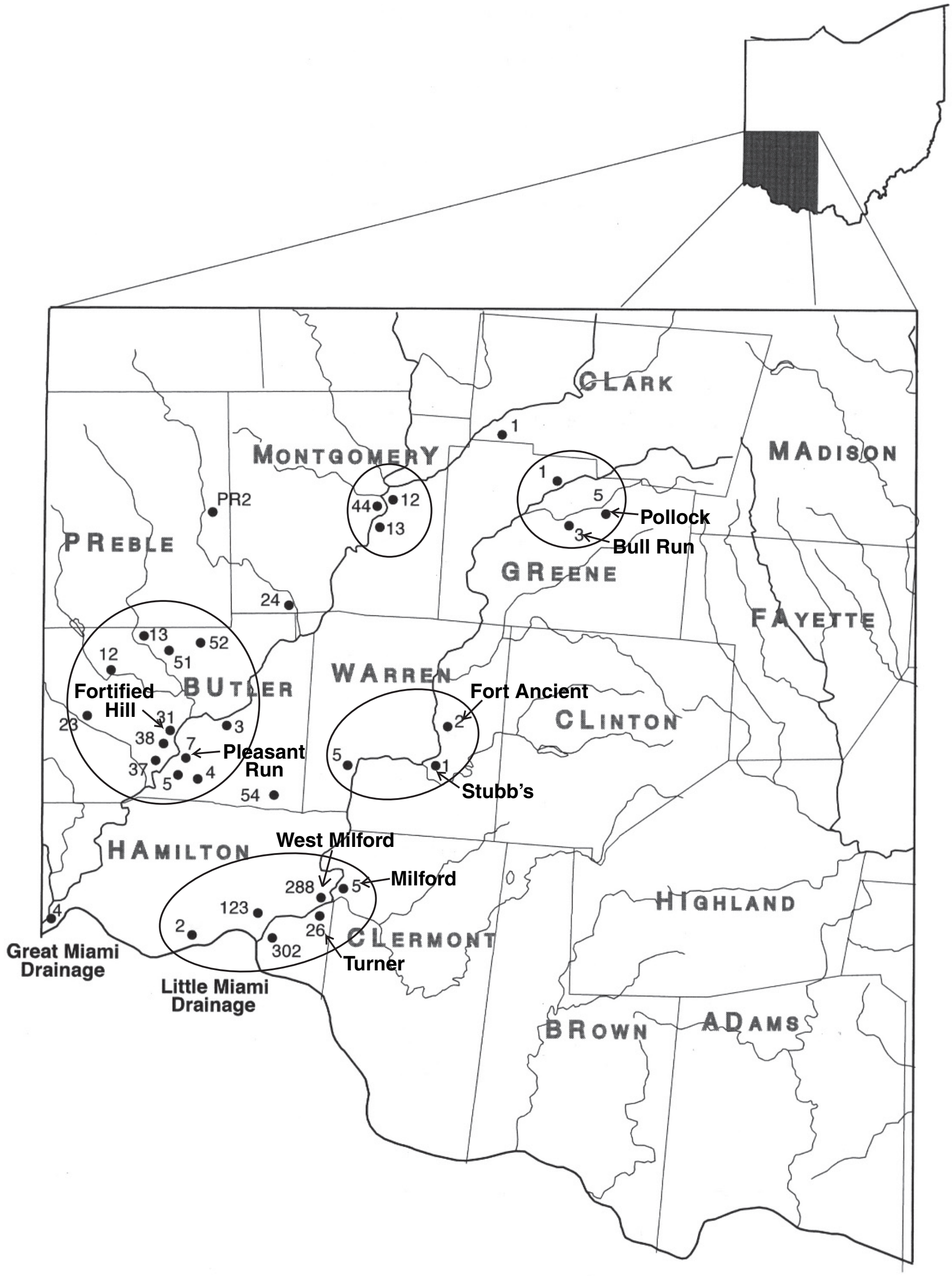


Figure 15.2. Five clusters of earthworks in southwestern Ohio. Most earthworks shown here are certainly or very probably Middle Woodland in age. See Table 15.1 for additional site names and bibliographic citations. See credits.

Table 15.1. Earthworks in Southwestern Ohio[1]

Site Number[2]	Site Name	Reference[3]
33WA1	Stubb's Works	Whittlesey 1851, plate II
33WA2	Fort Ancient	Anonymous 1810*
33WA5	Foster Works	Riordon 1996*
33MY24	Carlisle Fort	Binkley 1889*
33BU3	Fairfield Township Works I	Squier and Davis 1848, plate VIII-1*
33BU4	Fairfield Township Works II	Squier and Davis 1848, plate VIII-2*
33BU5	Fairfield Township Works III	Squier and Davis 1848, plate XXXI-4
33BU7	Pleasant Run Works	Squier and Davis 1848, plate XXX-1
33BU12	Milford Township Works I	Squier and Davis 1848, plate XI-2*
33BU13	Milford Township Works II	Squier and Davis 1848, plate XXXI-2
33BU23	Davis Works	MacLean 1879, figure 57
33BU31	Fortified Hill	Squier and Davis 1848, plate VI*
33BU37	Ross Township Works I	Squier and Davis 1848, plate XXX-2
33BU38	Ross Township Works II	Squier and Davis 1848, plate XI-3
33BU44	St. Clair Township Works I	Squier and Davis 1848, plate XI-1
33BU46	Union Township Works I	MacLean 1879, figure 46
33BU47	Union Township Works II	MacLean 1879, figure 47
33BU51	Wayne Township Works I	Squier and Davis 1848, plate XXXI-3
33BU52	Wayne Township Works II	MacLean 1879, figure 62
33BU54	Beatty Works	No plan published, cited in MacLean 1879:174
33CL1	Osborn Works	Werren 1878
33CL5	Milford	Squier and Davis 1848, plate XXXIV-1
33GR1	Bell Works	Squier and Davis 1848, plate XXXIV-4
33GR3	Bull Works	Squier and Davis 1848, plate XXXIV-3
33GR5	Pollock Works	Squier and Davis 1848, plate XII-3*
33HA123	Mariemont Embankment	Woodward and McDonald 2002, figure 68
33HA2/1	Cincinnati Works I	Drake 1815
33HA2/2	Cincinnati Works II	Drake 1815
33HA26/127	Turner	Whittlesey 1851, plate III
33HA4/148	Miami Fort	Squier and Davis 1848, plate IX-2*
33HA302	Sand Ridge	No published plan, recorded by Starr
33HA3/323	Colerian Works	Squier and Davis 1848, plate XIII-2
33HA288	West Milford, or Camden	Squier and Davis 1848, plate XXXIV-2A
	East Fort Works ("Gridiron")	Squier and Davis 1848, plate XXXIV-2B
33MY12	West Carrolton Fort Works	Squier and Davis 1848, plate VIII-4*
33MY13	Alexandersville Works	Squier and Davis 1848, plate XXIX-1
33MY44	Miami River Earthwork	No published plan
33PR2	Glander Works	Squier and Davis 1848, plate XII-2*

[1]From Riordon (2004a:227, table 16.1). Most earthworks listed here and shown in accompanying Figure 15.2 are certainly or very probably Middle Woodland in age.
[2]Site numbers given are Ohio Archaeological Inventory numbers.
[3]Reference is to the earliest publication with the site's plan.
*These sites are regarded as "hilltop" enclosures.

Ancient earthworks, and the Purdom mound group. At least 35 earthen enclosures beyond the 18 sites that we document occur in the southwestern Ohio region, and of these, only the Pollock, Foster, and Bell Works and Miami Fort have been excavated at some level and reported (Riordon 2004a:224). However, they lack burial mounds, and only Pollock and Miami Fort have radiocarbon dates.[10]

The Turner site in southwestern Ohio was seriated by Prufer (1961, 1964) as late among Ohio Hopewell sites, based on its total record. Ruhl's (1996; Seeman and Ruhl 1998) earspool seriation shows that it ended late but was used for a long period of time, and that different mounds were constructed at significantly different times. Too few radiocarbon dates (six) have been obtained from too few proveniences (two) to draw any conclusions about Turner's duration of use. The dates range between A.D. 100 and A.D. 300 (Greber 2003). Both the Fort Ancient and Stubbs earthworks appear by their radiocarbon record to have been begun earlier and used for a longer period of time. A total of 36 radiocarbon dates from Fort Ancient suggest its construction and occupation from about 100 B.C. until A.D. 350 radiocarbon time (Connolly 2004:219–220). The majority of the dates fall between A.D. 50 and A.D. 250 (Greber 2003:103). However, there are no radiometric assays from the South Fort, which was constructed prior to the Middle and North Forts, perhaps by as much as 200 years by P. Essenpreis' estimate (Connolly 2004:220), making reasonable the 100 B.C. date for groundbreaking at the site. Hopewellian construction at the Stubbs earthwork appears to have spanned the broad period between A.D. 1 and A.D. 500, to judge from a large suite of radiocarbon assays from the site (Cowan and Sunderhaus 2002:table 1). The three charcoal radiocarbon dates from the Purdom Mound 1–2 fall early, between 70 B.C. and A.D. 100 (Heilman and Mahoney 1996:296).

Three most basic forms of spatial relationships among Hopewellian mound and/or earthen enclosure ceremonial sites in southwestern Ohio have sociological significance but their meanings remain obscured by limited excavation and radiocarbon dating. At a broad geographic scale, earthen enclosures in the Little and Great Miami valleys form five spatial clusters, in Butler, Montgomery, Hamilton, Warren, and Green Counties (Figure 15.2, Table 15.1). The chronological positioning of these spatial clusters is unknown. At a more local scale, some earthen enclosures occur very close to one another, appear to have complementary morphologies in some cases, and possibly represent functionally differentiated components of a ceremonial landscape for a local group of people. Examples include the Fort Ancient and Stubbs enclosures as a pair, the Turner, West Milford, and Mildford works as a triad, the Pollock and Bull Run works as a pair, and the Fortified Hill and Pleasant Run Works as a pair (Riordon 2004a: 238–239; see below, Comparing Hopewell Social and Ritual Organization in Southwestern Ohio and the Scioto-Paint Creek Area). Again, chronological relationships among sites of a set are unknown. Finally, how small burial mounds and mound groups such as those documented in the HOPEBIOARCH data base relate temporally and functionally to the larger earthen enclosures is unclear.

None of these three kinds of problematic relationships appear tractable except through further field and museum work to obtain radiocarbon samples. Most of the earthen enclosures have not been investigated, and most of the excavated, small burial mound centers without enclosures lack earspools, breastplates, and platform pipes that might be seriated. One of the Twin Mounds and Manring Mound 2 each contained one breastplate. Organic materials within the curated collection of the Turner earthwork have been dated successfully (Greber 2003) and this work could be continued. Curated inhumations that might have datable organics in their bone and teeth are limited in southwestern Ohio Hopewell sites. The Turner site has the largest skeletal series, with somewhere between 20 and 45 individuals curated and provenienced.[11] Smaller numbers of inhumations are curated for the Purdom, Glen Helen, Campbell, and Boblett sites.[12] The Turner earthwork has been almost fully destroyed, except for one thick midden deposit which is productive in living debris but insufficient for unraveling the temporal complexity of the site (R. Genheimer, personal communication 2007). Nothing remains of the Milford earthwork above ground, although there are lithic scatters adjacent to where it would have been located (R. Genheimer, personal communication 2007). Only small portions of the Stubbs earthwork remain intact, most having been destroyed without excavation and radiocarbon dating (F. Cowan, personal communication 2006).

ECOLOGY: SUBSISTENCE, MOBILITY, AND DEMOGRAPHY

In order to confidently describe the ecology of Hopewellian life in the Scioto-Paint Creek area, including subsistence, mobility, and demography, much more archaeological survey and excavation information is needed from there. No intensive, systematic, regional, surface survey of the Scioto-Paint Creek area, including both valleys and surrounding uplands, has yet been made. Regional survey is limited to a low-intensity, spotty survey within about one-third of the Scioto valley bottoms and terraces, alone, from Chillicothe to Waverly (Purfer 1975:268, 314), and a few surveys in the immediate vicinity of major earthworks (Dancey 1995, 1996, 1997; Greber 1995; Coughlin and Seeman 1997). Systematic coring of the Scioto and Paint Creek valley bottoms in order to map their depositional histories, reveal buried sites, and predict the locations of others has not been undertaken in the Scioto drainage, despite the accepted view (Prufer et al. 1965:10–11, 14, 127) that many Hopewell habitations are buried in the alluvium below plow depth. A successful model for this kind of geomorphological work is the research by Hajic (1987, 1990, 2000; Hudak and Hajic 1999) in the lower Illinois valley, adjacent portions of the Central Mississippi valley, and seven valleys in Minnesota. Hajic mapped their stratigraphy, reconstructed their depositional environments, modeled their alluvial landscape evolution based on landform-sediment assemblages, and in the Minnesota case, developed GIS predictive models for locating geologically buried archaeological sites.

Only two residential sites have been excavated in the area (Brown's Bottom #1, McGraw), and only one house and surrounding pattern of pits has been uncovered in one of them. Current understanding of the ecology of Scioto Hopewell peoples is thus based on very small windows of observation within the Scioto-Paint Creek area, and on much analogy to the neighboring Licking and Muskingum valleys and the upper Ohio valley more broadly (Burks et al. 2002; Carskadden 1996, 1997; Dancey 1991; Pacheco 1988, 1993, 1996, 1997; Wymer 1987, 1992, 1996, 1997).

Subsistence

Research projects that would advance our understanding of subsistence in the Scioto-Paint Creek area during the Middle Woodland are of two forms. First are projects that would document the basic parameters of the subsistence system, as D. A. Wymer and colleagues have previously done for Hopewell peoples of the Licking valley. The Scioto-Paint Creek subsistence system should be described in its own right, rather than by analogy to the Licking system, given the somewhat different culture histories and ecologies of the two areas. Basic topics, which Wymer (Steinhilper and Wymer 2006) and Pacheco (Pacheco et al. 2006) have begun to explore at the Brown's Bottom #1 site, include: (1) the plant and animal species that were used by Scioto Hopewell peoples; (2) the approximate relative contributions to their diet made by plant versus animal foods, domesticated versus wild seed foods, and seed versus nut foods; (3) the forms and paces of subsistence change over time; and (4) the degree of dietary variability between households in different locales compared to the ease of harvesting different resources at those locales, as an indicator of population packing. Excavation and analysis of multiple residential sites within the Scioto-Paint Creek area are needed to roughly estimate these parameters.

These basic studies could be enhanced with several kinds of others that move beyond how the Licking valley subsistence data have been analyzed to date. First, economic modeling (e.g., Keene 1981; Reidhead 1976) of the most efficiently procured combinations of the plant and animal foods that Scioto Hopewell peoples used could provide estimates of probable diet mix with more exactitude than is currently possible with floral and faunal remains, which are difficult to place on one quantitative scale. Insights into seasonal variations in diet composition and adequacy could also be gained. Economic modeling of diet, harnessed with osteological analyses of musculoskeletal stress markers, could also contribute to the study of the division of labor, the nature of the daily lives of women and men, young and old, and the relative quality of their lives. Second, the swidden rotation schedules of Scioto Hopewell households could be modeled in finer detail, following the lead of Rainey (2003), who used ethnohistoric analogs and Ohio Hopewell paleoethnobotanical data (Chapter 3, Long-Term Cycles of Residential Mobility and the Lengths of Occupation of Sites). Estimates of swidden rotation schedules could provide insight into other issues such as frequency of residential moves and human impact on the environment, when coupled with paleoethnobotanical indicators of environmental manipulation and impact (e.g., Wymer 1996:47–48, 1997:159–161). Third, the likely cosmological and other cultural associations of various eaten plant and animal foods, per ethnohistoric analogs, might be sought in order to create a culturally richer, native view of Scioto Hopewell diet. Information on the various symbolic referents of different foods, conjoined with archaeological data on the kinds of foods commonly found and not found together in dumping episodes and other contexts, could give insight into the symbolic construction of meals, and whether the balancing, complementing, and/or segregating of food categories was important to Hopewell peoples as one expression of their world view (e.g., Hudson 1976:165, 302, 317).

Mobility

The topic of the amount and patterning of mobility that characterized Hopewell peoples' subsistence strategies in the Scioto-Paint Creek area has at least six aspects that are sorely in need of further research. These are: (1) the seasons of occupation of residential sites by all or part of a household; (2) whether short term or seasonal residential base camps were made and used by some or all of a household in valley edge locations or further into the uplands; (3) the duration of occupation of residential sites; (4) the kinds, locations, and seasons of use of logistical sites; (5) variations in these subsistence strategies among households; and (6) the age-sex division of subsistence tasks involved in residential and logistical moves.

Addressing these issues with confidence will require intensive, systematic, regional surface surveying and a regional coring program, in both valleys and uplands, to locate sites. Complete excavations of the layouts of a good sample of located sites of varying kinds will also be necessary. Specifying the seasonality of sites might be improved beyond that obtained in previous excavations in the Licking and Scioto valleys by taking pollen samples from sediments within micro-settings protected from wetting-drying cycles within archaeological features. To make progress at a reasonable rate in these several arenas would require substantially increased investment in the infrastructure of research archaeology in Ohio, akin to the scale that Struever (1968a, 1968b, 2004; Brown and Struever 1973) mustered for Hopewell archaeology in the lower Illinois river valley.

COMMUNITY, SOCIAL, AND RITUAL ORGANIZATION

In the last 10 years, many key details of Hopewellian community, social, and ritual life in the central Scioto valley have begun to be documented empirically. Basic social units and categories such as households, residential communities, local symbolic communities, sustainable communites, clans, sodalities, political alliances, genders, and leaders of particular kinds have been identified (e.g., Carr 2005a; Carr and Case 2005b; Dancey and Pacheco 1997b; Field et al. 2005; Pacheco 1993; Pacheco et al. 2005; Ruby et al. 2005; Thomas et al. 2005). The social and ritual roles played by these individuals and groups, the means of integration of individuals within a group, and relationships among the social categories have been reconstructed to various extents. Rituals of several kinds that differed in their sizes, social compositions, and functions have been defined (Carr et al. 2005). An integrated picture of Scioto Hopewell life is beginning to emerge.

Future studies of Scioto Hopewell community, social, and ritual organization can be made productively on at least two levels. First is the level of multiple individuals, including social groups, organizational relationships among them, categories of individuals (e.g., males, leaders of a particular kind), and roles. Refinements and further identifications of the above-mentioned social units and categories are still needed. For example, although a suite of clans has been identified, some of these may encompass multiple clans with similar totems or eponyms and may need partitioning (e.g., the Nonraptorial Bird group). Likewise, certain social groups that may have been sodalities and/or ritual societies (e.g., represented by mica mirrors, galena cubes, obsidian bifaces) require additional lines of verification.

A second level of productive study is that of the individual and his or her "lived experience" as positioned in a society and the natural environment, as recorded in his or her "life history" (Buikstra et al. 2004; Krogman 1935; see also Buikstra 2006:348–351; Cox and Sealy 1997; Katzenberg 2000) or "osteobiography" (Saul 1972:8; Saul and Saul 1989; see also Metress 1971; Williamson and Pfeiffer 2003). Now that many basic social and ritual categories of Scioto Hopewell people have been identified, it is possible to place a specific individual in the nexus of these and to ask what his or her specific life might have been like. For example, who were each of the two individuals buried together with fancy items in grave 47 under Mound 25 at the Hopewell site? To what local symbolic community(ies) and clans did each belong? Were either of them members of one or more sodalities? What was the gender of each person: masculine, feminine, or transitional? Were both individuals considered adult, or had they yet to be initiated fully into adult social life? What social and ritual roles did each fulfill, as a member of a community, clan, sodality, gender, age category, and in any leadership capacity? How prestigious was each individual, relative to each other and to other persons interred in the charnel house? What relationships bound the two persons together such that they became buried together? What relationships bound each individual together with others with whom they were buried, in immediately adjacent graves, in a cluster of graves, and within one charnel house? Did either of the individuals travel beyond the Scioto-Paint Creek area or trade with those who had gone afar, given the materials of his or her grave goods; and if so, for what likely purpose(s)? What were the implications of these various aspects of the life of each person for his or her health, work load, physical quality of life, circumstances of death, and age of death? In attempting to answer questions such as these, the researcher not only forms a picture of what it might have been like to have been a specific Scioto Hopewell person, but also expands the documentation and understanding of the social "organization" of Scioto Hopewell people – the operation and processes of their social life (*sensu* Firth 1951:2, 36).

Methods

Research topics of the above kinds, at the levels the group and the individual, can be pursued in part with the methods of mortuary analysis, expanding on the mortuary studies made in *Gathering Hopewell* (Carr and Case 2005c) and here. However, a more productive route would be to combine mortuary analyses with physical anthropological information on bone and dental genetic make-up, chemistry, and morphology. Several new avenues for research are open, as follows.

Analysis of DNA extracted from tooth and bone collagen or from tooth pulp cavities has good potential for significantly increasing the proportion of deceased persons for whom their sex is determined (Stone et al. 1996). Good success has already been achieved on Scioto Hopewell skeletons (Mills 2001:7; 2003; successful amplification for 69 % of individuals) and Illinois Hopewell skeletons (Bolnick 2005, 2007:634; successful amplification for 71 % of individuals). Sex determinations are essential for identifying gender relationships and roles, social ranking, clans, sodalities, and communities.

Analysis of nonmetric postcranial, cranial, and dental traits (Alt and Vach 1998; Blom et al. 1998; Konigsberg and Buikstra 1995; Lane and Sublett 1972; Larsen 1997:302–332; Pearson 2000:116–122; Schillaci and Stojanowski 2002;

Spence 1974), craniometrics focused on the face and skull base forward of the forward edge of the foramen magnum (Brace and Hunt 1990; Harding 1990; Minturn 2006; Relethford and Harpending 1994; Schillaci 2003; Schillaci et al. 2001; see also Konigsberg and Ousley 1995; Suzanne 1977), oxygen isotope and strontium isotope analysis of teeth and bone (Hodell et al. 2004; Price et al. 2000; White et al. 2002, 2003), and mtDNA (Bolnick 2005, 2007; Mills 2001, 2003; Shimada et al. 2004) can afford information on an individual's biological group affiliation, biological distances among groups and individuals, and/or locations where a person has lived, both early in life and closer to death. Success has been had at both the regional and local scales, making coarser and finer-grained distinctions among biological populations, social groups, and individuals. In turn, basic information on group affiliation, biological distances, and residences has been used to document and corroborate a wide range of aspects of social organization (see above references). In the local Scioto Hopewell case, such potential applications include inferring an individual's local symbolic community affiliation; the fluidity of membership of communities; rates and vectors of intermarriage among communities, clans, and prestige groups and of adoption among communities; postmarital residence patterns; geographic patterns of relocation of an individual at various points in his or her life history, either locally, regionally, or interregionally; and the solidity of intercommunity alliances considering marriage, residence, and relocation patterns. The viability of mtDNA analysis in making fine-grained, local-scale reconstructions that genetically distinguish different prestige or other groups and that identify patterns of postmarital residence has already been demonstrated for an Illinois Hopewell cemetery population (Bolnick 2005, 2007) and is likely for Scioto Hopewell populations, which show the same haplogroup diversity as Illinois ones (Bolnick 2005, 2007; Mills 2001, 2003).

Musculoskeletal stress markers (MSM) on skeletons (Capasso et al. 1999; Hawkey and Merbs 1995; Merbs 1983) can be used to infer some of the various physical activities an individual repetitively undertook during life (e.g., running, throwing a spear, knapping flint, grinding seeds, pounding nuts or copper ore, pulling weeds) and his or her work load for each task and in total relative to other individuals. Such information can give insight into the varying kinds of work, work loads, and qualities of life of individuals who differed by gender, social role, prestige, community, or other social categories. A study of MSM on skeletons from the Turner site in southwestern Ohio (Rodrigues 2005) is successful in these ways. No MSM studies of skeletal populations in the Scioto valley has been made.

In light of these modern physical anthropological methods, which have scarcely been used to study Scioto Hopewell peoples, and considering what has come to be documented about Scioto Hopewell community, social, and ritual organization over the past decade, I now suggest some further areas of sociological research that are ripe.

Community Organization

One cornerstone topic that needs further exploration is the existence and nature of local symbolic communities of Scioto Hopewell people. Ruby et al. (2005) hypothesized that, between the level of the residential community comprised of one or a few households and the sustainable community comprised of many households that gathered together periodically at large ceremonial centers, there existed an intermediate level of community organization in the Scioto-Paint Creek area: the local symbolic community. The sets of households who comprised a local symbolic community are inferred to have had a sense of common identity, consequently to have buried their dead together within a definable spatial cluster within a charnel house, and to have been territorially based in that they lived in different segments of the Scioto and Paint Creek valleys.

The existence of the local symbolic community level of organization of Scioto Hopewell peoples has been posited thus far from three empirical patterns. First is the apparent clustering of residential sites around the large ceremonial centers in the Scioto valley rather than the uniform distribution of the residences up and down the valley, as recorded through a surface survey directed by Prufer (1975:316). Second is the trimodal spacing of large, late Middle Woodland ceremonial centers from one another in the Scioto-Paint Creek area. The first mode represents the distance between very closely spaced centers within a single local symbolic community. The second mode has been identified as the expanse of a single local symbolic community's earthworks, including its most distant earthworks, and per chance, also the distances between different, geographically separated local symbolic communities, that is, the distances between nearest earthworks in adjacent local symbolic communities. The third mode indicates the expanse of multiple local symbolic communities within a single, broader sustainable community, as expressed in the distances between ceremonial centers in different local symbol symbolic communities (Chapter 3, Sustainable Communities; Ruby et al. 2005:161–165, 170, table 4.6). A third kind of evidence that suggests the existence of local symbolic communities, and additionally each's sense of identity, is the varying styles of fabrics found in ceremonial centers thought to fall within different local symbolic communities (Carr 2005b:93–94; Carr and Maslowski 1995).

The existence and nature of local symbolic communities of Scioto Hopewell people could and should be tested through additional archaeological survey and by bone and dental morphological, genetic, and chemical analyses. The issue can probably be addressed most easily for the late Middle Woodland period, when the inferred organization of local symbolic communities is clearest. It has been reconstructed that at this time, three local symbolic communities resided in the Scioto-Paint Creek area: one in the Scioto valley, one in main Paint Creek valley, and one in the North Fork of Paint Creek valley (Chapter 3, Local Symbolic Communities; Carr 2005a, 2005b; Ruby et al. 2005). Knowing now what the surface signatures of Hopewell habitation sites look like in the Scioto-Paint Creek area (Coughlin and Seeman 1997; Pacheco 1993), a systematic surface survey should be made from the mouth of Paint Creek along its length to the Baum and Seip earthworks, as well as up the North Fork of Paint Creek valley to the Hopewell and Old Town earthworks. If a relatively continuous distribution of Hopewell habitation sites were to be found between Baum and Seip, and between Hopewell and Old Town, and if a hiatus in habitation sites occurred someplace between Baum and Hopewell, and between these and the Scioto valley, then the existence of the three local symbolic communities and their territorial basis would be corroborated.

Bone and dental morphological, genetic, and chemical analyses of burials from the Seip-Pricer mound, Hopewell Mound 25, and the Ater mound would provide additional tests of the idea. Specifically, within the charnel houses under each of these mounds, two or three spatial clusters of burials have been identified through systematic mortuary-sociological analysis to represent persons from two or three local symbolic communities who buried their dead adjacent to one another (Chapter 3, An Example of a Sustainable Community; Carr 2005a). At Seip-Pricer, the western burial cluster is thought to have been constituted by deceased persons from the local symbolic community in the North Fork of Paint Creek valley, the middle burial cluster by deceased members of the local symbolic community in the main valley of Paint Creek, and the eastern burial cluster by deceased persons from the local symbolic community in the Scioto valley (Carr 2005a:310–311; Thomas et al. 2005:364, table 8.11). If this reconstruction is correct, then the deceased within a cluster might exhibit more similarity to one another in their bone and dental morphology and chemistry and in their genetics than do the deceased from different clusters. Nonmetric postcranial, cranial, and dental traits, craniometrics focused on the face and mandible, oxygen isotope ratios and strontium isotope ratios of bones and teeth, and mtDNA each might show this pattern (see Mills [2001:13] for a nascent Ohio Hopewell application and Bolnick [2005, 2007] for an Illinois Hopewell application). It is possible, however, that the expected pattern would not emerge, despite the organization of Scioto Hopewell peoples into the proposed local symbolic communities, if intermarriage and/or adoption among the communities was great and if persons were buried with their families of marriage rather than families of birth.

Three other basic features of the community organization of Scioto Hopewell peoples could be investigated in the course of making the above bone and dental morphological, genetic, and chemical analyses. First is the overall degree of fluidity in membership of local symbolic communities, as a function of intermarriage, adoption, persons changing their residence to join relatives in other communities, etc., in contrast to the degree of endogamy of local symbolic communities. This feature bears on the questions of whether or not individual local symbolic communities were viable breeding populations, and of regional population density. A second feature of Scioto Hopewell community organization that the above analyses could reveal is patterns of postmarital residence – patrilocal, matrilocal, or bilocal. The degree of variability that males compared to females within a burial cluster in a charnel house exhibit in their bone and dental morphology and chemistry would allow this determination (e.g., Lane and Sublett 1972; Larsen 1997:326–329; Schillaci and Stojanowski 2002, 2003; Spence 1974). Documenting postmarital residence pattern would help to complement our nascent understanding of how kinship was reckoned among Scioto Hopewell peoples (Chapter 4, Gender, Gender Relations, and Kinship Structure; Field et al. 2005) and current thought about the importance of horticulture to them (Chapter 2; Wymer 1996, 1997). Finally, bone and dental morphological, genetic, and chemical analyses could easily shed light on the frequency with which persons who were born and raised in distant regions came to and were buried within Scioto Hopewell ceremonial centers (Hodell et al. 2004; Price et al. 2000; White et al. 2002, 2003). These instances are expected to have been rare (e.g., Ruby and Shriner 2005).

Regional Mortuary Programs and Intercommunity Alliances

If Scioto Hopewell peoples were organized into local symbolic communities, as evidence implies, a next logical subject is whether their mortuary programs were regional and multi-site in scale. Two questions are essential to the topic: (1) Did a given local symbolic community bury its dead in one site or multiple sites over a region? (2) Did multiple local symbolic communities across a region bury their dead together in a single site?

For the late Middle Woodland period ritual landscape in the Scioto-Paint Creek area, these two questions concern the veracity of the hypothesis of the "tripartite alliance" (Chapter 3, An Example of a Sustainable Community; Carr 2005a). In this model, during that period, each of three local symbolic communities in three different river valleys (see above) buried some of their dead together in large charnel houses in each others' valleys. Thus, for example, it is proposed that people who were members of the local symbolic community in main Paint Creek valley interred their dead not only within the charnel house under the Pricer mound in the Seip earthwork in that valley, but also within the charnel house under the Edwin Harness mound in the Liberty earthwork in the Scioto valley, and within charnel houses under Mound 25 in the Hopewell earthwork and under the Conjoined mound in the Old Town earthwork in the North Fork of Paint Creek valley (re. Question 1). Obversely, the Seip-Pricer charnel house is proposed to have included deceased not only from the local symbolic community in main Paint Creek, where the Seip-Pricer charnel house was located, but also deceased from a local symbolic community in the North Fork of Paint Creek and others from a community in the Scioto valley (re. Question 2). This burial of the deceased from the three different local symbolic communities together in a charnel house in each of the community's lands is interpreted to have been a powerful means for creating a spiritual alliance in perpetuity among the deceased and their living descendants

(Chapter 3, An Example of a Sustainable Community; Carr 2005a).

The proposed, regional, multi-site mortuary program, and the hypothesized alliance between three local symbolic communities that the mortuary program implies, could be tested with bone and dental morphological, genetic, and chemical analyses of human remains from the Seip-Pricer mound, Hopewell Mound 25, and the Ater mound, which occur in two of the three valleys. Two kinds of tests are immediately suggested, pertinent to the two questions, above. First, if a local symbolic community buried its dead in multiple charnel houses over the region, the deceased who were laid to rest in certain spatial clusters in different charnel houses but who are thought on archaeological evidence to have been members of that same one local symbolic community (Carr 2005a:310–311; Thomas et al. 2005:364, table 8.11) should be more similar in their bone and dental characteristics than are the deceased placed in different spatial clusters in some one charnel house and thought to have been members of different communities. For example, the bone and dental morphological and chemical characteristics of persons buried in the western cluster under the Seip-Pricer mound, in Cluster E under Hopewell Mound 25, and in the southern cluster under the Ater mound, all of whom are inferred to have been members of the local symbolic community in the North Fork of Paint Creek, should resemble one another more, on average, than do the bone and dental characteristics of the deceased buried in the different spatial clusters within some one of these mounds. Second, if multiple local symbolic communities across the region buried their dead in a single charnel house, and if those persons had lived out much of their lives in different local symbolic communities in different valleys, then, as above, the deceased who lay in different spatial clusters within that charnel house and who are thought to have been affiliated with those different local symbolic communities should, on average, be distinct from one another in their bone and dental morphological, genetic, and chemical characteristics. For example, if each of the charnel houses under the Pricer, Hopewell 25, and Ater mounds held the remains of persons who had lived much of their lives in different local symbolic communities, then those deceased who were placed in different spatial clusters within any one of these charnel houses should, in general, be distinguishable from one another in their bone and dental characteristics (see Mills [2001:13] for a nascent, model study). Again, both of these tests presume that intermarriage and/or adoption among communities was not great and that persons were buried with their natal families.

The issue of whether a given local symbolic community buried its dead in multiple sites over a region (Question 1) involves not only the relationships of contemporaneous, large charnel houses with large burial populations to one another, but also the relationships of large charnel houses to smaller burial mounds. For example, in main Paint Creek, who were buried in the small mound sites of Rockhold and Bourneville, to the west and east of the Seip earthwork, respectively, in contrast to those buried in Seip's large charnel houses under the Pricer and Conjoined mounds? If the small sites were roughly contemporaneous with either the Pricer or Conjoined mound, as they appear to have been (see above, Chronology), were the deceased who were interred in the small mounds natal members of the local symbolic community that resided in main Paint Creek valley? Or were they persons who married into that community from other local symbolic communities in the Scioto-Paint Creek area? Or were they persons from more distant places outside of the Scioto-Paint Creek area who married into the community and/or had ties of a kind with it? If they were natal members of the local symbolic community in main Paint Creek valley, are there any features of their burials that suggest why they were segregated from persons interred in the large charnel houses in the Seip site? Analysis of bone and dental morphological, genetic, and chemical characteristics of persons buried under the Rockhold, and Bourneville mounds compared to those of the deceased under the Pricer or Conjoined mounds at Seip could answer the issue of the origins of the persons buried at Rockhold, and Bourneville.[13]

A similar line of questioning applies to the relationship of the small mound site of West, in far western Paint Creek drainage, and the large earthen enclosure of Mound City. If these sites overlapped in their times of use (see above, Chronology), did the deceased who were buried at Mound City include persons from distances as far as the western portions of main Paint Creek drainage, where the West mound is located?

The issue of whether multiple local symbolic communities across a region buried their dead together in a single site (Question 2) likewise involves not only the large charnel houses mentioned above, but also smaller burial mounds. The earthen enclosures of Hopewell, Seip, Liberty, and Old Town, for example, each had many small mounds within them and nearby, in addition to the large charnel houses that they contained. The Mound City embankment held solely many small mounds. In each of these sites, the persons buried under the small mounds might have been members of the local symbolic community in which the site was built, members of one or more other, allied local symbolic communities in the Scioto-Paint Creek area, or persons from outside the area who had marital or other connections to members of the community in which the site was built. These alternative ideas might be sorted out through bone and dental morphological, genetic, and chemical analyses. (See Mills [2001:13–14] for an incipient, model analysis.)

In the case of the Hopewell, Seip, Liberty, and Old Town earthworks, if some or all of the persons in their small mounds turn out to have been from the Scioto-Paint Creek area, the culturally interesting question arises as to why these people were buried separately from others in the large charnel houses at these sites, yet near to them. Some possible ways in which the persons in small mounds might have been distinguished, and that would require study, include differences in circumstances of death, other pollutions, social rank or role, or time – for example, later in a site's history, after the closing of a large charnel house, or early in its history, before the site became regionally important.

In the case of Mound City, the sheer quantities of quartz spearheads, mica mirrors, and galena cubes that were buried in large, homogeneous ceremonial deposits in some mounds and that were used by ritual specialists suggest the gathering at those mounds of large numbers of specialists who must have come from multiple local symbolic communities within and possibly outside of the Scioto-Paint Creek area (Table 4.8; Carr et al. 2005:486–488, Table 13.2). However, whether the deceased placed in those mounds also came from multiple local symbolic communities, and from communities near or far away, is unclear. For other mounds at the site that lack large ceremonial deposits, the community and regional affiliations of the persons buried in them are also unknown. These uncertainties cannot be investigated through bone and dental analyses because hardly any Middle Woodland period skeletal remains from Mound City are curated in archives today.

A particularly interesting case of the community affiliations of persons buried in different mounds within a single site is the comparison of those interred under Mound 25 to those interred under Mound 23 at the Hopewell site. These two mounds mirror each other in both being very large, in having elaborate tombs in general, and in containing largely adults, with subadults almost completely missing. At the same time, the two mounds are complementary in that many burials under Mound 25 had many and/or elaborate grave goods, whereas most burials under Mound 23 had few or no grave goods. In addition, the burial population under Mound 25 is heavily skewed toward males (3:2), whereas the sex distribution of that under Mound 23 is unknown. Also, the persons buried under Mound 25 appear to have come from at least three different local symbolic communities (Chapter 3, An Example of a Sustainable Community; Carr 2005a), whereas the community affiliation(s) of the deceased under Mound 23 are unknown. One possible interpretation of the two mounds is that burial within Mound 25 was restricted to particular, largely important classes of individuals – hence the richness of artifacts and male bias (Carr 2005a:278–280) – whereas Mound 23 contained spouses or other affines of the persons not eligible for burial in Mound 25. Other possibilities are that persons buried in Mound 25 versus Mound 23 differed in rank (see below, Social Ranking; also Carr 2005a:337–338), that the two mounds were built at different times when Scioto Hopewell social organization and mortuary practices were somewhat different or at different times within a long-term ritual cycle, or that persons buried in Mound 25 came largely or entirely from within the Scioto-Paint Creek area whereas those interred in Mound 23 came from outside of it. To investigate these alternative interpretations, it is necessary to identify the sexes of available, curated individuals from Mound 23 and Mound 25 through DNA analysis and the locations of residence of the individuals through bone and dental morphological and chemical analyses. The numbers of curated individuals, however, is not ideal – about one-third from each mound.[14]

Alliance Formation, Ritual Gatherings, and Ceremonies

Our understanding of the alliances that Scioto Hopewell individuals and communities crafted among one another could be refined in two arenas. One is the nuts-and-bolts documentation of the sizes of ritual gatherings, the distances from which people came to join together in rituals, the culturally-specified functions of the rituals, whether some might have taken the form of ritual dramas, and the calendrical or circumstantial precipitants for their being scheduled. The second area in need of research is inventorying the different means and media used by Scioto Hopewell peoples to create and refashion alliances, and documenting how means and media complemented one another and changed in the balance of their use over time. Among the vehicles for alliance making that Scioto Hopewell peoples used and that seem tractable for archaeological and/or bioarchaeological study are: mortuary rituals, other ceremonies, the decommissioning of fancy materials and artifact forms together by ritual participants, their burying their dead together, building earthworks and mounds, utilitarian ceramic and lithics exchange, perhaps valuables exchange, and marriage exchange. At the core of the topics of decomissioning fancy items together, building earthen structures, and exchanging items is the essential issue of the spiritual essence, power, sentience, and/or personhood attributed to these objects, and the effects of these properties on the nature, quality, and permanence of the alliance relationships that were built.

Sizes of Ceremonies

The sizes of mortuary and mortuary-related rituals that occurred within charnel houses and on mound floors in the Scioto-Paint Creek area and across Ohio have been estimated quantitatively and in great detail by Carr, Goldstein, et al. (2005; see also Chapter 4, The Sizes of Gatherings). This first attempt used the numbers of redundant artifacts in individual graves and ceremonial deposits to infer the number of persons who placed gifts in graves during mortuary ceremonies or who decommissioned artifacts in deposits after mortuary or mortuary-related ceremonies. The study provides minimum estimates of numbers of ritual participants in part because it considers only gift givers or persons who decommissioned artifacts, not others who simply attended the rites or who had ceremonial roles that did not involve gift giving or artifact decommissioning. The estimates are also minimal because the study considers each grave or deposit individually rather than in potentially contemporaneous sets of graves and/or deposits. The first bias does not seem correctable, but the second might be.

A promising approach for overcoming the bias of analyzing individual graves and deposits as units of social gathering would be to argue contextually those that might have been made at one time and contributed together to drawing a gathering. The contents and/or spatial adjacency of graves or deposits might be used successfully in some instances to associate them. Then, the numbers of redundant artifacts in the entire suite of graves or deposits, rather than in the graves or deposits individually, might be used to calculate the number of persons who gave gifts or decommissioned artifacts. For example, the artifact contents of Altars 1 and 2 under Mound 25 in the Hopewell site may have been complementary (Greber 1996:162, 164; Greber and Ruhl 1989:79–81, 276) and possibly were created contemporaneously as a part of one ritual. Similarly, the six persons, Burials 2–7, placed on a high, raised platform above the floor of Pricer Mound in the Seip earthwork might have been laid out in one episode. Combining ceremonial deposits and/or burials and their redundant artifacts in this fashion to estimate the minimum sizes of ritual gatherings would produce higher estimates than those made by Carr, Goldstein, et al. (2005). A reanalysis might also lead to somewhat different empirical patterns across sites of different kinds and over time, and modified sociological inferences. However, the typology and general patterning of gatherings of various sizes and social compositions found by Carr, Goldstein, et al. is robust and probably would not change much.

Geographic Expanse of Participation in Ceremonies

The geographic distances from which Hopewell people came to bury their dead in a given mound or earthwork, and the community and societal affiliations of the participants, has been inferred only qualitatively to date. Specifically, the likelihood that people came from multiple communities within and perhaps outside of the Scioto-Paint Creek area to inter their deceased or to hold mortuary-related ceremonies there has been inferred from the large numbers of ritual paraphernalia or social role markers of a kind that were placed in a grave or ceremonial deposit (Carr, Goldstein, et al. 2005; Weets et al. 2005:549). The hundreds of mica mirrors placed in each of Mound 7 and Burial 1 of Mound 13 within the Mound City earthwork, the approximately 500+ pairs of earspools deposited in Altar 1 of Mound 25 in the Hopewell earthwork, the 100,000 pearls equatable to approximately 400 strands that were put in Altar 2 of Mound 25, and the 94–95 copper breastplates and 66 copper celts laid over skeletons 260 and 261 in Mound 25 each suggest the ritual gathering of very many persons beyond the number that would be found in a single local symbolic community or perhaps the several in the Scioto-Paint Creek area and wider region.

This picture could be refined considerably by identifying the geographic locations where deceased persons who were buried in a mound or earthen enclosure had resided early and later in their lives – their histories of residence. Bone and dental chemical and genetic characterizations of the deceased have good potential for providing this information, following the model analyses of White et al. (2002, 2003), Hodell et al. (2004), Price et al. (2000), and Bolnick (2005, 2007). With such facts in hand, it might be possible to answer some perennial questions about Hopewellian social interaction pertinent to several scales, culture-historical issues, and proposed ideas about the causes of elaboration of Scioto Hopewell culture. For example, (1) from how far up and down the Scioto valley were people attracted by religious and ritual developments in the Scioto-Paint Creek area and drawn there to live and/or participate in burying their dead there? Were local population densities significantly increased in the Scioto-Paint Creek area by such immigrations, as modeled in Chapter 5, and did they further stimulate social organizational and ritual elaboration there? Did the geographic expanse from which people were drawn to the area increase over the Middle Woodland period? (2) Did Hopewellian peoples from the Licking drainage, or the Little or Great Miami drainages, participate in ceremonies in the Scioto-Paint Creek area, immigrate there, and occasionally or frequently come to be buried there? What would these findings imply about the cultural mechanisms by which the circle-octagon elements of the distant Newark and High Bank earthworks came to be constructed in nearly identical form, with circles of the same size, with the same relationship to lunar events, and in precisely perpendicular orientations (Lepper 1998:130–131; see below)? What would the findings imply about the cultural means by which the distant

Hopewell and Turner sites came to share a pattern of each having had paired ritual basins that were complementary in their soil-fill colors, orientations, and/or perhaps certain aspects of their artifact contents (Greber 1996:162–164), with the possibility that certain basins at the two sites were contemporaneous (Greber 2003:96, 106)? Do the combined chemical, genetic, and artifactual evidence support models of long-distance pilgrimage to a ceremonial center or travel to a center of learning (Carr 2005d:589–591, 600–604, 608, table 16.2; Lepper 1996; 2004:79; 2006), spirit adoption and intermarriage among peoples of distant areas (Carr 2005d:587–589, 608, table 16.2; Hall 1997:157, 161; 1989:255–256), or the buying of religious prerogatives from distant elite (Carr 2005d:586, 608, table 16.2; Penney 1989:159–229)? (3) Was there a significant immigration of Havana elite or commoners from Illinois into the Ohio area, as Prufer (1964a:55, 57–59) hypothesized from artifactual, radiocarbon, and osteological evidence, or in the opposite direction, as Bolnick (2005:132–138) has concluded from a genetic study, or none to speak of, as Sciulli and Mahaney (1986) have concluded from cranial discrete traits? What would this finding imply about the likelihood and levels of participation of Havana Hopewell and Scioto Hopewell peoples, beyond any immigrants, in each other's ceremonies?

Ceremonial Integration of the Newark and Scioto-Paint Creek Communities

The ceremonial and other cultural relationships between peoples of the Scioto-Paint Creek area and those around the Newark earthwork are especially important to document. Newark is the largest of all Hopewellian earthworks in Ohio and in the Eastern Woodlands (Lepper 1996:226), encompassing some 575 acres. Also, the Newark region is one of the areas of Hopewell ceremonialism closest to the Scioto-Paint Creek area, laying less than a day's canoe trip away. From all available evidence, ties between the peoples of these two regions appear to have been very strong, on a par in some ways with the relationships among local symbolic communities within the Scioto-Paint Creek area, itself. Events within the two areas and interactions among their peoples likely directly influenced culture-historical trajectories within each area. Nevertheless, the social and ritual particulars of these relationships and their historical effects have only begun to be explored (Lepper 2006:128–131).

The Newark earthwork lies some 80 miles by river valleys from the Scioto-Paint Creek confluence. Most of the trip can be made by water, canoeing up the Scioto and Walnut Creek to within a mile or two portage of the South Fork of the Licking river, which flows past Newark. This distance is about three times greater than that between farthest-spread, contemporaneous earthworks within the Scioto-Paint Creek cluster.

Diverse and reinforcing kinds of material evidence, related to earthwork building and burial concepts and practices, suggest the close social and ceremonial ties between peoples of the Newark and Scioto-Paint Creek regions. First and strongest of the evidence are the precise geometric and astronomical equivalency and the directional complementarity of the High Bank octagon-and-circle earthwork in the Scioto-Paint Creek area and the Observatory Circle and Octagon elements of the Newark earthwork. Of all the earthworks that Hopewellian peoples built across Ohio, only two combine a circle and an octagon: High Bank and Newark (Lepper 1998:130). The Observatory Circle of Newark and the circle of High Bank are both the same size: 20 acres. The octagon-circle layouts of Newark and High Bank each create alignments that mark the eight extremes of the 18.6 lunar cycle: maximum and minimum northern moonrise on the eastern horizon, maximum and minimum southern moonrise on the eastern horizon, and the four analogous moonset points on the western horizon (Lepper 2004:77, 79; Hively and Horn 1982, 1984). In addition, the two octagon-circle earthworks are complementarily oriented 90° from each other. The major axis of the Newark Octagon and Observatory Circle marks the maximum north moonrise, whereas minor axes through opposite vertices of High Bank's octagon mark this celestial event (Romain 2004:104, table 6.11).

Second, the square of the Liberty earthwork in the Scioto-Paint Creek area and that of the Newark earthwork both have their minor axis through opposite vertices aligned to the equinox sunrise (Romain 2004:104, table 6.11). These are the only two square enclosures, of the dozen or so in Ohio, that are oriented to the equinox sunrise.[15]

Third, the Newark earthwork and many earthworks in the Scioto-Paint Creek area share layouts that incorporate a 3–4–5 right triangle (Marshall 1996:213). These triangles may have been instrumental in laying out the earthworks on the ground.

Fourth, the Newark earthwork and some works in the Scioto-Paint Creek area express the fascination of peoples in both areas with geometric equivalency relationships among squares and circles. Specifically, the Square and the Great (Fairgrounds) Circle at Newark have equal perimeters. In the Scioto-Paint Creek area, the circle of the Hopeton earthwork is contained precisely in its square. The square of the Works East earthwork is contained precisely in its circle; likewise for the Frankfort earthwork and the Circleville earthwork (Romain 2000:48–49, 62–63).

Fifth, from the Octagon at Newark, a causeway that was formed by two parallel embankments extended southwestward at least six miles. Significantly, the causeway was oriented toward the confluence of the Scioto river and Paint Creek (31° west of south from Newark) (Lepper 1998:130). Lepper has interpreted the causeway as a sacred road (1996:237–238; 1998:130–133; 2004:79; 2006) that spanned the full territory between Newark and the earthworks in the Scioto-Paint Creek area (2006:126) and allowed the safe passage of pilgrims to Newark, analogous to the "white roads" of the Maya and Delaware (Lepper 1998:132, 2006:126–127). At least near Newark, a small circular enclosure branched off the road every mile to mile and a half (Lepper 1998:129), which might have been used for pilgrimage rites as a person or group approached Newark and prepared for entrance into it from the southwest. It is possible that the road did not extend from Newark much more than the six miles for which it has been documented, and that any pilgrims from the Scioto-Paint Creek area first traveled by canoe up the Scioto and up to the headwaters of Walnut Creek, portaged briefly there to the South Fork of the Licking, and then canoed down the South Fork some miles to the vicinity of the start of the road. Whether the causeway extended physically all the way from Newark to the Scioto-Paint Creek area or was only partial and symbolic of the total journey, it marked a strong conceptual and ritual tie between the two regions.[16]

Sixth, similar burial practices and symbolism connected, perhaps very strongly, peoples of the Newark and Scioto-Paint Creek areas. Specifically, Newark appears to have contained a large charnel house complex for burying together the dead from multiple social units, analogous to the charnel houses constructed in the Scioto Paint-Creek area at the Liberty, Seip, Old Town, Hopewell, and Tremper sites. At Newark, within its elliptical earthen enclosure, the large Central mound of the Cherry Valley cluster of 12 mounds covered substantial posts of what was probably one or more charnel buildings (Wilson 1868:69 in Lepper 1998:121). The Central mound was comprised of four conjoined mounds (Salisbury and Salisbury 1862a; Wilson 1868; Whittlesey 1838), which could have covered four distinct rooms of one charnel house or four separate but closely spaced charnel houses, by way of analogy to the conjoined mound and charnel house designs of the Pricer, Conjoined, and Edwin Harness mounds, and Mound 25, at the Seip, Liberty, and Hopewell earthworks. Three of the Central mound's conjoined mounds formed a line (Salisbury and Salisbury 1862a; Wilson 1868; Whittlesey 1838), as did the three conjoined mounds that comprised each of the Pricer, Seip-Conjoined, Edwin Harness, and Porter-Conjoined mounds, and Mound 25, at the Seip, Liberty, Old Town, and Hopewell sites. The fourth mound of the Central mound projected to the east (Salisbury and Salisbury 1862a; Wilson 1868; Whittlesey 1838; see also Lepper 1996:236; 2004:77). Within the largest, northernmost of the four conjoined mounds was unearthed a " 'tier of skeletons' placed with their heads to the center and their 'feet radiating toward the outside' " (Salisbury and Salisbury 1862b:12 cited in Lepper 1996:237). The arrangement of these bodies suggests a self-contained cluster of burials in this one mound of the conjoined four. Considering the distinct cluster of burials placed under each of the three conjoined mounds of the Pricer mound, likewise under each of the three conjoined mounds of the Edwin Harness mound, and probably under each of the three mounds of the Porter Conjoined mound (Carr 2005a; Greber 1979a, b; Moorehead 1892:133–143), the Central mound at Newark can be posited to have had four clusters of burials, one under each of its conjoined mounds.

Very significant, if the central mound of the Cherry valley group did, as seems likely, hold a four-chambered charnel house, or four closely spaced charnel buildings, each with a set of burials, the four groups of people could have been members of four different communities: perhaps the three allied local symbolic communities from the Scioto-Paint Creek area who buried their dead together there in each of several charnel houses (Chapter 3, An Example of a Sustainable Community; Carr 2005a), and a local symbolic community in the Newark area. Just as the three local symbolic communities in the Scioto-Paint Creek area marked a spiritual alliance among themselves by burying their dead together in each of the Pricer, Edwin Harness, and Porter-Conjoined mounds in the Seip, Liberty, and Old Town earthworks, so they *may* have marked their spiritual alliance with a local symbolic community in the Newark area by all four communities having buried their dead together in the Central mound of the Cherry Valley mound group. This interpretation implies a very strong social–ritual connection between peoples of the Scioto-Paint Creek area and those of the Newark area, and is a priority for investigation.

Other interpretations of the four lobes of the Cherry Valley central mound are also possible. The four lobes might have contained persons from different local symbolic communities in the Newark area, alone, or persons from different clans, as was probably the situation in the charnel house under the Tremper mound, or persons distinguished by other social or situational criteria.[17] Any of these scenarios, however, minimally imply the sharing of key mortuary symbolism and practices between the Newark and Scioto-Paint Creek areas and a connection between them.

Together the multiple lines of evidence presented above suggest very strong social and ritual ties of one or more kinds that linked peoples of the Newark and Scioto-Paint Creek areas. Specifically implicated are the sharing of geometric and astronomical details of earthwork designs among community leaders who orchestrated the building of the octagon-circle earthworks at High Bank and Newark, and the squares at Liberty and Newark; possibly the pilgrimage of Scioto-Paint Creek peoples to Newark along an embanked road, part or much of the way; and possibly the burial of peoples from three communities in the Scioto-Paint Creek area and one in the Newark area together within the same charnel building or a suite of charnel buildings under the Central mound of the Cherry Valley group at Newark.

The question of whether three local symbolic communities in the Scioto-Paint Creek area and one from the Newark area buried their dead together in the Central mound, or whether the four hypothesized groups of people in the mound were all local, can still be investigated today. A remnant of the center portion of the Central mound lays preserved under the Central Ohio Railroad bed (B. Lepper, personal communication 2007). It could be excavated. Any skeletons found might then be compared to collections of skeletons from the Scioto-Paint Creek area for similarities and differences in their bone and dental morphological, chemical, and/or genetic traits, in search for Scioto-Paint Creek individuals who were buried in the Central mound at Newark. As a complement to this work, the chemical signatures of skeletons from Scioto-Paint Creek cemeteries could be compared to the signatures of wild game or any excavated skeletons from the Newark area, in search for people from the Newark area who were buried in Scioto-Paint Creek cemeteries. Cooperative burial rites among peoples of the two regions might have been reciprocal.

Functions of Ceremonies

The many culture-specific functions that ceremonies within charnel houses and earthworks might have had for Scioto Hopewell peoples have hardly been investigated. Recent literature on Hopewellian ceremonies in Ohio and Illinois has focused repeatedly and narrowly on primarily world renewal ceremonies and ancestor cults (Buikstra and Charles 1999:214–216, 221; Buikstra et al. 1998:88; Byers 1996:182–183; Romain 1996:208; 2000:191–200, 218–226; 2004:163–167; Sunderhaus and Blosser 2006; see also Mallam 1982). Most attention has been given to world renewal rites, following a break-through insight provided by Hall (1979:260–261, after Henricksen 1965:65). He proposed that the mucks, muds, clays, and marls dug from wet areas or beneath bodies of water and placed over midwestern Hopewell burials or as a bed for them, and that the bone awl skewers sunk into the four corners of Illinois and Michigan Hopewell tombs to peg down a hide or other covering over a grave pit, were likely aspects of mortuary ceremonies that reenacted the Earth Diver myth of the creation of the world. However, recent literature on the symbolism of Hopewell mound construction has not reiterated Hall's further suggestions of the intricate intertwining of world renewal ceremonies with spirit adoption and succession rites and with mourning rituals (Hall 1987:30–34, 38–39; 1997:160, 168). Also not considered by recent researchers in their ethnohistorical analogies are the many themes and practices that comprise world renewal rites of Woodland and Plains Native Americans, beyond rites of re-creating the cosmos through reiteration of creation myths by oratory, drama, and material construction. These additional elements of ceremony include: petitioning for the fertility of animal and plant species; renewing day length and maintaining the seasons; communing with ancestors; offering thanks to ancestors and spirits; celebrating the harvest; purifying the whole community; removing disease from a whole community and perpetuating its health; pardoning wrongdoings; instructing the community in moral behavior; cleaning and repairing the ceremonial grounds; clearing the community of old and worn out items, and such (see Table 4.11 for other elements of ceremony and references). Romain (2000:221–225; 2004:164–166) mentions a few of these themes. Ancestor cults, which seek to maintain connections of the living with deceased ancestors and which are distinct from funerals and rites of passage of the deceased to an afterlife (Morris 1991), have occasionally been discussed for their ritual integration with or segregation from world renewal ceremonies and their performance by Hopewell peoples in mound and enclosure sites (Buikstra and Charles 1999:220–221; Byers 1996:181–183). Mortuary rites of separation, liminality, and reincorporation (van Gennep 1909, 1960) have seldom been distinguished and identified in Ohio Hopewell sites (Carr 2005c:470–471; Carr, Goldstein, et al. 2005:500–503, 522–525).

In contrast to the few, functionally distinguished kinds of supra-household ceremonies that have been broached in studies of Hopewell ritual is the much greater spectrum of supra-household ceremonies that were performed historically by Woodlands and Plains Native Americans (Table 4.11). These ceremonies were held to meet the many perennial material, social, and spiritual needs that all humans and societies have.[18]

Ceremonies similar or analogous to the many ones listed in Table 4.11 can be expected to have been performed by Scioto Hopewell peoples; evidence for whether or not they were performed should be sought archaeologically. Detailed analyses of the contents, sizes, and contexts of ceremonial deposits within charnel houses and surrounding locales would be one productive approach to the subject, as demonstrated by studies made by Cowan (2005), Seeman (1979b), Greber (1996), and Carr, Goldstein, et al. (2005).

Among the supra-household ceremonies that were performed historically in the Woodlands and Plains (Table 4.11) and within the earthworks of Scioto Hopewell peoples are those of sodalities, whose members were drawn from multiple clans, multiple residential communities, and perhaps multiple local symbolic communities. The nature and functions of the rites held by Hopewell sodalities marked by breastplates, earspools, and smoking pipes, and by possible ones marked by mica mirrors, galena cubes, and obsidian bifaces, are hardly known (Chapter 4, Sodalities and Ceremonial Societies) and should be investigated. To date, insights into these rites have been based solely on the possible functions of the artifacts that marked those sodalities. Likewise the ceremonies held by clan-specific societies, including one marked by bear canines and possible others marked by the power parts of canids, fox, elk and raccoon, are opaque to us and should be explored (Chapter 4, Sodalities and Ceremonial Societies). The specific nature and purposes of the ceremonies of these various sodalities and societies could be explored by examining the kinds of artifacts that were placed in large deposits during their ceremonies (Table 4.8) and that were auxiliary to the artifact markers of the sodalities and societies, i.e., artifacts additional to breastplates or earspools or fox teeth, etc. Clues might also be gotten from the broader archaeological contexts of the ceremonial deposits, similar to the approach taken by Greber (1996).

Recent literature on ritual at Hopewell ceremonial centers in Ohio and elsewhere is also limited in the specific archaeological correlates that have been used to characterize and distinguish the varying kinds of rites that might have been held there. This issue has several manifestations. First, the functional distinction of funerals and other mortuary rites of passage from ancestor cults has been linked by Buikstra and Charles (1999:204–205, 211–212) and Charles (1995:84–85) only indirectly to material correlates. Buikstra and Charles open two windows into the past: whether a ritual involves competition among social groups (rites of passage) or emphasizes tradition and the status quo (ancestor cults), and whether multiple communities partake in the ritual (rites of passage) or only a single community does (ancestor cults). The degree of competition and group size involved in a ceremony are then linked to the archaeological correlates of whether or not artifacts of extra-local origin are deposited at a burial site, and whether artifact assemblages are large or small. Not considered are the distinctive nature and goals of the two kinds of ceremonies and the different kinds of paraphernalia, bodily manipulation, and other material correlates that consequently are intrinsic or necessary to them and would distinguish them archaeologically. Bridging arguments of this kind remain to be built.

Second, and similarly, the specific, differing archaeological correlates of the several themes that may comprise world renewal ceremonies have not usually been sought. Romain (2000:221–225; 2004:164–166) begins the process, separating the material manifestations of purification by bathing, first-fruits offerings, and renewal of flora. These distinctions are appropriately made in Scioto-Hopewell specific material terms but are left unexplored for their general archaeological correlates.

Third, and more disturbing in discussions of ritual at Scioto Hopewell ceremonial centers, is the naive and misleading implicit equation that has been made between symbolic representations of the cosmos and ceremonies intent on world renewal (Buikstra and Charles 1999:214, 216; Byers 1996:181–183, 2004:78–79; Romain 2004:164; Sunderhaus and Blosser 2006:145; but see Romain 2000:219, 222; Sunderhaus and Blosser 2006:141–142). Cosmological symbols were used widely in historic Woodlands and Plains ceremonies of diverse kinds and their expression in the archaeological record cannot be equated singularly with renewal of the cosmos. Other kinds of ceremonies may be indicated by cosmological symbols in an archaeological record (see especially Chaudhuri and Chaudhuri 2001). Obversely, world renewal ceremonies may emphasize maintaining the fertility of species of this world or other themes and not emphasize the structure of the cosmos at large.

Fourth, the distinct material manifestations of mortuary rites of separation, liminality, and reincorporation, which have begun to be enumerated by Carr (2005c:470–471; Carr, Goldstein, et al. 2005:500–503, 522–525), remain to be explored more fully in Hopewell-specific and general terms.

Fifth, the archaeological correlates of possible Scioto Hopewell ceremonies that had functions other than world renewal, connecting with the ancestors, and helping the deceased and bereaved through their transitions (Table 4.11) have largely not been defined yet. For example, the kinds, amounts, and spatial distributions of archaeological remains generated during rites aimed at curing an individual, renewing the health of a whole community, adopting a community member to end a period of mourning, or initiate male or female youths to adulthood need consideration. What kinds of special paraphenalia were used in such ceremonies historically and might have been decommissioned at the end of them? Did the ceremonies require any special kinds of architectural facilities (e.g., Hopewell parallel wall embankments that led to water, artificially built ponds, or seclusion buildings)? Who and how many typically attended such ceremonies and what amounts of food remains might have been generated by them? Did the ceremonies include rites that involved the deceased and that were located in charnel houses or by the place of burial? Survey of the ethnohistoric literature for the answers to these and related questions would be extraordinarily helpful.

In all, the building of middle range theory, ethnographic models, and Scioto Hopewell context-specific arguments that link the functions of supra-household ceremonies to their material correlates is much in need.

Ceremonial Form: Ritual Dramas

Closely tied to the topic of the culture-specific functions that ceremonies within charnel houses and earthworks might have had for Scioto Hopewell peoples is their forms. One form for which archaeological evidence is accumulating and research is warranted is the ritual drama. Here, I follow the lead of Brown (2003, 2006), who has sought to recognize such ceremonies later in time at the Mississippian site of Cahokia.

A ritual drama is a ceremony, the content and form of which expresses a mythic or historical event, the larger structure of a myth, the culturally-posited content and/or organization of the cosmos (i.e., a cosmogram), a supernatural/spiritual character, and/or a "personnage, that is, a person who exists in perpetuity, often represented by a name or seat, and sometimes associated with an estate or ranked position (Mauss 1938, 1985, see also Gillespie 2001:82–83), such as a "body politic" (Metcalf and Huntington 1991:162–179). Ritual dramas can occur as a part of rites of many kinds, including funerals. In a mortuary setting, the contents and layout of a cemetery, a cluster of graves, or a single grave, which are archaeologically visible, can indicate the narrative content and plot of the drama. Examples of ritual dramas and/or their material correlates include the layout of Cahokia's Mound 72 burials as a Mississippian cosmogram (Brown 2003, 2006); the funerary rites of the divine kings of the African Shilluk, which reenact the unification of the nation (Metcalf and Huntington 1991:166); a long Berewan funeral song that describes the geography that the soul of the deceased traverses to an afterlife in the idyllic homeland from where the Berewan migrated historically (Metcalf and Huntington 1991:87–89); and the accession rites and funerals of Maya aristocrats who, along with bundles of valuable heirlooms and memorializing tablets, represented the personnage of the founding head of a royal house (Gillespie 2001:96–99). The target audience of such acted out and/or materialized dramas may be a large, public gathering (e.g., Ortiz 1972), a small assembly of ritual specialists or sodality members (e.g., Radin 1945), and/or one or more deities, spirits, culture heros, or an array of deceased ancestors (Rappaport 1968). A given ritual drama may be a part of a larger cycle of dramas performed over the course of a year or years (Ortiz 1972:156), or may be situationally determined but repeated (Metcalf and Huntington 1991:166) or situationally determined and unique (e.g., Brown 2003, 2006). Beyond the event-specific purpose of a ritual drama, it has the effect of "mobilizing a community's [or other group's] moods and motivations and reflect[s] their collective identity" (Ortiz 1972:139).

Evidence that Hopewell peoples in the Scioto-Paint Creek area and in the Little Miami drainage performed ritual dramas is found in the contents and layouts of both graves and ceremonial deposits. The manners in which the skeletons, cremation remains, and artifacts in some graves were arranged suggest that they, themselves, were actively used to materialize dramatic scenes, possibly as a part of larger performances that were acted out. Examining these grave arrangements for how they were created and their possible symbolic meanings through contextual study and the forensic-like bioarchaeological methods of *anthropologie du terrrain* (Nilsson-Stutz 2003) could shed strong light on several difficult topics: the specific nature and purposes of certain ceremonies that Scioto Hopewell peoples held, their philosophical–religious beliefs and cosmology, and just perhaps something of their myths, if historic Woodland Native American myths had some continuity in theme and content into the Middle Woodland past (see Lankford [1975] for evidence and an analysis to this effect). Moreover, identifying any ritual dramas that might have taken place in Scioto Hopewell ceremonial centers and might have structured mortuary remains could correct for the remains having, perhaps in some cases, been misinterpreted by researchers (including myself) who have viewed them in terms of social positions, social roles, philosophical–religious beliefs, circumstances of death, and other better-known determinants of mortuary practices. (See Brown [2006] for possibly such a correction in a Mississippian case at Cahokia.)

Some Scioto Hopewell graves that seem ripe for this kind of study and that illustrate some of the diverse grave arrangements that might represent ritual dramas are ones that rendered skeletons into bird-men, cremations into human-like faces, and cremations into abstract geometric patterns. I describe examples of each of these classes of burials now.

Under Mound 25 in the Hopewell earthwork, skeletons of a middle-aged probable male, a young adult probable female, and a middle-aged probable female (Burials 41A, B, C, respectively), all buried within one tomb, were each arranged to suggest their identity as a bird-person (Figure 15.3A). Burials 41A and 41B had their arms spread out like wings. Burial 41C was missing all of the phalanges and some of the metatarsals on each foot, but three metatarsals had been retained in one foot area, giving the appearance of the front three talons of a bird, and four metatarsals had been positioned in the other foot area, resembling the front three talons and hind talon of a bird, instead of five-toed human feet. This treatment resembles artistic depictions of the claws of some bird-men in later Mississippian art works (e.g., Brain and Phillips 1996:48, 61; Brown 2004:114; Dye 2004:194; Lake Jackson site copper plate, Florida Bureau of Archaeological Research; Holmes 1883:plates 74, 75; Phillips and Brown 1978:187, figure 242; 1984:plate 147, 200, 302, 303, also 217, 223). The same pattern of arms spread like wings characterizes the skeleton of a middle-aged adult male, Burial 3, under Mound 4 in the Hopewell earthwork (Figure 15.3B).[19]

A human face looking forward was rendered with the cremated remains and associated artifacts of a person of unknown age and sex – Burial 1 under Mound 20 in the Hopewell earthwork (Figure 15.3C). The cremated remains defined the overall shape of the head, while two earspools represented the eyes and a panpipe the nose. Two sections of femurs in the mouth area may have represented a bird's beak, which would make the person a bird-man. A similar face with cremated remains defining the head, two earspool eyes, and a nose, beak, or mouth represented by an unidentified light-colored object characterizes Burial 1 under Mound 25 (Figure 15.3D). The age and sex of the person are unknown.

Abstract, geometric designs formed from cremations and associated artifacts are exemplified by Burial 43 under Mound 25 in the Hopewell earthwork and Burial 13 plus four others under Mound 9 in the Mound City earthwork. Burial 43 was the cremated remains of an middle-aged adult male and a child, arranged into an inverted U-shaped arc with a conch shell at each end of the arc (Figure 15.3E). The conchs were oriented identically. The arc surrounded one normal sized and one small copper breastplate, while

(A)

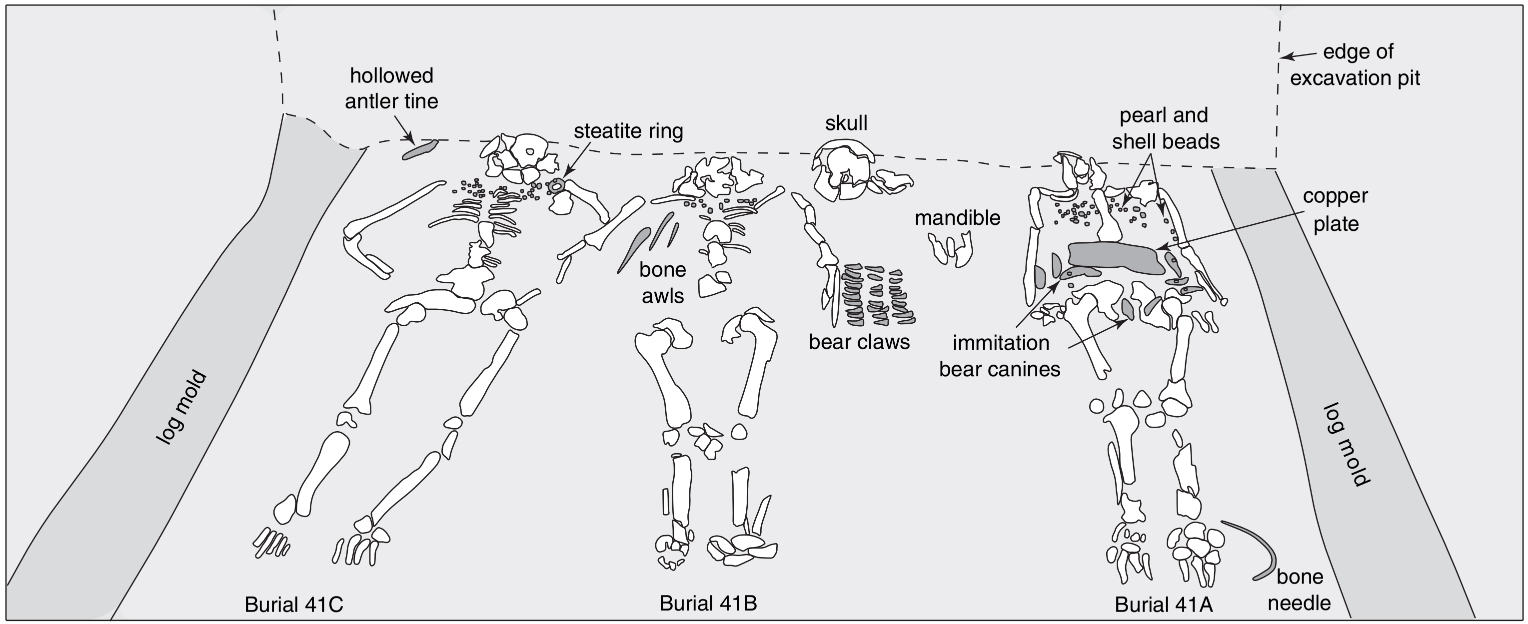


Figure 15.3. Examples of Scioto Hopewell burials with arrangements of skeletons, cremation remains, and/or associated grave goods that may have been materialized ritual dramas. See text for interpretations. (**A**) Three skeletons, possibly renditions of bird-persons. Burials 41A, B, C, Mound 25, Hopewell earthwork. (**B**) Skeleton, possibly a rendition of a bird person. Burial 3 under Mound 4, Hopewell earthwork. (**C**) Cremation in the form of a human face, looking forward, with earspool eyes and possibly a bird's beak. Burial 1, Mound 20, Hopewell earthwork. (**D**) Cremation in the form of a human face, looking forward, with earspool eyes. Burial 17, Mound 25, Hopewell earthwork. (**E**) Cremation arranged as an inverted, U-shaped arc with a conch shell at each end. Burial 43, Mound 25, Hopewell earthwork. (**F**) Multiple cremations arranged in a complex geometric design. Burial 13 plus four others, Mound 9, Mound City earthwork. For original excavation photographs that have been published for some of these graves, see: (B) Shetrone (1926a:37, figure 9); (C) Shetrone (1926a:52, figure 17); and (F) Shetrone (1936:99, figure 49). See credits.

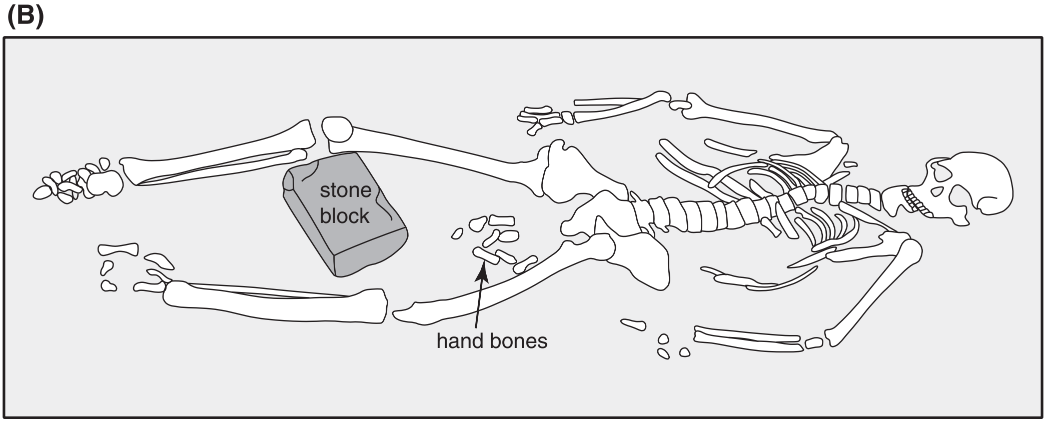


Figure 15.3. *(continued)*

two unidentified objects were placed above the arc. One possible, death-associated interpretation of the burial arrangement that comes to mind is the Milky Way – a pathway taken by souls to a land of the dead in the beliefs of many historic Woodland Indians – with its ends in the primal waters around the earth. The Milky Way and souls on it would have been closely symbolized by the arc of cremated remains, while the primal waters would have been symbolized by the conchs. Burial 13 and its four associates were the cremated remains of several individuals arranged into two circular piles with three rectangular piles above (or below) them (Figure 15.3F). No artifacts other than a few pieces of mica were found with the burials. The arrangement could represent two eyes of a face with an upright headdress and/or down-hanging partial face mask, depending on the arrangement's intended orientation(s). The arrangement could be part of a larger work, the full extent of which is not shown in the field photograph.

In all, I have identified in the photos archived in the Ohio Historical Society, Columbus, more than 30 Scioto Hopewell burials that indicate manipulation and arrangement of a corpse, skeleton, cremated remains, or artifacts, and that are candidates for the physical remains of ritual dramas. The potential for gaining insights into Hopewell ceremony, beliefs, and mythology through the forensic-like and contextual study of such burials is great.

Like some graves, certain ceremonial deposits – both large and small – are suggestive of ritual dramas. Deposits with many artifacts of diverse kinds suggest dramatic performances that involved large casts of characters and the participation of big audiences. One example is the Central Altar of Mound 4 at the Turner site, Ohio (Willoughby and Hooton 1922:63–74). The altar contained the cremations of a number of people; at least 11 clay figurines of men and women in various stances in life and perhaps prone in death; a carving of a Below-realm composite creature with bull-like horns, four limbs like an aquatic mammal, and a rattlesnake's tail; and a second Below-realm watery creature of a kind with four legs. All of these representations were overlain by a large mica cutout of a horned snake probably analogous to the horned serpent of the Below-realms in historic Algonkian, Iroquoian, and Siouan belief (Barbeau 1952; Hamell 1986/1987:79; 1987:76; Howard 1960:217; Martin 1999:202; Skinner 1915:162–186, 263; 1923). The deposit appears to have been comprised of decommissioned ceremonial paraphernalia and cremations that were used to create a drama about a group of individuals who had died, their journey to a land of the dead, and their encounter with creatures of one or more Below realms along the way. In historic Ojibwa lore and near death experiences, this journey required the deceased's soul to cross over a rushing river on an unstable or

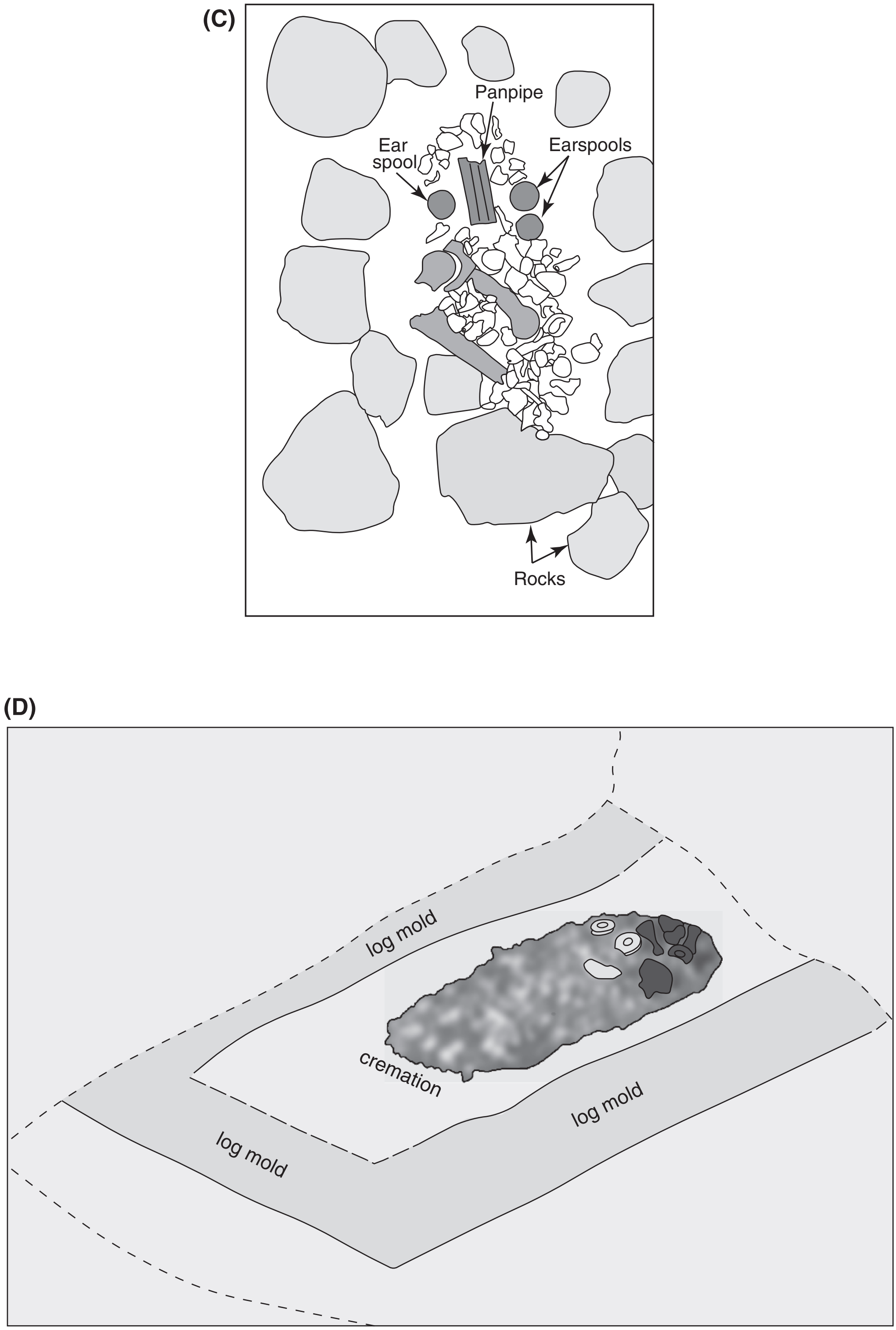


Figure 15.3. ***(continued)***

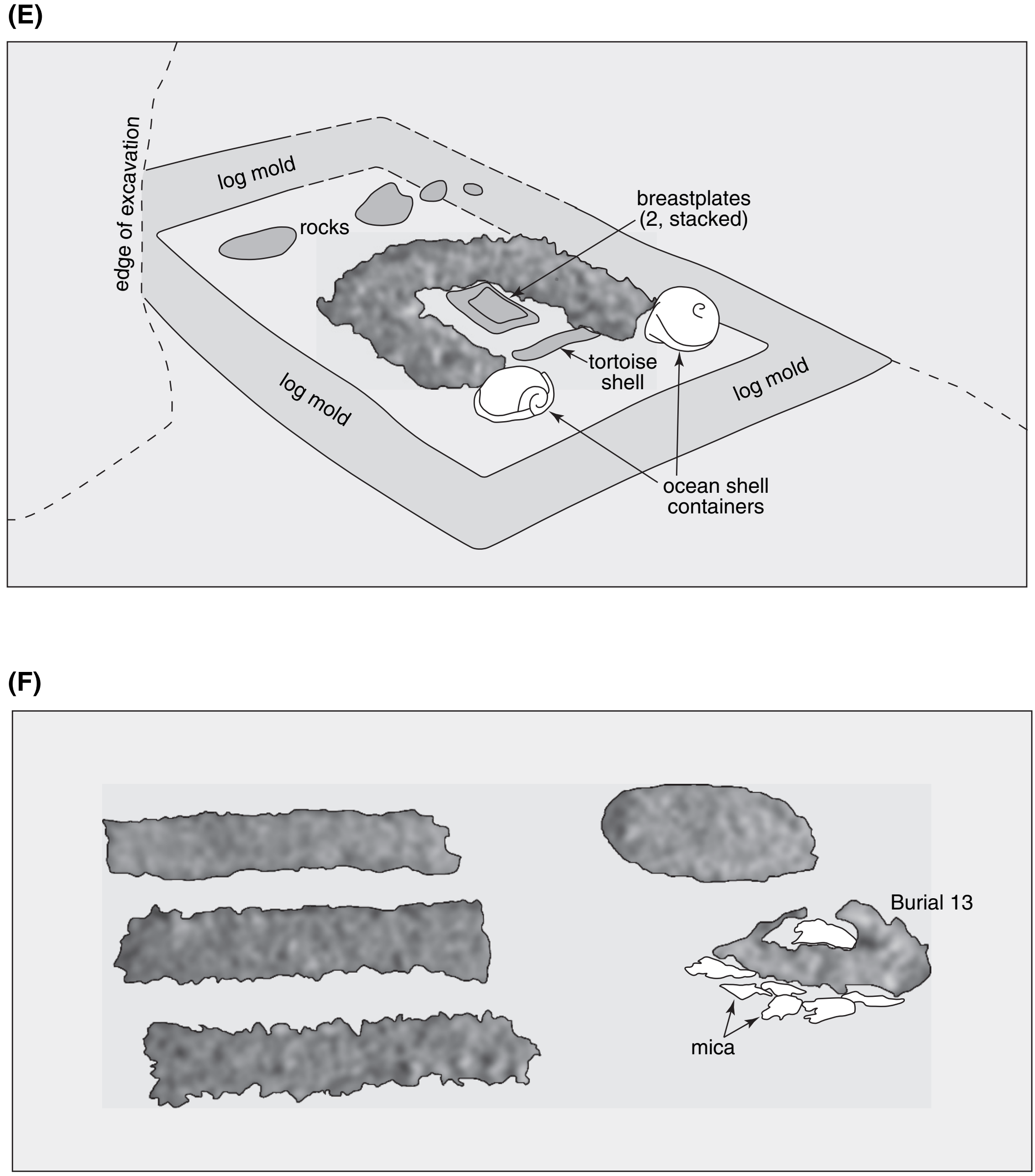


Figure 15.3. *(continued)*

rising and falling log, which turns out to be a serpent. If a soul lost its footing and fell in the river, it was lost (Barnouw 1977:18–19, 136; Kinietz 1947:145; Kohl 1860:218–219, 222–223; see also Penney 1983). In addition to the above, key remains, the Central Altar contained very large numbers of diverse, other kinds of artifacts (Carr, Goldstein, et al. 2005:493–494), implying a large participating audience. The number of persons who contributed items to Mound 4's Central Altar has been estimated at 441 (Carr, Goldstein, et al. 2005:507).

A second example of a large ceremonial deposit that appears to have been the remains of a ritual drama is the Copper Deposit adjacent to Burials 260–261 under Mound 25 in the

Hopewell earthwork. This deposit contained many geometric symbols cut out of sheet copper into diverse forms. Many of the symbols represented basic dimensions, realms, and motions of the Scioto Hopewell cosmos: the cosmos as a whole, the four Cardinal Directions and four Quarters of the earth-disk, the Semi-cardinal Directions, the Solstice Directions, the spin of the cosmos, key creatures of the Above and Below realms and its earth-disk, and the conjoining and balancing of creatures of these realms (Carr 1998, 2000b). The forms that expressed these meanings include, respectively, rings; rings with interior crosses, and squares; rings and a pair of earspools with both interior crosses and semicardinal holes; an oblique cross and diamonds; swastikas; animals and animal parts such as an eagle, the talons of birds of prey, a mammal's head, an antler, a snake's head, snake tongues, a bear paw, bottom-dwelling sucker fish, and a saw-shaped cutout that possibly depicted a shark's jaws and teeth; and forms that combine some of these creatures into a single, composite work of art (Moorehead 1922:109; Shetrone 1926a:74–75). The cosmological thrust of the bulk of the symbols in the deposit suggests their use in a ritual drama concerned with the whole of the cosmos and the relationships of its many dimensions and realms to one another and the whole.

The large number of copper cutout designs in the deposit (109+) and their large size and visibility from a distance suggest that, if they do evidence a ritual drama, it was large, with many dozens of actors. In addition, a very large audience may be indicated by the huge and diverse numbers of items gifted and placed in nearby Altar 1 and in the deposit of copper breastplates and celts put on top of Burials 260 and 261, and in the moderately sized deposits coded in the data base as Shetrone 1924:7–9 and Shetrone 1924:7–16 and comprised of animal jaws, teeth, and claws. This interpretation presumes that some or all of these several deposits were created contemporaneously with one another and the deposit of copper designs – a distinct possibility, given that all five deposits are located within the same burial cluster and charnel building or section of a charnel building (Appendix 7.2, Hopewell Mound 25 Greber&Ruhl.jpg). The estimated minimum number of gift givers who contributed to Altar 1, Altar 2, and the deposit of copper breastplates and celts are 514, 52, and 186 persons, respectively, for a total of 752 persons (Carr, Goldstein, et al.:Appendices 13.3 and 13.4).

Other ceremonial deposits that contained many items of diverse kinds and that are opportune for exploring ritual dramas in Scioto Hopewell societies include the Central Altar under Turner Mound 3, the Lower Cache under the Tremper mound, and Offering 1 and Deposit 2 under Shetrone's Mound 17 at the Hopewell site. Smaller yet diverse ceremonial deposits that hold promise include the spatially structured artifact layouts in Burials 9 and 12 under Mound 7 in the Mound City earthwork.[20]

Timing of Ceremonies

That the timing of some Scioto Hopewell ceremonies within earthen enclosures followed a calendar while others were initiated by circumstance is almost certain. Earthworks were oriented to the summer solstice sunset, perhaps summer solstice sunrise, winter solstice sunset, winter solstice sunrise, the equinox, the moon's eight maximum and minimum northern and southern rise and set points, and other unidentified but repeated directions (Romain 2005; see also Carr 2005b). These orientations suggest a diversity of celestially timed ceremonies, which in view of historical Native American analogs in the Eastern Woodlands and Plains would have had defined functions. Surely the idiosyncratic timing of deaths, illnesses, and perhaps births, poor weather, poor productivity of plant or animal foods, and such also scheduled Scioto Hopewell rituals.

Unclear and without empirical substantiation at present, however, are the specific functions of the ceremonies that were regularly scheduled. Earthworks with the above-named orientations cannot be tied to ceremonial deposits or burials that repeatedly have the same artifact compositions and that could give insights into the functions of cyclical rituals. Neither single ceremonial sites or charnel houses nor multiple, contemporary or nearly contemporary ones in the Scioto drainage have such repeating assemblages of artifacts – at least not for the large and spectacular ceremonial deposits and burials. For example, there is only one deposit predominated by obsidian spear points (at the Hopewell site), only one deposit with mainly quartz spear points (at Mound City), only one grave with large numbers of celts and breastplates (at Hopewell), only one deposit predominated by cones and hemispheres (at Hopewell), only one accumulation comprised of primarily copper geometrics (at Hopewell), only one deposit of hornstone preforms (at Hopewell), and only one deposit of chlorite disks (at Hopewell) (Carr, Goldstein, et al. 2005:486–488, 490–494; Tables 13.2 and 13.3). There are two, huge and diverse deposits (Altars 1, 2) under Mound 25 at the Hopewell site and apparently within the same charnel house room, but their contents are neither equivalent nor complementary. The only ceremonial deposits that hint at a possibly cyclical ritual of a specific function are the three substantial deposits of galena cubes at Mound City (Mound 5, Altar; Mound 13, Burial 1) and Hopewell (Shetrone's Mound 29). Remaining to be explored is whether smaller deposits with less spectacular contents repeat within and/or among ceremonial sites or charnel houses and indicate regularly scheduled ceremonies of particular functions.

Means and Media Used to Build Alliances

How alliances in the Scioto-Paint Creek area changed over time in their nature and solidity is understood to a good degree (Chapter 4, Changes in Alliance Strategies, Changes over Time in the Sizes and Social Compositions of Gatherings; Carr 2005a; Carr, Goldstein, et al. 2005), but could be refined. It is known that, initially, economic and social relationships among individual commoners as dyads in nonmortuary contexts were a primary means by which households and kin groups sought and solidified connections with one another. Ritual ties, in the form of individuals participating together in the ceremonies of a sodality marked by smoking pipes, possibly including smoking together to seek the power of their individual animal spirit helpers, buttressed dyadic relationships. So, too, did individuals contributing their pipes and other personally owned artifacts to the one large Great Cache at the Tremper site. Later, alliances were negotiated among whole local symbolic communities through leaders who represented them and orchestrated cooperative and/or competitive material displays nested within mortuary rituals inside earthworks. Spiritual connections among communities were built by their burying some of their dead together within a single enclosure but in separate mounds (at Mound City) and then on one prepared ceremonial floor but in adjacent buildings or rooms (at the Hopewell site). Communities then perfected these spiritual means for making alliances among themselves by burying large numbers of their dead within the same charnel house (at Seip, Liberty, perhaps Old Town). This innovation made material displays less necessary, although leaders continued to play key, nodal roles in alliance making. Finally, when alliances among local symbolic communities in the Scioto-Paint Creek area began to break down, there was some reversion to individual dyadic means for maintaining intercommunity alliances.

This history of changes in how alliances were built, maintained, and held onto in the Scioto-Paint Creek area could be filled out in two important ways. First is by considering additional strategies and material media that were used to make alliances – in particular, "utilitarian exchange" of ceramic vessels and lithic raw materials – and how frequencies of exchange shifted over time, in coordination with or in complement to the other means of making alliances just described. Exchange of ceramic vessels over distances as great as 25 kilometers and encompassing multiple local symbolic communities in the Scioto-Paint Creek area during the Middle Woodland period has been documented through electron microprobe and instrumental neutron activation analyses of the clay pastes of vessels (Carr 1990–1991; Carr and Komorowski 1995). Exchange or direct procurement of lithic raw materials from greater distances within Ohio and across neighboring states is also reported (Vickery 1983; see also Cowan 2006:34; Pacheco 1993). One would anticipate that as Hopewellian social, ritual, and spiritual means for creating and maintaining alliances among households, kin groups, and local symbolic communities became effective and blossomed, utilitarian exchange of ceramic vessels and lithics would have become less necessary and declined in frequency. One would also expect that rates of utilitarian exchange would have rebounded as Hopewellian social, ritual and spiritual alliances broke down toward the end of the Middle Woodland Period. These expectation are based on sociocultural theory about how individuals and groups tend to build effective alliances, following an ordered sequence of strategies (for a summary, see Carr 2005a:314–316).

It is possible to investigate these dynamics of Scioto Hopewell alliance making by identifying local and nonlocal ceramics and lithics at domestic sites and by tracking over time changes in percentages of nonlocal items. This research is feasible using the two large domestic assemblages obtained from the McGraw site (Prufer et al. 1965) and the Brown's Bottom #1 site (Burton 2006; Pacheco et al. 2005, 2006), supplemented by smaller samples available from the residential and/or camp sites of Harness-28 (Seeman n.d.), Starr's Knoll (Ohio Department of Transportation 1993), and Wade (Church 1992; Church and Ericksen 1997; Ohio Department of Transportation 1993).

A longer term but coarser grained, preliminary study of utilitarian ceramic exchange over the entire Woodland period in the Scioto and Licking drainages (Carr 1990–1991) did find changes in exchange rates in line with the proposed pattern, excepting the predicted increase in exchange rates at the end of the Middle Woodland. Percentages of trade vessels, which were identified by their having paste chemistries anomalous from the local norm, decreased significantly from the Early Woodland (50–58 %; 13–15 of 26 vessels) through the Middle Woodland (13.3 %; 12 of 90 vessels) to the Early Late Woodland (5.4 %; 3 of 56 vessels). These preliminary results suggest that the proposed research should be fruitful.[21]

A second way in which the history of changes of Scioto Hopewell alliance building could be understood better is by considering the culture-specific meanings of the various material media that Scioto Hopewell peoples employed to create alliances with one another, and how those meanings were instrumental in alliance building. Particularly tangible are the materials and artifact forms that were placed together in large deposits within ceremonial centers by multiple individuals, groups, and communities, and that certainly expressed the form and quality of relationships that these units were attempting to build or maintain with one another. These media changed through time, and have the potential for giving insight into how alliances were conceived of and how these conceptions changed over time – in specific social, political, and/or spiritual terms. Early in the Middle Woodland, at Tremper, the cremated remains of hundreds of individuals were placed together. In a separate large deposit, their personal smoking pipes, clan markers, and the paraphernalia of diviners (mica sheets, cones, boatstones, galena cubes), but also utilitarian personal and household items (projectile points, mealing stones), were placed together. Slightly later at Mound City, personal smoking pipes, personal ornaments (beads), divining paraphernalia (mica sheets, galena cubes, quartz projectile points), and clan markers (elk canines) were placed in large numbers in several deposits, now separated by the kind of item. All the divining paraphernalia and beads are light in hue. Later, at the Hopewell site, large, separate deposits were formed of dark obsidian projectile points, dark preforms of Indiana hornstone chert, light divining equipment (galena cubes), hundreds of thousands of light colored personal ornaments (beads), clan markers (wolf and fox teeth), and markers of sodalities (breastplates, earspools) and leaders (geometrics of mica and copper).

While I have focused previously on the social and political roles and relationships implied by the large deposits of these items (Chapter 4; Carr, Goldstein, et al. 2005), issues of spiritual connection, spiritual power, and personhood, and how they energized and were used in forming and maintaining social and political relationships, remain open to exploration. These religious–philosophical beliefs are as significant in and of themselves as is their use in social and political life, when attempting to understand the culture and ways of Scioto Hopewell peoples. A large number of questions arise. Were the above-named kinds of artifacts attributed spiritual essence, power, sentience (consciousness), and/or personhood (capable of social relations), as nonhuman things commonly were among historic Algonkian peoples and Woodland peoples generally (e.g., Hallowell 1960; Hudson 1976; see also Carr and Case 2005a:39–42)? If so, what does the placing together of these kinds of items from multiple individuals, groups, and communities imply about the nature and quality of the connections that they were creating among one another? Consider the Huron metaphor of mixing together the body souls of multiple deceased individuals when mixing their cremated remains (Trigger 1969:108). Were there differences between human cremated remains, ritual paraphernalia of various kinds, personal ornamentation, and utilitarian tools in the kind or quantity of essences, power, sentience, and/or personhood that they were attributed? If so, what does the placing together of items of one kind versus another imply about the nature of the relationships that were being created? Did combining many smoking pipes in a large deposit mean the same thing spiritually and conceptually to Scioto Hopewell peoples as did combining obsidian projectile points into a large deposit? What does the shift over time from placing cremated human remains together to not placing them together and instead assembling artifacts suggest? What does the continuity, throughout the Middle Woodland sequence, in placing divining equipment together imply about the nature of the relationships that were being built? Likewise the continuity in depositing clan markers together? What does separating multiple kinds of items from one another in different deposits, or mixing them together in one, imply? For example, at Tremper, what does the separation of deposits of human cremated remains from the Great Cache of ritual paraphernalia and other kinds of artifacts suggest? In Hopewell Mound 25, what does the combining of large numbers of metallic breastplates and celts over Burials 260 and 261 imply? Did light and dark colored items differ in the kind or quantity of essences, power, sentience, and/or personhood that they were thought to have? What does the shift over time from depositing primarily light-colored ritual paraphernalia to depositing both light and dark-colored ritual paraphernalia mean? Likewise, from depositing mainly mica ritual paraphernalia to both mica and copper ritual paraphernalia? What was the religious–philosophical significance to Scioto Hopewell peoples of systematically segregating large deposits of certain kinds of artifacts from graves of the dead (e.g., smoking pipes, cones, mica mirrors, obsidian projectile points, quartz projectile points, copper cutouts, mica cutouts) whereas other kinds of artifacts were usually placed in large deposits with the deceased (e.g., animal power-part clan markers other than bear canines) or were laid in both contexts (e.g., galena cubes, bear canines, breastplates, earspools, pearl and shell beads)? What is the significance to the spiritual essence(s), power, sentience, and/or personhood possibly attributed to various artifacts of their never having been surrounded immediately by ghost barriers of water-associated substances when placed in deposits without human remains, whereas some human remains were surrounded immediately by ghost barriers? How were these many and various patterns of laying human remains and artifacts to rest, and the meanings that these materials and depositional patterns encompassed, logically suited in native terms for building social and political relationships among individuals, groups, and communities?

These questions are tough to answer, and won't likely be answered with the same certainty as whether a particular ceramic vessel was made locally or imported. However, in their considering the interrelatedness of belief, social formation, political action, and material expression, these topics are central to, if not at the heart of, what Scioto Hopewell culture was – for them and for archaeologists today (e.g., Seeman 1995). Some nascent analytical approaches for addressing these questions are offered by Turff and Carr (2005). Critical to the success of archaeological inference in this domain is archaeologists familiarizing themselves more thoroughly with Woodland Native American spiritual and philosophical beliefs and practices.

Social Competition

Intertwined with the subjects of Scioto Hopewell intercommunity alliances, ritual gatherings, and ceremonies is whether they involved and originated in intense competition among individuals and among social groups. Interpretations of Scioto Hopewell social life over the past 25 years have repeatedly put forward the notion that its showy material record, and particularly the massive ceremonial deposits of glistening raw materials and paraphernalia that were ritually destroyed and placed within charnel houses, indicate intense social competition. Ceremonial flamboyance has been cast as a sociopolitical strategy that aggrandizing individuals and competitive lineages used to display and augment their social power and prestige, and to recruit social followings and mates. This interpretation aligns with the popular, if not pervasive view in sociocultural anthropology and anthropological archaeology that competition among individuals and social groups is necessary to the development of social complexity in all small and mid-scale societies.

To the contrary, I suggest here that by placing Scioto Hopewell ceremonial deposits in their broader cultural and archaeological contexts, and by exploring the meaning of the deposits from multiple lines of evidence, these remains instead indicate remarkably refined and well-orchestrated social complementarity and cooperation among Scioto individuals and groups. In more general anthropological terms, the road to social complexity in some small and mid-scale societies can center on social cooperation and be motivated by collective values and concerns, in contrast to social competition.

At play here are two conceptual levels of disagreement. The first is the general theoretical issue of the nature of society: whether it is intrinsically and always strongly competitive. The second concerns the middle-range theoretical problem of how to identify and discriminate between competition and cooperation archaeologically.

Some of the lines of evidence that I present from the Scioto Hopewell empirical record to address these two issues are incomplete and open to debate. Opportunities for important future research rest in both the two conceptual concerns and the empirical uncertainties.

The Competitive View of the Scioto Hopewell Archaeological Record

Flamboyance is a word repeatedly used to describe the Scioto Hopewell material record. Within the charnel houses at the sites of Tremper, Mound City, Hopewell, and Seip, Scioto Hopewell peoples laid to rest huge quantities of ceremonial paraphernalia and exquisite raw materials in special ceremonial deposits, and sometimes in graves. In all, 24 distinct kinds of paraphernalia and raw materials were decommissioned in one or more of 43 impressive deposits (Table 15.2, see also Carr, Goldstein, et al. 2005:486–494, tables 13.2 and 13.3). For example, 94–95 copper and iron breastplates and 69 copper and iron celts were arranged over Skeletons 260 and 261 in Mound 25 at the Hopewell site. Between 250 and 500 pairs of metallic earspools were decommissioned in Altar 1 in the mound. An 8 foot × 4 foot pavement of 100s of mica mirrors and sheets were placed adjacent to Burial 9 under Mound 7 at the Mound City site. Similar large deposits of mica were found in Mounds 13 and 23. Several hundred obsidian spear heads and 50–100 quartz spear heads were respectively placed in Altar 2 under Mound 25 at Hopewell and in the Altar under Mound 3 at Mound City. Over 100,000 pearl and shell beads, equivalent to about 400 necklaces of common Scioto Hopewell size, were recovered from Altar 2 under Hopewell Mound 25 (Figures 1.2, 1.9, and 4.16).

Table 15.2. Ceremonial Paraphernalia and Raw Materials Deposited in Large Numbers in Scioto Hopewell Sites[1]

metallic breastplates
metallic earspools
copper celts
mica mirrors and sheets
obsidian projectile points
quartz projectile points
copper geometrics
large, community smoking pipes
small, personal smoking pipes
divining cones and hemispheres
metallic panpipes
crescent-shaped gorgets
pearl and shell beads
bear canines
bear claws
wolf teeth
fox teeth
elk teeth
raccoon teeth
effigy alligator teeth
galena cubes
quartz crystals
hornstone disks
chlorite disks

[1]At the Turner site in southwestern Ohio, large ceremonial deposits also included small animal canines and reel shaped gorgets. These items were not placed in large deposits in Scioto Hopewell sites.

Such deposits and other showy aspects of the Hopewell life in the Scioto valley and elsewhere have repeatedly been interpreted by American archaeologists in Western, political–economic terms that emphasize competition among individuals and social groups, and that assume a sense of the self as separable from society. The archetypal statement has been made by Brown (1981) for Illinois Hopewell societies and then was expanded to Scioto Hopewell societies and Hopewell societies in general by Braun (1986). For Brown (1981:36), "The considerable consumption of long-distance trade goods in burial and in living activities attests conspicuous consumption that is typical of groups vying with each other for highest prestige. Friedman and Rowlands (1977) have argued that such jockeying for prestige affects the economic future of the local group by recruiting new individuals through marriage and other means." (See also Brown 1997:243.) More generally, "... the competitive social contests that are embedded in feasts and showy consumption of material goods (e.g., the potlatch) give a structure to inter-group social relations that would otherwise be absent (Friedman 1975)" (Brown 1981:26). Braun (1986), generalizing Brown's interpretation to Hopewellian groups in the "North American midlands" (ibid., p. 117), saw "increased demands for production beyond subsistence to accommodate competitive displays of would-be local leaders" (ibid., p. 121); also "... differential mortuary association of exchange goods suggests that the interments involved are those of persons active in the manipulation of exchange" (ibid., p. 118). Seeman (1988) and Buikstra and Charles (1999) have elaborated the viewpoint of competitive, ostentatious displays and conspicuous consumption for Ohio and Illinois Hopewell groups, respectively, and Fagan and Milner have repeated it in their textbook descriptions of Hopewell life.[22] In all, material flamboyance and social complexity are envisioned as the products of intense competition rather than pervasive cooperation among individuals and social groups.

This competitive view of the social lives of Scioto Hopewell peoples has its basis in two lines of thought. One concerns the general anthropological issue of the nature of society. It is the prestige goods model of political economy in societies of middling complexity, as originally developed by French Marxist anthropologists Dupre (Dupre and Rey 1973) and Meillassoux (1978, 1981) and then applied by British archaeologists Friedman and Rowlands (1977). Concepts of Sahlins (1972) and Hayden (2001) complement those of the core proponents. In essence, the model says that the flow of prestige goods necessary for the payments of social debts, damages, bride-price, and other social functions is taken control of and manipulated by self-aggrandizing individuals for their own prestige and power. Self-interested competition among lineages is viewed similarly. Competition is seen as intrinsic to social life.

The second contributing line of thought maps this competition into the archaeological record and concerns the middle-range theoretical problem of archaeologically identifying and distinguishing competition and cooperation. Pearson (1982; 2000:32, 84–87) and Cannon (1989), followed by others (Morris 1991; Charles 1995:84–85, 89–90; Buikstra and Charles 1999:205, 211, 215, 220), have argued that mortuary-related rituals are times when individuals, kin groups, communities, classes, political blocks, and/or leaders recreate their social relationships, affording opportunities to renegotiate their relative social prestige, political power, and/or economic advantage (see also Childe 1945:17 as a precursor). Social standing is altered through such means as competitively decorating deceased persons, competitively constructing large and elaborate tombs, competitively destroying and burying wealth, and competitive gift giving and feasting among the living (see also Binford 1964b:414). For these authors ritual and material flamboyance are equated single-mindedly with social, political, and economic competition, overlooking the alternative of cooperation among individuals and groups.

Crosscultural Variation in Conceptions of the Self

The prestige goods model of society and the competitive model of mortuary ritual grandeur are heavily loaded with the Western conception of the self as an individual separable from society. Yet, it is easy to point out empirically, with crosscultural research in psychology, social psychology, and anthropology, that the individualist notion of the self is hardly universal. Consequently, we tread on thin interpretive ice archaeologically when we assume a priori that the native peoples we study were rugged individualists and that ritual flamboyance always reflects social competition.

Specifically, the modern Western world, and particularly Anglo-Americans, are well known to be extreme in their valuation and expression of individualism and social competition compared to other peoples around the globe. In Anglo-American culture, the "self" is conceived to be coterminous with the body and separable from society. Children are enculturated in being individualists – that is, in pursuing and giving priority to personal goals over the goals of collectives, or in making collective goals "their own" (Triandis 1989). In contrast, in many nonwestern cultures, and commonly in Africa, Asia, and historic Native American tribes, the self is equated with a larger group such as the family, the community, or the tribe. Children are enculturated in being collectivists – that is, in identifying with collective goals and endeavors, rather than personal ones, as a source of satisfaction and a set of experiences by which they define themselves (Triandis 1989 and many references therein; see also Carrithers et al. 1985; Marsella et al. 1985; Shweder and LeVine 1984).

The differences that distinguish some nonwestern notions of the self and motivations from Anglo-American ones are not merely a matter of the "balance" in valuation of individual pursuit versus social responsibility – a pull that Anglo-Americans do commonly feel in making decisions about their actions. Rather, there is a *qualitative* difference in experience and motivation attributable to a qualitatively different frame of reference. For example, in the case of the Kaliai of New Guinea, one's experience of oneself, one's orientation to the world, and one's motivations are relational rather than as a discrete, physically-defined individual. So relationally oriented are the Kaliai that a person is not conceptualized and experienced as dead (*antu*) until all his or her social obligations to others and rights in others have been balanced (Counts 1979). Creek Native Americans have a continuous concept of the self: a human being is connected through his or her heart to a pervasive energy continuum (*boea fikcha/puyvfecv*) of which all things are a part and, together, comprise the sacred All *Ibofanga*) (Chaudhuri and Chaudhuri 2001:2, 24). Psychologists and social psychologists have identified, since the 1980s, a wide variety of societies globally that have such relational or continuous concepts of the self (Carrithers et al. 1985; Triandis 1989 and references therein).

Significantly, relational and continuous concepts of the self, in their holistic views, do not lay the motivational groundwork for interpersonal competition or an ideology of domination in the way that the Western, separable notion of the self does. Competition becomes decreasingly sensible logically and emotionally as the "other" is experienced increasingly as an aspect of "oneself".

To make the point concrete, I relate a story told to me by the President of the Arizona Psychological Association. Working in the Flagstaff area, he frequently counseled Navajo clients. He summarized how Navajo were different from Anglos in their approach to life, in his experience, with the following incident. A young man in high school came in to see him for personal help. To open the conversation, the psychologist said, "I see that you're a line-backer on your high school football team. Do you enjoy football." "Oh, yes, I like it a lot," said the Navajo. "How did your team do last season?" "Oh, we did really great." "You won a lot of games?" "No, we lost most of them – but we played together really well." Not exactly what you expected, right? Here, we see a very competitive American sport reworked by a Navajo and expressing his own culture's sense of self, society, and values – one that emphasizes the collective self and collective goals over the physical individual and individualistic pursuits, and one that creates satisfaction through social cooperation rather than competition among individuals and groups.

In this light, it is clear that variation among cultures in how they define and experience the self, and in the efficacy of social competition or cooperation in a given cultural–psychological context, are fundamental issues with which archaeologists must grapple when exploring the emergence of social complexity in small and mid-scale societies, and in the Scioto Hopewell case in particular.

Anglo-American Archaeological Practice

The effort to understand a specific culture's way of defining the self, with its implications for social competition and cooperation, is not one that commonly has been made historically by Anglo-American archaeologists. For those of us who study past, traditional Woodland Native Americans, because we do not naturally see their behaviors through their cultural values and their concepts and experience of the self and right action, I suspect that we have often made mistakes in understanding their motivations and behaviors (see also Gillespie 2001, 2002).[23] Without being aware of it, we probably have all too often placed our own Western values, and our own enculturated understandings of how social life works, upon past Woodland peoples.

This misleading situation is exacerbated when key data about the past peoples who we study are limited. The interpretive freedom that is possible with only broad evidential constraints makes it easy to lay a Western interpretation of a past people's actions and motivations upon their material record. In the case of Scioto Hopewell peoples, the intensely competitive view of their social lives that archaeologists constructed in the 1970s and 1980s solidified before many of the details of their richly crosscutting social, community, and ritual organization had become known, and before the history of changes in their subsistence practices and population levels had been sketched. Assumed social, ecological, and demographic conditions, aligned to popular paradigms of the time, led to interpreting the flamboyant ritual deposits left by Scioto Hopewell peoples, and the elaborate ceremonies implied, as the products of intense social competition among individuals and groups. Now, with many more data and sociological studies on Scioto Hopewell peoples in hand, this interpretation is ripe for empirical scrutiny and debate.

An essential point to be understood from the beginning is that there is nothing *inherent* in material and ceremonial flamboyance to tie it singularly and necessarily to competition between individuals or social groups. The flamboyance of a ceremony and the large investments in materials, labor, and social capital entailed can result from many motives: to praise, thank, or beseech ancestors, spirits, or deities for any of the necessities of life (e.g., health, good hunting, abundant harvest, good weather, protection from enemies); to reenact a cultural mythic event or sequence to ensure the well being of a community; to renew and "purify"; to satisfy the newly deceased and encourage their departure; to ward off negative conditions (e.g., disease, spirits causing disease); to mark a change in leadership; to renew friendships or trade partnerships; and for fun and socializing (Table 4.11). Significantly, the target audience can be deceased ancestors, spirits, or deities with whom social competition may not be an issue, rather than the living with whom it may. Further, some of these various motives for ceremonial flamboyance can be founded on collective, relational, and/or continuous notions of the self, philosophies of social life, and cultural values that are distinctly different from individualistic and competitive Western ones.

Determining which of these various interpretations pertains to the Scioto Hopewell case is an empirical matter rather than one of assumption. It requires exploring the material record deeply and following out multiple lines of evidence, in awareness of our own Western biases – the tactics of what I have called the practice of "thick prehistory" (Chapter 1).

The Question and the Evidence to Consider

The question arises, then, for consideration here and for future empirical research, do the flamboyant ritual deposits left by Scioto Hopewell peoples, and the elaborate ceremonies implied, reflect intense social competition among individuals and social groups, or well-orchestrated and rich ties of social cooperation and complementarity, or something else? My weighing of the Scioto Hopewell material record at this time is that numerous, corroborating aspects of the Scioto Hopewell material record converge on the conclusion of social complementarity and cooperation, and that previous interpretations of intense competition among individuals and groups is an implicit projection of Western concepts of the self onto the record.

The corroborating lines of evidence are many, and both direct and contextual in nature. They include: (1) the decentralized and complementary organization of leadership roles and the crosscutting and complementary organization of ceremonial sodalities that integrated the lives of Scioto Hopewell peoples; (2) the occurrence of the huge ceremonial deposits of fancy artifacts within charnel houses that metaphorically symbolized social and spiritual cooperation in multiple ways; (3) the nature of the deposited artifacts, themselves, which marked unified social groups, including sodalities, a clan, and probably a phratry, rather than competing individuals and social groups; (4) a lack of skeletal evidence for violence, including (5) the results of recent osteological and contextual studies that show in good likelihood that few if any isolated, culturally modified human remains were trophies of war; (6) a paucity of elite artifacts that might depict human trophy parts, and the existence of reasonable alternative interpretations for the few that might; (7) a lack of elite artifacts that unambiguously symbolize implements of war; and (8) evidence for stable population levels, negligible population packing, and little competition over local food resources. All of these lines of evidence are new findings, subsequent to the reconstructions of intense social competition offered by Brown, Braun, Seeman, Charles, Buikstra, Fagan, and Milner. The lines of evidence that are most in need of further basic data collection and evaluation are numbers 5 through 8. Let us consider each of these eight points in greater detail.

First, new mortuary analyses made by several authors and presented in *Gathering Hopewell* (Carr and Case 2005c) reveal that the construction, artistic, and ceremonial efforts of Scioto Hopewell peoples were not orchestrated through centralized leaders like Big Men, chiefs, or priests, who might have jousted and domineered, nor through strongly defined, competing or ranked lineages that were symbolized materially. Rather, Scioto Hopewell societies were fairly flat, with complementary and crosscutting social units: multiple kinds of leaders who had specialized and complementary roles that were weakly institutionalized; crosscutting ceremonial societies; clans that shared leadership roles and whose members crosscut both sodalities and communities; perhaps a phratry of four linked clans; and intercommunity alliances. These rich social interconnections among individuals and groups would have dampened competition considerably. They also point to a social ethical system focused on complementarity, with implications for a collective view of the self at the scales of the individual and group.

Second, the flamboyant deposits that archaeologists have interpreted as evidence of intense social competition and display occurred in charnel houses. However, these were places where strong ties of cooperation were explicitly expressed materially. There, multiple communities buried their deceased together in order to create and affirm spiritual alliances among themselves (Chapter 3, Sustainable Communities). This was the case for the charnel houses under the Tremper mound, the Pricer and Conjoined mounds in the Seip earthwork, the Edwin Harness mound in the Liberty earthwork, and Mound 25 in the Hopewell earthwork. In the Tremper charnel house, 12 social units – most probably four clans in each of three different local symbolic communities – cremated their dead together in 12 separate crematories and then combined most of the dead, about 280 persons, in a single depository. On the floors of each of the other four mounds, three local symbolic communities buried their dead in three spatial clusters within the same charnel structure or adjacent charnel buildings, which in most cases were then covered with a unifying mantel of earth. Significantly, in the logic of the historic Algonkian and Huron Feasts of the Dead, the burial of the bones of Scioto Hopewell deceased together in a single charnel house and/or under a single mound probably implied intimate contact of their souls, the eternal cooperation of the dead with one another, and the necessary cooperation of their living descendants (Trigger 1969:108; see also Galloway and Kidwell 2004:508 and Swanton 1931:170–194 for a similar logic among the Choctaw). Further, in the logic of a widespread historic Woodlands Native American metaphor, the Scioto Hopewell charnel house probably was equated symbolically with the domestic dwelling, and those persons from multiple communities buried together there would probably have been thought of as having family-like ties. Historically, Woodland Native Americans equated the domestic dwelling with a large ceremonial building, a mound, a ceremonial dance ground, or a whole ceremonial center, and through this symbolism, the appropriateness of family-like ties of cooperation at the broader scales of the community and multiple-community cooperative endeavors (see DeBoer 1997:229 for many ethnohistoric references; Knight 1989:280). Finally, the 12 social units that gathered to bury their dead at Tremper decommissioned the ceremonial paraphernalia that they had used there within one great deposit of over 500 items, rather than in separate deposits for display, comparison among groups, and one-up-manship. In these five charnel settings potently symbolizing close social cooperation, it makes little sense to interpret the flamboyant ceremonial deposits within them as the products of competitive, ostentatious displays among communities competing for highest prestige.

Reinforcing the reconstruction that multiple communities cooperated closely with one another, rather than competed, in the rituals held at ceremonial centers is a labor analysis made by Wesley Bernardini (2004; see Chapter 3, Sustainable Communities, Figure 3.7). He calculated that the laborers who constructed each of the five earthworks of Seip, Baum, Old Town, Liberty, and Works East, which are located in three different local symbolic communities in three different river valleys, must have come from all three communities, who worked together. Close cooperation among the three communities is also shown by the almost identical shape and the similarity of the sizes of the charnel houses under the Pricer and Edwin Harness mounds respectively within the Seip and Liberty earthworks, and by the strong similarities in the sizes and tripartite shapes of all five of the earthworks, which imply the sharing of charnel house and earthwork design details among the leaders of the different communities (Chapter 3, Sustainable Communities).[24] Cooperative earthwork construction paralleled burial of the dead together.

A third empirical reason for concluding that the showy ritual deposits left by Scioto Hopewell peoples affirmed their social cooperation rather than expressed competition among individuals and groups is the nature of the deposited artifacts, themselves – the social groups that they marked. Copper breastplates, metallic earspools, platform smoking pipes, mica mirrors, and galena cubes each marked a given sodality or probable sodality, that is, an integrative club-like group whose members came from multiple residence and kinship units – in this case, multiple clans and residential communities, and perhaps multiple local symbolic communities. In addition, bear canines likely represented a ceremonial society whose members all belonged to the Bear clan, which was dispersed across local symbolic communities (Chapter 4, Sodalities and Ceremonial Societies). Each of these artifact classes was placed in one or more deposits comprised of many items of largely that one kind, suggestive of collective sodality or clan rites similar to those held by historic Woodland Indians. Significantly, as members of one sodality or one clan, the individuals who deposited breastplates, bear canines, or some other one kind of artifact together would have been expressing their cooperation and joint identity as sodality or clan members, rather than their competition with one another.

A good example of the collective and corporate emphasis of such ceremonies held by Scioto Hopewell sodalities is the large number of copper earspools that were bound together in a bundle with a heavy cord, and placed in Altar 1 of Hopewell Mound 25 (Figure 4.18). The bundle implies a group offering rather than the separate contributions of individuals (Ruhl 2005).

Another kind of cooperative social group that probably existed and helped to generate an especially flamboyant ceremonial deposit in the Scioto valley was a phratry – that is, a set of clans who reciprocally support one another in certain social tasks. Within the Great Cache in the Tremper charnel house were 110 jaws and jaw pendants of wolves, bears, puma, and bobcats. These items marked four clans and their totems or eponyms, as did analogous items historically in the Eastern Woodlands. Importantly, all the puma and bobcat jaws were mandibles, whereas almost all the wolf and bear jaws were maxillae (Thew n.d.) – a physical complementarity that suggests the social complementarity of these two sets of clans (Chapter 4, Clan Organization). Again, the jaws were placed together in one deposit, implying cooperation and complementarity within a whole, rather than in separate deposits for display, comparison, and prestige-building among clans.

The fourth through eighth reasons for concluding that the rich ceremonial deposits left by Scioto Hopewell peoples reflect celebrations of cooperation rather than displays of competition are contextual and require further research. The fourth reason is the lack of skeletal evidence for interpersonal violence. Of the approximately 250 excavated skeletons of Hopewell people in the Scioto drainage, none are known to have embedded projectile points or their markings, parry fractures, cracked ribs, bashed in skulls, or other signs of interpersonal violence. Neither unhealed examples associated with death or healed examples have been observed in extensive modern osteological studies by physical anthropologists Cheryl Johnston and Paul Sciulli, or were recorded in field notes by original excavators and attending physicians (C. Johnston, personal communication 2007). Significantly, this situation contrasts markedly with later Late Woodland and Fort Ancient skeletons and earlier Late Archaic and Early Woodland skeletons from Ohio and neighboring regions (Johnston 2002:112; Mensforth 2001; Milner 1995:232, 234–235; 1999:120–122). The same patterns and contrast are found in Illinois for Havana Hopewell societies (Buikstra 1977:80).[25]

It is possible that the mortuary records of Scioto Hopewell people do not accurately reflect rates of interpersonal and intercommunity violence because killed warriors and war captives were tabooed from burial with other community members in mounds and disposed of elsewhere, or were cremated rather than inhumed and thus remain unidentified. It is true that in many societies, those who have died what is deemed to be a "bad" death are separated in burial from those who have died what is thought to be a "good" death (Carr 1995). And it is known that those Scioto Hopewell people who were buried in mounds must have been some subset of the entire population, given their relatively small number compared to the duration of the Middle Woodland period (e.g., Prufer 1964a:74). However, casting strong doubt on the idea of a skeletal record completely biased against incidences of violence is the distinction between causes of injury and causes of death. If raids, skirmishes, and/or feuds had occurred among communities or clans within the Scioto drainage with any regularity, or among Scioto peoples and more distant societies, one would expect at least some individuals who had been injured through violence, healed from their injuries, and then died "good" deaths later in life, to be among the inhumations in Scioto burial mounds. This is not the case, suggesting peaceful living conditions.

The argument of a biased skeletal record resulting from segregation of persons who died "bad deaths", although not currently supported empirically, is interesting and worthy of further study.[26]

Fifth, and related to the fourth argument, culturally modified, isolated human skulls and mandibles, once concluded by Seeman (1988) to have been primarily trophy skulls of young male recruits for warfare, have been shown through more modern osteological research and further contextual studies to indicate a variety of other cultural practices, and uncommonly if ever war trophies. Counter to the trophy interpretation, 53 % of the Scioto valley modified human remains sexed by Seeman (1988:570–571, table 1) are female, and 36 % to 54 % of the ageable individuals are not young compared to their expected age of death.[27] These persons are unlikely candidates for slain warriors, contrary to the logic and conclusion drawn by Seeman. Further, although it might be argued that in hit-and-run raids, those killed and beheaded are as likely to be children, women, and old persons as young male warriors – which is a late prehistoric Midwestern, Southeastern, and Plains pattern (Case 1995) and which would make the sample of Scioto Hopewell modified human remains in line with the war trophy interpretation – in fact, a more spatially and temporally relevant comparative sample of Late Archaic trophy skulls from Kentucky and Ohio is predominated strongly by adult males (Mensforth 2001:117–115, 117–119, 123, 132, table 3; see also Mensforth 2007:272). In addition, for the Hopewell site population, restudied by C. Johnston and P. Sciulli, none of the modified human remains show evidence of ante- or perimortem injury (Johnston 2002:112). One would expect skull trophies of war to sometimes have signs of combat, but they do not. Also, none have scavenger damage sometimes seen on victims of conflict who are not buried immediately after death (Johnston 2002:112). Finally, at the Hopewell site, 50 % of the persons with whom the modified human remains were buried and that can be sexed are females – again unlikely warriors who took trophies, although the sample size is small (Johnston 2002:329, figure 12).

Beyond these direct osteological data, contextual evidence of several kinds also does not support the idea that the isolated human skulls and mandibles are war trophies. None of the persons with whom the remains are buried is accompanied by any grave associations such as quartz or obsidian projectile points, or mica or copper effigy projectile points or atl atls, which might mark them as prestigious warriors or hunters. Also, across Scioto Hopewell charnel houses, frequencies of modified human remains and frequencies of showy ceremonial deposits do not correlate with each other. One would expect such a correlation if the skulls and mandibles were trophies of war, and the ceremonial deposits resulted from competitive displays among rival groups: warfare should correlate with competition. Further, the psychology of several communities burying their dead together in one charnel house in order to build an alliance among themselves does not mix easily with the psychology of also burying in that same charnel house the trophy heads that members of the communities had supposedly taken from one another.[28] Finally, the manner in which human maxillae and mandibles were modified by Scioto Hopewell peoples is similar to the way in which they modified bear, coyote/wolf, bobcat, and mountain lion maxillae and mandibles (Johnston et al. 1997; Seeman 1988:569; see also Nawrocki 1997; Thew, n.d.). Both human and nonhuman specimens were modified primarily by grinding and drilling, much less frequently by cutting, and occasionally by notching, scoring and snapping, and painting (Johnston et al. 1997; Seeman 1988:570–571). Also, at the Tremper site, both a modified human mandible and modified bear, coyote/wolf, bobcat, and mountain lion mandibles and maxillae were deposited together in the same cache of ceremonial paraphernalia and personal items (Thew, n.d.). The similarity in how both human and nonhuman mandibles and maxillae were worked might be explained in a number of ways. One is that both were, in the eyes of Scioto Hopewell peoples, revered relatives and ancestors. If one considers that the species of animals whose mandibles and maxillae were modified were also the totems or eponyms of Scioto Hopewell clans (Thomas et al. 2005) and may have been thought to have been ancestors, like ancestors, or relatives by clanpersons with those totems or eponyms, then by analogy, similarly modified, decorated, and deposited human modified remains might also have been relatives or ancestors. The identification of modified human remains in Ohio as “revered” relatives and ancestors is a well-known, possible alternative to the interpretation that they were trophies of war (Webb and Snow 1945:287; Willoughby and Hooton 1922:61; see also Seeman 1988).

The weight of empirical evidence from specifically the Scioto Hopewell record on the cultural causes of its modified human skulls, maxillae, and mandibles thus currently leans heavily to the interpretation that few, if any, were trophies of war, removing this line of evidence that Scioto Hopewell life was strongly competitive. However, several kinds of additional analyses could refine or refute the lines of argumentation made above. Modified human remains from sites additional to the Hopewell site could be studied for whether they show evidence of ante- or peri-mortum injury, or scavenger damage, improving the sample size and evaluation made by Johnston (2002:112). DNA testing of remains would help to increase the number of individuals of known sex. Bone and dental morphological and chemical analyses and genetic studies might tell whether the modified remains were of individuals who had been born or resided outside of the Scioto drainage or had familial ties to outsiders, rather than local Scioto Hopewell persons. This distinction is important. It is possible for Scioto Hopewell social life to have been peaceful and strongly cooperative internally, yet for the modified human remains to represent trophy taking, if the slain individuals came from distant Hopewellian or non-Hopewellian groups and trophy taking was motivated by other than individual prestige-building, which it can be (Rosaldo 1989; see also Gardner 1964).[29]

In any of this new work or rethinking of previous osteological and contextual studies, it will be important to segregate analytically and interpretively the modified human remains found in the Scioto drainage from those found in southwestern Ohio at the Turner and Marriott sites. Social life and the level of competition among Hopewell peoples in southwestern Ohio, where elevated hill forts are common and charnel houses shared by multiple communities are undocumented, may have been significantly different than life and the degree of competition in the Scioto drainage, where only one Middle Woodland hill fort occurs and all large charnel houses were shared by multiple communities. Further, the practice of modifying human skulls, maxillae, and mandibles, as well as that of placing them in burials, may have had different motives and cultural meanings in the two regions. This segregation was not made in Seeman’s (1988) study of Hopewell culturally modified human remains, which aggregated them from across Ohio at large (see Note 27), and which was made before diversity in Hopewell social organizational forms across different valley systems in

Ohio was appreciated. Other geographic regions and scales are also critical to distinguish, yet have not been.[30]

Sixth, the absence of skeletal indications of warfare is coupled with a paucity of elite artifacts and artwork depicting human parts that might be interpreted as war trophies. All of the few examples (Table 5.1) have alternative interpretations. The five effigies of a finger, hands, and an ear all could reflect the common historic Woodlands practice of dishonoring a person for an antisocial act by cutting off an ear, a nose, digits, or appendages. The four effigies of human bodies lacking heads, legs, and/or hands could represent ceremonial sacrificial victims. Further, no association occurs between the presence of such effigy human parts and the presence of showy ceremonial deposits across charnel houses in the Scioto-Paint Creek area. Again, one would expect this association if the effigies represented war trophies and the ceremonial deposits indicated competitive displays among rivals. The scarcity in Scioto Hopewell art of depictions of possible human body part trophies contrasts markedly with their commonality in the art of Mississippian societies, who are well-documented for their warfare (Brain and Phillips 1996:45; Brown 1985:100, 115; Moorehead 1932:Figures 14 and 15; Phillips and Brown 1978:188, Figures 243 and 244; 1984:Plates 153, 154, and 295; Dye 2004:191, 199; Brown and Dye 2007; Dye 2004:191, 199; 2006).

A seventh reason for questioning the idea that the showy ceremonial deposits of Scioto Hopewell peoples were competitive displays and reflect intense social competition is the lack of elite artifacts that unambiguously symbolize implements of war or feuding. Although effigy projectile points and atl atls made of mica, copper, quartz, and/or obsidian are common (Table 5.1) and might have symbolized warrior status or been used in war divination or in sending power intrusions to enemies, these artifacts equally could have symbolized the prestige of skilled hunters and/or been used in hunt divination. The hunt interpretation fits the data better: none of the effigy points or atl atls occurred in burials or ceremonial deposits that contained supposed takings of war – modified human skulls or mandibles, or effigy human parts.

A final reason for concluding that the flamboyant rituals and rich ceremonial deposits of Scioto Hopewell peoples were expressions of cooperation rather than displays of intense competition among individuals and groups is the broader ecological context. Evidence is lacking for higher regional populations densities and increased competition over subsistence resources in the Scioto-Paint Creek area from the Early Woodland through the Middle Woodland periods. The mound survey made by Seeman and Branch (2006; see Carr, Chapter 2, Ecological Setting), using the Ohio Archaeological Inventory and Mill's *Archaeological Atlas of Ohio*, found that from the Early through Middle Woodland periods in the Scioto drainage, the numbers and sizes of mounds built, and the implied labor expended, did not increase – that is, no substantial regional population growth.

One does see through time the concentration of mound building and people from the Scioto drainage at large into the Scioto-Paint Creek confluence area, and a redistribution of people from uplands, small tributary streams, and the edges of the Scioto and Paint Creek valley trenches onto the terraces and bottom lands of the Scioto and Paint Creek valleys. However, three additional kinds of information show that this redistribution of people within the region did not result in a tight packing together of communities, territoriality, and competition over primary subsistence resources. Geographic analysis of the locations and areal sizes of local symbolic communities in the Scioto drainage during the last third of the Middle Woodland period indicates that even at that late time of most increase in local population density, communities were well separated from each other, by roughly 11–20.5 river kilometers, or approximately their own sizes, rather than packed together and competing for land (Chapter 3, Sustainable Communities).[31] In addition, paleoethnobotanical data from the Brown's Bottom No. 1 site in the Scioto valley (Steinhilper and Wymer 2006) and sites in the neighboring Licking valley (Wymer 1987, 1996) show that Hopewell peoples in these areas used those plant food resources that were most available and most easily collected or grown locally, with different kinds and amounts of species used at different sites (Chapter 2, Opportunism, Figures 2.14–2.16).[32] This pattern of plant exploitation is what one observes where hunter–gatherer–farmers are not crowded together. Had population packing and competition over critical, first-line resources developed in the Scioto-Paint Creek area, one would expect to see the use of a wide diversity of both easy and harder-to-gather or grow plant species at each site. Finally, the evidence against packing of communities and competition over primary subsistence resources aligns with evidence against territorial strategies: the retention of a dispersed settlement system throughout the period of Hopewell ceremonialism in the Scioto-Paint Creek area, and the shift to aggregated villages with surrounding ditches only later in time – more than a century later, about A.D. 500 (Carr and Haas 1996:30–31; Dancey 1988; Seeman and Dancey 2000:595–597, figures 22.8, 22.9). Thus, available evidence does not indicate a demographic or subsistence basis for intense social competition in the Scioto-Paint Creek area.

Additional research is necessary to get a firmer picture of demography, subsistence, and settlement patterns in the Scioto-Paint Creek area and to evaluate the ecological potential for social competition there. As discussed above (Ecology: Subsistence, Mobility, and Demography), intensive, systematic, regional surface surveying and coring are sorely needed in main Paint Creek valley, its North Fork, and the Scioto valley north of the Liberty earthwork, in order to locate residential sites and document better whether local symbolic communities in these three valleys were well separated from one another. Paleoethnobotanical records from a larger number of broadly excavated residential sites in the Scioto-Paint Creek area are needed if a more reliable picture is to be constructed of variation in the use of plant and animal food resources across locales.

The above, eight lines of evidence for assessing the cooperative or competitive quality of social relations among Scioto Hopewell peoples do not address the issue of competition for mates. This has been said by Brown (1981:36; 1997:243) to have been the driving factor behind long-distance procurement of fancy raw materials and ceremonial elaboration. It is a factor, however, that should be demonstrated empirically rather than assumed. Currently, I do not know how to firmly assess the degree of competition for mates directly from the archaeological record or indirectly through its common causes. The latter include birth sex ratios, survivorship sex ratios, the degree of polygyny, the abundance of agricultural land as one determinant of polygyny, the nuances of how kinship was reckoned, and settlement patterning of kin as a determinant of polygyny (Ember 1974; Keesing 1975:26–41). Most of these social and demographic parameters are not currently tractable with the Scioto Hopewell archaeological record. However, the one modern osteological study of sex ratios of a Scioto Hopewell mortuary population tentatively suggests that Scioto Hopewell communities had a fairly balanced adult sex ratio (Konigsberg 1985). A balanced adult sex ratio is usually associated with monogamy (Ember and Ember 1981:346), which does not encourage competition over mates as would polygyny.[33]

In sum, there is little hard evidence to support the common interpretation that Scioto Hopewell social life was intensely competitive – that large ceremonial deposits of exquisite paraphernalia and raw materials reflect ostentatious displays of social power and wealth among would-be local leaders, lineages, and communities vying with each other for highest prestige. Instead, the bulk of the archaeological evidence, of multiple and diverse forms, indicates cooperative ritual celebrations and relations among members of closely-knit social units: communities, sodalities, clans, and perhaps a phratry. Further, crosscultural research in psychology and social psychology on how self image is constructed and defined in collectivist societies, give pause to and qualify the party line in anthropology, that competition among individuals and social groups is essential to the development of social complexity in all small and mid-scale societies, and that ceremonial flamboyance, such as that of Scioto Hopewell peoples, can always be read as social competition. These studies invite the possibility of interpreting ceremonial flamboyance more broadly, as either social cooperation or social competition or some balance, to be worked out on a case-by-case basis, as I have begun to do here for Scioto Hopewell peoples.

At this time, there is little sound reason for us to continue laying our own Western views of self-interested individuals and competitive social life upon Scioto Hopewell peoples, when the available data speak so loudly against this psychology and social form. To do so disrespectfully diminishes a major accomplishment of Scioto Hopewell peoples equal to their monumental earthworks and beautiful art. The Scioto Hopewell appear to have mastered to a considerable degree the art of cooperation in social relations, and to have created a well-orchestrated social and ritual life.

The challenge to Woodland archaeologists at this time is to empirically explore in further detail the veracity of this new view of Scioto Hopewell social relations, while leaving behind our Western and personal preconceptions of "the" nature of social life. Toward this end, several kinds of additional studies of Scioto Hopewell data have been suggested above, and critical thinking about our own cultural world view assumptions, values, and self-constructions is warranted.

Leadership

Good headway has been made on defining many of the key characteristics of leadership in Scioto Hopewell societies through analyses presented in *Gathering Hopewell* (Carr 2005b; Carr and Case 2005b; Field et al. 2005; Keller and Carr 2005; Rodrigues 2005; Thomas et al. 2005). The topics addressed there include the roles (duties and tasks, domains of action) taken on by leaders, whether roles were centralized in the hands of a few persons or segregated among many, the degree to which roles were institutionalized, the power bases of leaders of various kinds, the geographic expanse of the domains of power of leaders, criteria for recruiting leaders, and how leadership organization developed over time.

Metallic Celts

Further research on leadership in Scioto Hopewell societies is needed to refine our understanding of it in a couple key areas. One is the nature of a particular leadership role marked by metallic celts. Analysis to date (Carr and Case 2005b) suggests that in the Scioto-Paint Creek area, copper and iron celts marked a community-wide leadership position of a kind. The position had roles that complemented those of another kind of community-wide leader marked by copper and iron headplates. That metallic celts and headplates each marked community-wide leadership roles has been inferred from the symbolism of their forms, their materials, their frequencies in burials, their age and sex distributions, and/or other characteristics. Crowns and headdresses are common natural symbols of heading a social unit crossculturally, and axes were key icons of power in later Mississippian societies of the Woodlands (Brown 1976:126; Dye 2004: 202–203; Phillips and Brown 1978:13, 18–19; 1984:plate 104; Waring and Holder 1945:10–11, 15). The copper from which nearly all celts and headplates were comprised was associated by historic Woodland Native Americans with the power of supernatural beings of the Above and Below realms (Turff and Carr 2005). This power might have been thought to have been especially concentrated in celts, which on average were comprised of larger masses of copper than any other copper artifact class made by Scioto Hopewell peoples (Bernardini and Carr 2005). Further, as expected of symbols of top leadership roles, both celts and headplates occurred in very low percentages (7.0 %, 4.0 %, respectively) of the burials excavated from early through late Middle Woodland cemeteries in the Scioto drainage, including Mound City, Hopewell, Seip, Liberty, and Ater. In addition, unlike the significant overlap found in the membership lists of different sodalities marked by breastplates, earspools, and possibly mica mirrors and galena cubes, there are no clear cases of individuals who were recruited into both leadership positions marked by celts and headplates.[34] Also, unlike the members of sodalities marked by breastplates and earspools, the persons who filled the roles marked by celts and headplates were commonly recruited from a limited number of clans: Raptor and Nonraptorial Bird, and Racoon and Canine, respectively.

That the specific roles marked by metallic celts were distinct from and complementary to those symbolized by headplates can be inferred from the difference in persons and clans who filled those two positions. It is also evident in the different age and sex distributions of the persons. Headplates were found only with elder males, in the 35–50+ years age range, for those individuals whose age and/or sex have been determined. In contrast, celts were found with primarily younger persons less than 20 years old and with both males and females, for those individuals of identified age and/or sex. The young age of the men and women found with celts suggests that it was probably the physical accomplishments of these persons that celts marked, in contrast to the social achievements, power, and respect of the old men who were leaders marked by headplates.[35] The total picture formed by integrating all of the above archaeological patterning is one of a division of top leadership in Scioto Hopewell societies, perhaps like the distinction between older heads of internal affairs and younger heads of external affairs among historic Native American tribes in the Eastern Woodlands (for references see Chapter 4, The Nature and Organization of Leadership Roles).

Although the bulk of evidence aligns with the interpretation that metallic celts symbolized community leadership positions, two characteristics of celts are unexpected, requiring further study of their sociological meaning. First, celts occurred not only sparsely among individual burials like headplates, but also were placed in great number (66 copper, 3 iron celts) in a ceremonial deposit over Burials 260 and 261 under Mound 25 at the Hopewell site. This deposit recalls other large accumulations of smoking pipes, breastplates, and earspools, and perhaps mica mirrors, galena cubes, and obsidian bifaces, which have been interpreted as remains of the collective ceremonies of sodalities and shaman-like professional groups (Chapter 4, Sodalities and Ceremonial Societies). In addition, the deposit contained a huge, 58 centimeter-long celt of copper that may have been a group contribution to the deposit, analogous to big, possibly community-owned, smoking pipes (in the Pricer Mound at Seip; Mound 1 at Esch), and perhaps other extraordinarily large items such as occasional, huge obsidian bifaces, galena crystals, and books of mica. These two characteristics of metallic celts suggest a different dynamic to the power of those community leaders marked by celts than those marked by headplates.

What specifically the difference was is unclear and a good topic for further study. It should be approached considering the differences in the clan affiliations and age-sex distributions of persons buried with metallic celts compared to those interred with metallic headplates. The possibility that the large deposit of celts and breastplates over Burials 260 and 261 was the remains of a ritual drama that featured and was planned by one or more community-wide leaders marked by metallic celts and a sodality marked by breastplates should be considered.[36]

Life Histories

A second important arena for future research on Scioto Hopewell leadership is the life histories of leaders. Documenting the histories of particular leaders through bone and dental genetic, chemical, and morphological studies, and contrasting their histories to those of more ordinary people, could shed light on the means by which individuals rose to be leaders, their power bases, and the activities and qualities of their lives.

It is known from a Scioto region-wide mortuary study (Thomas et al. 2005:375–377) that success in gaining leadership positions depended on the wealth of one's clan and the degree to which one's clan was well networked socially through its members belonging to various sodalities. What more personal historical or circumstantial factors might have also been important to a person becoming a leader? Were leaders of a local symbolic community ever born and raised in other, neighboring communities, and perhaps spirit-adopted into the community in order to replace a deceased leader-kinsman? Were leaders ever born and raised in other Hopewell traditions across the Woodlands, as Prufer (1964a:74) thought? Was the local symbolic community of birth of a person significant to his or her gaining leadership positions; for example, were leaders in the Scioto-Paint Creek area more likely to have been born and raised in the community in the North Fork of Paint Creek, which was wealthier (Carr 2005a:311)? Were some particular kinds of leaders more likely to have been born in neighboring or distant communities while other kinds were usually born locally? For example, one can imagine that people who filled rare forms of leadership, such as the three persons who were buried with copper-nostril inserts under the Seip-Pricer mound and Hopewell Mound 25, and the three persons buried with barracuda jaw scratchers under these mounds,[37] might have been foreign to the Scioto-Paint Creek area. Were shaman-like leaders of one kind, or leaders of any given kind, closely related to one another genetically, suggesting some degree of inheritance of that leadership position? Crossculturally, shamanic talents sometimes run in family lines and shaman sometimes are recruited repeatedly from the same family (Harner 1988:13; Walsh 1990:34; Winkelman 1992:33, 34). Personal, life-historical questions such as these have good likelihood of being answered through bone and dental genetic, chemical, and morphological studies.

The life histories of leaders, as revealed through their musculoskeletal markers of stress, paleopathological indicators, and bone and dental chemical studies, could also inform us about specialized activities that they might have routinely performed, specialized diets, and whether they were privileged in the amount or kinds of work they did, giving a picture of the nature and quality of their lives. For example, a MSM study of the skeletal series from the Turner earthwork, in southwestern Ohio, discovered that male leaders, but not female ones, were sheltered from extensive work. Shaman-like leaders were found to have incurred less chronic and traumatic physical stresses than the rest of the population. They also spent much time in activities that involved the hand, wrist, and forearm flexion and extension, which might indicate manufacture of paraphernalia, artistry, and/or drumming, among other possibilities (Rodrigues 2005:426–427). In the lower Illinois valley, Havana Hopewell persons in central tombs were found more so than others to have had auditory exostoses possibly indicating diver's ear – a condition that might have developed when diving for pearls in cold water (Buikstra 1976, table J-1, personal communication 2007).

Information on the life histories of individuals, including such topics as those just mentioned, could be used in at least three different approaches to help personalize our understanding of Scioto Hopewellian life. The approaches differ in scale. First, broad patterning in the life-histories of multiple leaders of a kind, or of all kinds, might be sought and compared to the life histories of more common Hopewell people in order to characterize leaders and leadership in general. The questions mentioned above implicitly take this global perspective. Analysis at this statistical level reveals the *organization* and *institutionalized operation* of socio-political and ritual-political positions and roles, and the general impact of such traditions upon the lives of those who fill those positions and roles. Rodrigues' (2005) study of leaders buried in the Turner earthwork (see above) is an example of this sociology-like, statistical approach.

At the other extreme, the life history of a specific individual who was a leader, and in contrast to the life histories of more common Hopewell people, might be documented in detail to view Scioto Hopewell social, political, and ritual life from the inside out, from the *eyes of one person*. This highly personalized and experiential approach has not yet been taken in studies of Scioto Hopewell leadership and life. McGregor's (1941) detailed description of the leadership roles, life, and death of a Puebloan ceremonial leader exemplifies this approach, but without the benefit of detailed bone and dental genetic, chemical, and morphological information. Another example are the many studies that have been made of the life history, moment of death, and other experiences of the European "Ice Man" (Spindler 1993, 1996; see also Bortenschlager and Oeggle 2000; Hodder 2000:27).

Between these two scales of analysis, it would be possible to examine the life histories of a few leaders who were placed in the same grave, the same cluster of burials, or the same single room of a charnel house, and who possibly interacted with one another in life. Their life histories could be compared and contrasted, to one another and in light of their social, political, and ritual identities. By this means, it might be possible to explore fine-grained aspects of the social, political, and ritual *relationships* of the persons to one another, and the intertwining of their life experiences, in dyads or small numbers. The result would be a study of specific "social relations", which were the building blocks of Scioto Hopewell social, political, and ritual "organization" (*sensu* Firth 1951:2, 28, 36). Like the one-person life history approach, this one would be highly personalized and experiential in nature rather than statistical and sociology-like, and help to bridge the individual and society. This last approach might be especially productive in the Scioto Hopewell case, allowing insights into the *complementary* nature of Scioto Hopewell leadership roles, rights, duties, and domains, which were distributed among multiple persons in a decentralized manner. All three of the approaches to studying Scioto Hopewell leadership would be more experientially loaded than the broad, community and area-wide perspective taken in this book in Chapters 2 through 5.

Social Ranking

Whether Scioto Hopewell peoples were organized into groups of different social rank and, if so, what the criteria for ranking might have been, are two questions that were explored in detail in *Gathering Hopewell* but were not answered satisfactorily. There, it was shown that archaeological patterns previously thought to define rank groups (Greber 1976, 1979a) do not align with the patterns proposed by contemporary middle range theory for identifying social ranking (Carr 2005f:241–247, table 6.1), and instead indicate the affiliations of persons in different local symbolic communities (Carr 2005a). The patterns that were evaluated were the differing total, ordinal-scaled quantities of artifacts of various kinds contained in graves in different sections of the charnel houses under the Seip-Pricer and Ater mounds, as well as the distributions of individual artifact classes, individual tomb characteristics, and the age and sex of the deceased among graves in different sections of the charnel buildings under the Seip-Pricer, Seip-Conjoined, Edwin Harness, Hopewell 25, and Raymond Ater mounds. In each of these cases, none of the artifact classes that represent unusual investments in energy expenditure and that were common enough to have been symbols of rank rather than leadership was found with adults, subadults, males, and females in the proportions that one would expect in a rank level of a society. Further, none of the artifact classes of these kinds concentrated in any single charnel house room. Also, no charnel house room held deceased adults, subadults, males, and females in the proportions one would find in a rank level of a society. Further, the prestige of persons buried in different rooms of a charnel building or charnel complex was not distributed pyramidally, whereby group size decreases as group prestige increases. Nor, alternatively, was prestige distributed such that groups of different prestige were of approximately similar size. Instead, the charnel house rooms with the materially richest burials, overall, also had the most individuals.

Three kinds of mortuary patterning remain to be examined for indications of social ranking and hold promise for determining whether it was an aspect of Scioto Hopewell society. These patterns differ in scale or form from those explored above and include: (1) differences among mounds within an earthwork and/or its vicinity; (2) differences between inhumations and cremation in the later Middle Woodland period; and (3) qualitative distinctions in the elaboration of certain kinds of prestigious artifact classes.

Differences in artifact classes, artifact quantities, and/or tomb forms and sizes among different mounds within an earthen enclosure, or among the mounds in these large complexes and those in smaller ones within the same valley, might reveal rank groups. The mound in which a person was buried could have been a very substantial, visible symbol of the person's social rank. This possibility fits the crosscultural pattern whereby within-cemetery burial location is sometimes determined by the vertical position of the deceased, although less strongly than by horizontal social position (Binford 1971:22; Carr 1995:181), as well as the crosscultural tendency for differences in cemetery locations to be determined foremost by differences in vertical social position (Carr 1995:162).

One contrast between mounds that would be prime to investigate is that between Mounds 25 and 23 in the Hopewell earthwork. The contrast is a natural one. These are the two largest mounds by volume and burial population within the earthwork, both are loaf-shaped, and Mound 23 may have covered one or more charnel buildings like Mound 25, given the good number of posts, some large and deep, that were found under Mound 23 (Moorehead 1922:99–100, plate XLV). In both mounds, the deceased were largely inhumed rather than cremated. Yet, the two mounds differ greatly in the percentages of their deceased who were accompanied by fancy artifacts that marked leadership, sodalities, or other prestigious roles, the quantities of these artifacts per grave, and whether they contained large deposits of decommissioned social symbols and ritual paraphernalia – Mound 23 being diminutive in all these ways.[38] The far fewer marked leaders and sodality members buried in Mound 23 and the smaller ceremonies held on its burial floor cannot, however, be equated automatically with the lower rank of the persons buried there, by contemporary criteria for identifying ranking archaeologically (Carr 2005f:241–247, table 6.1). These criteria, including ones for distinguishing symbols of rank from those of leadership, sodality membership, and other prestigious roles, will have to be applied systematically. In addition, further sexing of individuals through DNA analysis will be necessary in order to estimate with confidence the sex distributions of individuals in the two mounds. It would also be preferable to make bone and dental chemistry studies, in order to assess whether the persons buried under both Mounds 23 and 25 had lived much of their lives in the same geographic area. Ranking refers to prestige differences within a society, not between societies. Finally, studies of the relative health and relative work loads of the persons buried in the two mounds could provide supplemental information useful in evaluating the social conclusions drawn from the archaeological and demographic evidence.

Other contrasts among mounds of an earthwork complex that should also be considered in exploring whether Scioto Hopewell people were organized into groups of different social rank are between the large Mounds 25 and 23 at the Hopewell site compared to the 15 excavated small mounds with recorded burials, of the 36 small mounds within and around the enclosure (e.g., Lloyd 1998:7, table 2); the large Pricer and Conjoined mounds at the Seip site compared to the two excavated small mounds with recorded burials, of the 16 small mounds within and around the enclosure; the large Edwin Harness mound at the Liberty site compared to the three excavated small mounds with recorded burials, of the 17 small mounds within and around the enclosure; and the among the 14 excavated mounds in the Mound City site that are recorded to have had burials, of the 24 mounds within the enclosure. Time differences among mounds would be essential to consider in these studies (e.g., Greber 1983:90–91; 2003:91–92, 109).

At a somewhat broader scale, contrasts could also be drawn reasonably between burial mounds within a large earthen enclosure and small mounds that are in its vicinity and within the lands of the same local symbolic community. Social ranking might have been distinguished by burial in mounds enclosed by earthen embankments, in contrast to burial in mounds not enclosed. Burials at the Seip site in the middle third of the charnel house under the Pricer mound, and in the middle third of the charnel house under the Conjoined mound, which include persons apparently affiliated with the local symbolic community in main Paint Creek valley (Carr 2005a:310–311; Thomas et al. 2005:364, table 8.11), could be contrasted reasonably with burials in the closely neighboring, smaller sites of Rockhold and Bourneville in the valley. Burials in the small site of West in the valley might also be brought into the comparison, although it is more distant from Seip, and possibly dates significantly earlier than Seip (see above, Regional Mortuary Programs and Intercommunity Alliances; and Chronological Uncertainties in the Scioto Paint-Creek Area). A similar but somewhat less controlled comparison might be made between burials in the Edwin Harness mound of the Liberty earthwork and burials in the smaller, neighboring McKenzie mound group. Burials from the south section of the charnel house under the Edwin Harness mound, which included persons who likely were affiliated with the local symbolic community in the Scioto valley (Carr 2005a:310–311) and which are more or less distinguishable from burials in the middle and north sections of the charnel house, could be compared with the burials from McKenzie.[39] The McKenzie mound group appears to date to late in the Middle Woodland period like the Edwin Harness mound, according to Ruhl's (1996:91, figure 9; Ruhl and Seeman 1998) earspool seriation.

A second kind of mortuary patterning that has potential for studying whether Scioto Hopewell peoples were organized into ranked social groups is the contrast between inhumation and cremation. Early in the Middle Woodland period, nearly all persons buried within the sites of Tremper and Mound City were cremated. Also, most persons were cremated at the West mound, which more likely dates to around the time of Mound City than later (see above, Chronological Uncertainties in the Scioto-Paint Creek Area). However, by the later half of the Middle Woodland period, inhumation was used almost as commonly as cremation as a form of body treatment. Inhumations predominated at the sites of Hopewell, Old Town, and Bourneville, while cremations characterize Seip, Liberty, and Ater. These distinctions are not geographic: Hopewell, Old Town, and Ater occur in the North Fork of Paint Creek valley, whereas Bourneville and Seip occur in main Paint Creek valley. The distinctions do not symbolize different local symbolic communities. The three local symbolic communities represented by the three rooms of burials in the charnel house under the Pricer mound at Seip each cremated most or all of their dead. They did the same in the charnel house under the Edwin Harness mound at Liberty. Two of those local symbolic communities both cremated their dead and buried them separately in two rooms of the charnel house under the Conjoined mound at Seip. In contrast, at the Hopewell site, within the charnel structures under Mound 25, each of the three communities largely inhumed their dead and placed them in separate charnel rooms. The same pattern may have been followed at the Conjoined (Porter) mounds at the Old Town site. Thus, the inhumation-cremation distinction spanned multiple local symbolic communities and could have been a regionally-recognized symbol of a difference in rank or some other cultural category.

Whatever the contrast between inhumation and cremation meant to Scioto Hopewell peoples in the later half of the Middle Woodland period, it correlates with differences in the age-sex structures of the above burial populations (Hopewell site, Old Town site versus Seip-Pricer mound, Edwin Harness mound, Ater mound; Carr 2005a:278) to the extent that ages and sexes are known. The contrast also parallels differences in the relative importance of persons, specifically whether or not the person was a community-wide leader marked by a copper headplate or celt, or a member of a sodality marked by a copper breastplate or metallic earspools. More important persons who were buried with these items tended to have been inhumed. The correlation between inhumation-cremation and social importance occurs both within single mounds and among mounds at different sites (Carr 2005a:279–280). These additional patterns must be accounted for when assessing whether the inhumation-cremation distinction represented a difference in social rank. My preliminary look at this issues suggests that the inhumation-cremation contrast did not mark social rank, but it is well worth a detailed evaluation.[40]

A third kind of mortuary patterning that might reveal whether Scioto Hopewell peoples were socially ranked is qualitative distinctions in the elaboration of certain kinds of fancy artifact classes. Some examples that immediately come to mind, but that are false leads, include rare, copper earspools overlaid with silver or silvery iron versus common, plain copper earspools versus a person having none at all; rare, iron breastplates versus common, copper breastplates versus a person having none at all; and bear canines inset with pearls versus those not versus a person having none at all. These artifact classes have been shown through detailed statistical–contextual studies to have not indicated specifically social ranking and instead to have marked membership in an earspool sodality, a breastplate sodality, and a bear clan-specific ceremonial society (Carr 2005a:274–275, 280–286). Material differences among earspools, or among breastplates, or among bear canines might represent differences in the prestige achieved by different persons within the ceremonial society marked by that artifact class – similar to the levels of the historic Algonkian Midewiwin medicine society (Hoffman 1891) – but these distinctions are not ranking in the sense of societal-wide ranking as defined by contemporary American mortuary archaeologists who have followed Fried (1960, 1967) and Service (1962) and as meant here (see also Carr 2005f:239–241). Other fancy, Scioto Hopewell artifact classes that vary qualitatively in their materials or forms might meet contemporary middle-range theoretical criteria for identifying rank groups and would be worth searching for.

Researchers interested in the possibility of social ranking should not be confused about copper headplates that have deer antlers with differing numbers of tines. Headplates marked leadership – specifically community-wide leadership (Carr 2005a:282–283; Carr and Case 2005b:221–223) – and symbols of leadership must be carefully distinguished and excluded from potential symbols of rank when searching for rank organization (Carr 2005f:241–247, table 6.1). In addition, it is more likely that headplates with differing numbers of tines pertained to ceremonial rites of species growth and renewal than to leaders of differing prestige and power. A carved femur from Burial 278 under Mound 25 at the Hopewell site (Moorehead 1922:111, plate 82), or perhaps Burials 260 and 261 (Greber and Ruhl 1989:247, 269; Moorehead 1922:126, 128), depicts a person with a headdress that has antler stubs that transform into a full antler rack. It does not depict two persons, one with an antler-stub headdress and one with a full antler-rack headdress. Analogously, Burial 4 under Mound 13 at the Mound City site (Mills 1922:545) contained a copper headplate with three sets of copper antler racks – one with no tines, one with 3 tines, and one with 4 tines per rack. The antler racks possibly were alternative attachments to the copper headplate and worn sequentially by the person in the course of a ceremony of renewal, rather than by different persons at once to mark their distinctions in prestige and power. The three antler racks were found with one individual, not three.

Clans

Clans, and their places in the activities and organization of social, ritual, and political life of Scioto Hopewell people, have been identified with good detail. Their totems or eponyms, rough sizes, distributions among communities, relative wealth, access to leadership positions, ceremonial roles, and possible partnering into a phratry have each been addressed (Chapter 4, Clan Organization). Also known is a shift over time in the spatial layouts of mortuaries from one organized foremost apparently by clan affilliation (i.e., Tremper mound) to one organized by local symbolic community (e.g., the Hopewell 25, Seip-Pricer, Seip-Conjoined, Edwin Harness, and Ater mounds) (Chapter 4, Changes in Alliance Strategies).

Nonetheless, important, basic questions about Scioto Hopewell clans still remain. These questions concern whether more clans than those previously identified were constituents of Scioto Hopewell societies, as well as social and ritual parameters of the clan system, such as recruitment, ownership of power through names and sacred packs, and ceremonial functions. The possibly different geographic origins of clans who resided in the Scioto-Paint Creek area also warrants study.

Identification of Clans

Nine clans or groups of clans that have been identified to date for Scioto Hopewell communities, based on the occurrence of their animal power part markers in burials and the correspondences of these animal species to the common eponyms of clans in the Eastern Woodlands: bear, canine, feline, raptorial bird, raccoon, elk, beaver, nonraptorial bird, and fox (Thomas et al. 2005:358–361, tables 8.8 and 8.9). Still to be evaluated more thoroughly as possible clan totems or eponyms are opossum, deer, and turtle.

Drilled opossum teeth pendants were found in number along with drilled raccoon, fox, and mountain lion teeth pendants in a ceremonial deposit (the Burnt Offering) under the Seip-Pricer mound. That all four species were represented by analogous power parts, were made into pendants, and were deposited in association, and that raccoon, fox, and mountain lion have already been identified as Scioto Hopewell clan eponyms, suggests that opossum was, too. Opossum was, in fact, the eponym of a clan in at least one historic Eastern Woodland tribe (the Timucua; Thomas et al. 2005:344, table 8.1). Only the absence of opossum teeth from burials sets them apart from the power part markers of other clan-associated species identified for Scioto Hopewell peoples.[41]

A similar but weaker argument can be made for deer. A collection of 284 deer and elk astragali were found together in a ceremonial deposit (the Central Altar) under Mound 4 of the Turner site, in southwestern Ohio. Again, that both species were represented by analogous power parts and were placed in association, and that elk has been identified as a Scioto Hopewell clan eponym, suggests that deer might have been, as well. The commonality of both deer and elk as clan eponyms among northern Woodlands tribes (Thomas et al. 2005:345, 360, tables 8.1 and 8.8) reinforces this conclusion. However, evidence that deer power parts were placed in burials and were worn as pendants in the Scioto-Paint Creek area or at Turner is lacking, distinguishing them from the power parts of other animal species that have been identified as Scioto Hopewell clan eponyms. Further, the Turner site, for which some evidence of a deer clan exists, is removed geographically from the Scioto-Paint Creek area.

Turtle was a common clan eponyms among historic Woodland tribes and might be supposed to have been among the clans of the Scioto Hopewell (Thomas et al. 2005:345, 360, tables 8.1 and 8.8). In general, the most common clans of the historic tribes were also Scioto Hopewell clans. A hint that turtle was a Scioto Hopewell clan eponym is found in the ceremonial deposit, Altar 2 under Mound 25 of the Hopewell site. There, a number of drilled tortoise shell pendants were found, analogous to the pendants typically made of power parts of other animals that have been identified as clan eponyms in the Scioto-Paint Creek area. Significantly, the tortoise pendants had also been placed in association with a large number of pendants made from teeth and claw power parts of bear and with 690 foot bone power parts of small animals in the Altar (Moorehead 1922:114). A turtle shell pendant was also recovered in association with bear teeth pendants and a beaver maxilla power part from Burial Feature 4 under the Martin Mound, in the Walhonding valley in north-eastern Ohio (Mortine and Randles 1978). These associations between tortoise/turtle shell pendants and pendants made of the power parts of other animals that were Scioto Hopewell clan eponyms suggest that turtle may have been among them.[42]

Further evaluations of whether opposum, deer, and turtle were eponyms of clans in the Scioto-Paint Creek area could be made by exploring and analyzing museum collections from ceremonial sites in the area. Unpublished instances of the power parts and power part pendants of these species might well be found, given the early dates and incompleteness of the reports written about Scioto Hopewell ceremonial sites. In addition, the 284 deer and elk astragali found in the Central Altar under Mound 4 of the Turner site could be examined for drill holes or cord-wrap wear marks showing that they were worn as pendants and/or for other wear marks indicating other long-term use and curation. Deer astragali showing such modifications and uses would reinforce the idea that the astragali marked deer clan members and that Scioto Hopewell peoples had a deer clan. No drill holes, however, are apparent in the published photograph of the astragali or mentioned in their textual description (Willoughby and Hooton 1922:64, plate 17e). Finally the species of the 690 small animals, the foot bones of which were found in Altar 2 under Mound 25 of the Hopewell site, might be identified in order to determine whether some or all were species of the eponyms of Scioto Hopewell clans. If some were, this would reinforce the conclusion that turtle, the remains of which were associated with the foot bones, was also a Scioto Hopewell clan eponym. Identifying the species of the foot bones might also reveal other possible clan eponyms currently unknown.

Beyond the possible addition of opossum, deer, and turtle to the list of nine, solidly identified Scioto Hopewell clans and clan groups, some of the nine might be refined by subdividing them into their constituent species as categorized by Woodland Native Americans. The Raptor, Nonraptorial Bird, and Feline groups could be subdivided. In the Eastern Woodlands, species of raptors that historically were eponyms of clans included bald eagle, golden eagle, eagle generally, hawk, pigeon hawk, turkey buzzard, and buzzard generally. Species of nonraptorial birds that served as clan eponyms included crow, raven, black bird, martin, pigeon, partridge, and snipe, as well as the water birds swan, loon, and heron. Feline species included panther, lynx, and wild cat.

Determining whether any of these species were clans of the Scioto Hopewell would require a more detailed study of the modified animal bones curated in museums and the contexts of deposition of the bones. H. Thew's (n.d.) analysis of the fauna from the Great Cache under the Tremper mound is a good example of such work. She identified the animal maxillae and mandibles deposited in the Cache to be bear, wolf, coyote, puma, and bobcat. The wolf and coyote remains were largely maxillae and were modified in the same way, suggesting that they had been categorized together by Scioto Hopewell peoples and represented but one clan. This inference is supported by the fact that wolf and coyote are similar in body size (the coyote is about 85 % the size of a wolf), body shape, and dental formula and shape. Whether puma and bobcat were likewise categorized together by Scioto Hopewell peoples and represented one clan is less certain. The bones of both species are all mandibles and were modified in a like manner, and in one distinct from how wolf and coyote maxillae were modified. However, a bobcat is only about 50 % the size of a puma, making it more likely that Scioto Hopewell peoples would have seen the two species as distinct. This suggestion appears correct when the bobcat, puma, coyote, wolf, and bear remains are placed in the context of other artifact and spatial patterning at the Tremper site (Weets et al. 2005:543–545).

It is possible that Scioto Hopewell clans also included ones with eponyms other than animal species, as was the case for the clans of historic Woodland tribes. If so, some of these additional clans might have been marked materially in fairly direct ways and might be recoverable archaeologically, such as the historic hickory nut, tree, blackberry, sun, moon, arrow, paint, and calumet clans. I have not looked for evidence of these potential clans. Others clans might have been symbolized in much more elusive ways, such as the historic wind, water, night, cloud, salt, dirt, fresh land, stone, long dew, spirit, and medicine clans.

(See Thomas et al. [2005:344–346, table 8.1, appendix 8.2] for lists of clan eponyms in the Eastern Woodlands).

Social and Ritual Parameters of the Clan System

The clan systems of the historic Central Algonkian tribes, including those of the Prairie (Sauk, Fox, Kickapoo, Potawatomi), Woodland (Menomini), and Ohio Valley (Shawnee, Miami, Illinois) tribes, differed from one another at A.D. 1800 in several key ways. These differences include: (1) whether the clan was a descent group comprised of actual or conceptually related lineages; (2) whether its members claimed descent from a totem; (3) whether it owned a stock of names, which were sources of power, and was responsible for naming individuals; (4) whether its constituent lineages owned sacred packs that embodied the powers of intense visions of founding ancestors; and (5) whether it had ceremonial responsibilities, typically associated with a sacred pack. In addition, none of the Central Algonkian tribes had clans that (6) controlled land or property, and/or (7) determined residence. (8) In all of these tribes, clans helped to regulate marriage; marriage within the clan was prohibited. However, in a few tribes, marriage was further restricted by a moiety system (Callender 1962:11–42; see also Tooker 1971).

The nature of Scioto Hopewell clans relative to most of these eight parameters remains to be defined. It has already been shown empirically that Scioto Hopewell clans were not likely corporations that regulated residence and controlled property. Scioto Hopewell clans were not segregated from one another in different local symbolic communities (Thomas et al. 2005:363–365). Also, they were similar in wealth, suggesting but not demonstrating that property was not transferred and accumulated within the clan (Thomas et al. 2005:375–377). These characteristics fit those of historic Central Algonkian clans.

The question of whether Scioto Hopewell clans were descent groups, or tended to be so, could be addressed by comparing the bone and dental genetic make-up, chemistry, and morphology of persons buried with different clan markers and within the approximately coeval charnel houses under the Hopewell 25, Seip-Pricer, and Ater mounds. A strong pattern of descent within clans would in turn suggest that clan eponyms were conceived of as totemic ancestors, in the historic Woodland (Menominee) pattern (Callendar 1962:35). A weak pattern of descent would suggest that clan eponyms were associated with clan ownership of a stock of eponym-related names and with naming, as in the historic Prairie pattern, and/or with the control of naming to the extent of requiring a name to refer in a manner to the clan eponym, as in the historic Ohio valley pattern (Callendar 1962:29–30, 40; Howard 1981: 87–88).

Both ancestral totemic linkage to a species and name linkage to a species were means by which Central Algonkian tribes transferred power in nature to the individual. Whether the difference between these two means had ramifications for the acquisition and distribution of social power I am uncertain; this topic should be explored ethnologically and applied to the Scioto Hopewell case. However, totemic linkage did involve an origin legend and a ceremony describing the formation of the entire clan system, whereas name linkage did not (Callendar 1962:35). It would be fruitful to examine in detail whether large ceremonial deposits that contained the power parts of a wide range of animal species (i.e., the Burnt Offering under the Seip-Pricer mound; the Central Altar under Mound 3 at the Turner site) might represent the remains of clan system origin ceremonies, and to compare this conclusion to the results obtained from bone and dental genetic, chemical, and morphological studies of descent, with their implications for whether totemism was an aspect of Scioto Hopewell clan organization.

Whether Scioto Hopewell clans had sacred packs is significant, especially to the issue of how individuals obtained spiritual power. Sacred packs that embodied the powers of visions of founding ancestors of clans were used in clan naming ceremonies as a means of linking an individual to power in nature, among the historic Prairie Algonkian tribes (Callendar 1962:31). In contrast, sacred packs were not owned by clans and did not link individuals to power in nature among the Ohio valley tribes and the Menominee. Instead, sacred packs were owned by groups who neither oversaw naming nor thought themselves descended from a totemic species. Among Ohio Valley tribes, sacred packs were owned by large tribal divisions, which were localized, patrilineally related village groups. Among the Menominee, sacred packs were used by hunting and war sodalities.

In the Scioto Hopewell record, identifying sacred packs will require careful contextual analysis. Publications and field notes will have to be combed for small clusters of artifacts in tight spatial association, preferably with the artifacts having indications of having been wrapped in fabric or a pelt, as were historic Central Algonkian sacred packs. Scioto Hopewell people did wrap and sometimes bundle breastplates and large copper celts with these materials. Whether any discovered sacred packs can be determined to have been clan-owned will depend on their content and any patterning among them in their contents and depositional contexts.[43]

The ceremonial responsibilities of Scioto Hopewell clans to the broader community have been explored to a degree. It is likely that the Bear and Canine clans were responsible for certain stages of mortuary rites, such as body processing and/or psychopomp work, based on several lines of evidence. These include the disproportionate abundance of their markers in graves, the unexpected co-occurrence of their markers with those of other clans, and sculptures of a bear-man possibly with a decapitated head in his lap and of a dog eating a decapitated head (Chapter 4, Clan Organization; Figures 4.6B and 4.14).[44] Whether Scioto Hopewell ceremonies included any of the broader range of community-wide ceremonies enumerated in Table 4.11 for historic Woodland and Plains Indians, and what roles clans might have played in them, have scarcely been studied. Clans in historic Prairie Central Algonkian tribes were key means for organizing ceremonies pertinent to community welfare. They owned both ceremonies and sacred packs necessary to performing the ceremonies (Callender 1962:31). In contrast, clans of the Ohio Valley Algonkian tribes and the Menominee were not responsible for performing community ceremonies and did not own sacred packs (Callendar 1962:35, 41). It has been suggested above that a ritual drama pertinent to the whole of the cosmos and the relationships of its many dimensions and realms to one another and the whole was performed and resulted in the Copper Deposit adjacent to Burials 260-261 under Hopewell Mound 25. How clans might have figured into this ceremony could be investigated, considering the animal forms and designs in the deposit and perhaps the contents of nearby Altars 1 and 2.

Clan-specific ceremonies for clan needs, such as naming, refurbishing the clan pack and ratifying the original pack agreement made by the founder, and other periodic rites, were integral to the life of the Prairie Central Algonkian tribes (Callendar 1962:31). Ceremonies specific to a clan, or a few clans, seem to be evidenced in the Scioto Hopewell record by ritual deposits and graves that contained large numbers of power parts of one or a few species. Large deposits of solely elk canine pendants have been found at the Mound City site (Mound 8, Burials 2, 3; Mound 2 Burial 16). Deposits with only bear canines are known from the Seip site (Pricer mound, Cremation Basin 2 and the Burned Offering), the Hopewell site (Mound 25, Burial 34), and the Liberty site (Edwin Harness mound, a cremation). At Mound City, a large deposit (Mound 13, Deposit 5) contained many elk canine pendants, and some bone effigy bear canine pendants and copper effigy turtles, the latter of which might or might not have been clan markers. At the Hopewell site, a large deposit of wolf and fox teeth pendants was recovered (Mound 23, Skeleton 207), as well as a large deposit of raccoon teeth and bear claws (Mound 25, Burial 41). The specific functions of the ceremonies represented by each these 10 deposits might be identified by considering the social, ritual, and/or utilitarian functions of the other kinds of artifacts found in the deposits.

Clan Origins

It is possible that the number of clans in the Scioto-Paint Creek area increased over time during the Middle Woodland period (Chapter 4, Clan Organization). Animal power parts indicating the Raptor, Racoon, Elk, Beaver, Nonraptorial Bird, and Fox clans were not buried in the very early charnel house at the Tremper site, but were included in later charnel houses at the Mound City, Hopewell, and Seip sites (Table 4.7). If the Scioto Hopewell clan system did grow over time (Chapter 4, Note 9), a critical question is whether the new clans formed in the area, or were migrant clans that came into the area from farther up and down the Scioto drainage or elsewhere, having been attracted to the increasingly showy ceremonies performed in the area. The concentrating of peoples into the Scioto-Paint Creek area from up and down valley seems likely from available population distribution data (Chapter 2, Ecological Setting; Seeman and Branch 2006), and might have been accomplished socially through the channel of clans and interclan relations.

To explore this possibility, the genetic constitutions and the chemical and morphological bone and dental signatures of individuals buried with markers of clans that were present in the Scioto-Paint Creek area at the beginning of the Middle Woodland period might be compared with the constitutions and signatures of individuals buried with markers of clans that appear to have been additions later in the period. These two categories of individuals should be more distinct from each other than are individuals who were members of clans that were present in the Scioto-Paint Creek area from the beginning of the Middle Woodland period. This would be expected regardless of whether clans were also descent groups.

Sodalities and Ceremonial Societies

The basic fact that Scioto Hopewell peoples had sodalities and ceremonial societies in addition to their kin and residential units has been established only very recently (Carr 2005a:280–286). Sodality organization had previously been thought to have arisen in the early Late Woodland period (Braun 1977, 1986:123–125). Current understanding of the sodalities and ceremonial societies includes: the firm identification of four such groups represented by metallic breastplates, metallic earspools, platform smoking pipes, and modified bear canines, with likely two more groups marked by mica mirrors and galena cubes; something of the ceremonial functions of most of these groups; their cooperation together in complementarity to perform large ceremonies, on occasion; the overlap in the memberships of at least some of the groups; the moderate differences in prestige among them; their not having been organized into a ranked hierarchy, with membership in one group as a requisite for membership in another; and the possibility that some of the ceremonial societies had grades of members (Chapter 4, Sodalities and Ceremonial Societies; Carr 2005a: 280–286; Thomas et al. 2005: 361–362).

Knowledge about Scioto Hopewell sodalities and ceremonial societies could be advanced along eight, key topical fronts. First is the identification of possibly additional sodalities beyond those documented thus far. Second is the geographic expanse of sodality memberships. Third is the possibility of grades of prestige within some sodalities. Fourth is the relationship of long-distance procurement of the fancy raw materials used to create sodality paraphernalia to sodality rites and activities. Fifth, who crafted the exquisite paraphernalia that sodalities used? Sixth, did leaders of different kinds vary in their power bases by having been more or less well networked socially through membership in one or more sodalities or ceremonial societies? Seventh, what was the relative importance of geographically dispersed clans compared to sodalities and ceremonial societies in integrating residential communities and local symbolic communities? Eighth, were any of the different ceremonies that were performed by different sodalities and societies linked together over time as a sequence comprising an annual or other ceremonial cycle? I discuss the first six topics, which are the most tractable archaeologically.

Identification

To date, three sodalities and one clan-specific ceremonial society of Scioto Hopewell peoples have been identified with good certainty. These groups were marked by metallic breastplates, metallic earspools, smoking pipes, and modified bear canines. The identity of the groups has been inferred from their markers having been placed in large numbers in ceremonial deposits within charnel houses and the markers having been distributed among burials and cemeteries in accord with six criteria (Chapter 4, Sodalities and Ceremonial Societies).

Other artifact classes that also were deposited en masse within charnel houses and that require further study to see whether they marked sodalities or clan-specific ceremonial societies include mica mirrors, galena cubes, obsidian bifaces, and the teeth of elk, raccoon, fox, and canids. Determining the ages and sexes of more individuals who were buried with each of these kinds of items is possible and would improve the ability to evaluate whether or not the items marked sodalities or ceremonial societies. Genetic approaches to sexing will be necessary if sexing of skeletons in the Scioto-Paint Creek area is to be markedly improved. A restudy of the large skeletal series from the Ater mound using modern osteological methods would be helpful, however.

The Geographic Expanse of Sodalities

It is unclear whether breastplates marked one sodality that spanned multiple local symbolic communities in the Scioto-Paint Creek area, or multiple, like sodalities each with members from a single local symbolic community. The same is the case for earspools. For example, late in the Middle Woodland period, did breastplate owners who resided during life in the community in main Paint Creek valley and in the community in North Fork of Paint Creek valley and in the community in main Scioto valley all belong to the same sodality and meet together? Or did breastplate owners in the three valleys belong to three separate but like sodalities? This subject is critical because it concerns the specific means by which the multiple communities in the area were integrated, just how tightly integrated they actually were, and how they might have served in organizing and accomplishing the remarkable earthwork-building feats in the region.

A related key question is how the rise of possible pan-regional breastplate and/or earspool sodalities over the course of the Middle Woodland might have complemented or coordinated with the development and refinement of joint burial ceremonies as a means for forging alliances among local symbolic communities.

Efforts to explore these two related, geographic questions might be started by identifying through dental and bone chemistry the valleys of birth and childhood, and of adulthood, of persons who were buried with earspools or breastplates. The life histories of persons in the same charnel house rooms, same charnel houses, and different charnel houses in the same or different valleys might then be compared in order to work out the geographic expanse of the memberships of the sodalities.

Grades of Prestige

Some sodalities and ceremonial societies in the Scioto-Paint Creek area might have had grades of prestige through which members passed upon attaining set achievements. The levels of the historic Algonkian Midewiwin medicine society (Hoffman 1891) serve as one analog. Hints of these grades in the Scioto Hopewell case are found in qualitative variations among the material markers of a given sodality or society and the lesser frequencies of fancier variants: earspools of plain copper (very common) versus those overlaid with meteoric iron or silver (moderately rare); breastplates of copper (very common) versus those of meteoric iron (extremely rare); plain bear canines (common) versus those inset with pearls (less common) versus bear claws (less common) versus bear jaws (rare) (Chapter 4, Overlap in

Membership Among Sodalities and Grades of Achievement).

These artifact variants could be evaluated for whether they did represent prestige grades by noting the qualities and numbers of other kinds of artifacts placed in the graves of persons with different variants. If fancier, rarer markers of a sodality and society marker (e.g., silver covered earspools, bear canines set with pearls) are found to have occurred in generally richer graves (more prestigious or powerful persons), and more common, plain markers in generally more mundane graves (less prestigious or powerful persons), then the likelihood that the variants did represent grades of prestige within that sodality or ceremonial sodality would be improved.

Materials Acquisition

The roles that sodalities might have played in obtaining the distant, fancy raw materials from which their paraphernalia was made, and perhaps the paraphernalia of Scioto Hopewell leaders, needs to be thought out, examined in relation to possible ethnographic analogs, and investigated empirically. The materials that were used to make the ceremonial paraphernalia of Scioto Hopewell sodalities and possible sodalities include: copper and silver from the Keweenaw peninsula in Lake Superior for breastplates and earspools (Spence and Fryer 2005), Sterling pipestone from northwest Illinois and catlinite pipestone from Minnesota for platform smoking pipes (Emerson et al. 2005; Farnsworth et al. 2004), probably mica from the southern Appalachians for mirrors, probably galena from the upper Mississippi valley (Walthall 1981:41), and possibly obsidian from Yellowstone, Wyoming and the Camas-Dry Creek formation in Idaho for large ceremonial blades (Griffin 1965; Hatch et al. 1990; Hughes 2006; Wiant 2000).

The long-distance journeys that were necessary to get these materials might have been part of the rites of initiation of persons into sodalities or collective pilgrimage rites of sodalities (Carr 2005d:582–585; Gill 1982:101–105). The locations to which initiates and member-pilgrims would have traveled almost certainly would have been considered powerful, by their distance, geologic qualities, and/or weather (Bacon 1993; Carr 2005d:582–584; Helms 1988; Martin 1999; Turff and Carr 2005:672–676), and the journeys considered in part a quest for power to be managed, integrated, and used through sodality rites. In this scenario, a Scioto Hopewell sodality would have had (owned?) the spiritual knowledge and ritual practices necessary to safely remove material-spiritual power from its source, to work the material into powerful ceremonial paraphernalia, and to use that paraphernalia in ceremony for specific purposes. The ownership of sacred knowledge by Puebloan kiva and other ceremonial organizations and the necessity of that knowledge to perform specific ceremonies (Brandt 1977, 1980) would be an example of this logic.

On the other hand, the long-distance journeys made by Scioto Hopewell peoples to powerful places also might have been accomplished by small groups of individuals on vision and/or power quests unrelated to sodality activities. The Algonkian vision quest (Callender 1978a, b, e; Callender et al. 1978; Skinner 1913) of boys and girls being initiated into manhood and womanhood, and of shaman (Dewdney 1975:22), are examples. It is unlikely, however, that the materials that an individual obtained during a personal vision quest and that served as a tangible manifestation of his or her personal power would have then been exchanged to others within the Scioto-Paint Creek area upon returning home, including members of sodalities that used those materials to make their paraphernalia.

Production of Ritual Paraphernalia

Closely related to the issue of what roles sodalities might have played in acquiring the distant raw materials from which their paraphernalia was made and that marked their members at burial is who manufactured their paraphernalia. This question concerns the organization of production of ceremonial paraphernalia. The question probably has multiple answers, depending on the kind of paraphernalia and the technical expertise required to manufacture it

(K. Spielmann, personal communication 2006), and probably whether the sacred knowledge and/or formulae necessary to produce the item was restricted to a few persons or widespread in Scioto Hopewell communities. Platform smoking pipes, with their exquisite animal effigy sculptures and tight stylistic conventions, were probably made by a very small number of artists (Otto 1984:24; 1992:5). The artists would more likely have been pipe sodality members, perhaps of a high level of prestige within the sodality, considering the strong cross-cultural relationship in small-scale societies between the creative process of manufacture, the power that it involves or connects with and harnesses, the power of the manufacturing tools, the power of a manufactured item, and the producers who can control those powers and use the item (e.g., Escobar 2007:19, 66–67, 110–111, 138, 142–144, 217; Helms 1993:18–32, 53; McNaughton 1988:xvi, 16, 20–21, 42–43, 58–64, 103, 111–114, 121–139; Richards 1989; see also Eliade 1964:470–474). For example, among the Pueblo, those members of a sodality who make masks, paint, and certain other ceremonial paraphernalia are restricted to particular persons (Spielmann 1998:156, multiple references therein). However, it is possible that the Hopewell artists who made pipes were a few individuals who were not pipe sodality members and whose productions were commissioned by the members. Analogously, the masks of the Iroquois False Face sodality were both commissioned from outside persons and carved by its members (Ritzenthaler 1969:15). Scioto Hopewellian obsidian bifaces that were large, yet thin, also were probably made by a very few expert knappers, again more likely high-level members of the sodality that used these items, but possibly not.

Some kinds of Scioto Hopewell paraphernalia are technically more easy to produce, and might have been made by the members at large of the sodality that used the paraphernalia, or by others outside the sodality. However, in these cases, the sacred knowledge and/or formulae necessary to safely and effectively produce such an object of power might have been socially restricted, thus limiting those who actually produced the object to sodality members or a select few within the sodality. Such paraphernalia possibly include small obsidian bifaces, metallic earspools, metallic breastplates, mica mirrors, and drilled bear canines. The same is true of the techniques employed to patinate copper breastplates with multicolored images of animals, animal-humans, and humans in ceremonial garb (Carr 2000d, 2005e; Carr et al. 2002). For each of these more easily made kinds of ceremonial paraphernalia, the possible act of all members of a sodality together manufacturing that one kind of paraphernalia could have been an integral aspect of the sodality's collective ceremonies.

Galena cubes were used without modification and do not raise the question of who manufactured these possible sodality items.

For all of the kinds of manufactured ceremonial paraphernalia used by Scioto Hopewell sodalities (and leaders), it is unclear whether those who acquired the raw materials to make the paraphernalia, those who manufactured the items, and those who used them were the same or different individuals. There is also the possibility that the person who dreamed or was otherwise the source of inspiration for the design of an item was yet a different individual (e.g., Rosenthal 1995). Further, different stages in the production of an item might have been carried out by different individuals by social and belief restrictions (e.g., Dawson 1975:148; Roe 1979:199–200). All of these possible divisions in the work of forming and using ceremonial paraphernalia imply potential points for social exchange, complementarity, and interdependence. They would not have been out of place in Scioto Hopewell society, which was characterized by many axes of differentiation of social and ritual roles, and by marked role complementarity (see Chapter 4).

In none of the above cases of production of ceremonial paraphernalia is it likely that a sodality of artisans made items of a kind for beyond their own use – for members of a community or several communities to use in ceremonies. This form of production and distribution is exemplified by the Gitsontk sodality of carvers among the Tsimshian of the Northwest

Coast, who were the only persons allowed to carve ritual paraphernalia and did so for commoners and chiefs (Shane 1984; Spielmann 1998:155; 2002:200). The practice of sodality-based production of ceremonial equipment for the wider society does not seem pertinent to the Scioto Hopewell case because none of the above kinds of paraphernalia had community-wide distributions, or even close to community-wide distributions, in graves of the deceased.[45]

Leadership and Sodalities

The bases of power of Scioto Hopewell leaders of various kinds have been documented for the most part. The power of leaders can be traced to the shamanic tasks they performed, as well as the shaman-like world view of Scioto Hopewell peoples, including the idea of power obtained from animal spirit helpers and other nonhuman beings and expressed through transformation. One or a few kinds of primarily "secular" activities may also have brought leaders power (Tables 4.1 and 4.2). Not yet investigated is the degree to which leaders of different kinds might have varied in their power bases by having been more or less well networked socially through membership in one or more sodalities or ceremonial societies. This topic could be explored by observing the frequencies of graves of leaders of given kinds that contained sodality or society markers. A similar analysis of the varying power bases of different clans, including their involvement in sodalities, has been made (Thomas et al. 2005: 375–377, table 8.15) and can serve as a model for the proposed study.

Gender Roles

Through studies of skeletal biology, grave good distributions, and ceramic figures, all presented in *Gathering Hopewell* (Rodrigues 2005; Field et al. 2005; Keller and Carr 2005), the world of gender definition and relations in the Scioto, Miami, Mann, and Havana Hopewell areas was opened for exploration and discussion. Tentative understandings are presented there about the number of genders that Hopewell peoples recognized; role definitions of masculine and feminine; the distribution and complementarity of roles among the sexes; gender inequity in personal prestige and leadership; the distributions of work loads, physical traumas, and disease loads among the sexes; and the lack of contribution of gender patterning to any single, interregional Hopewellian ideology.

Marked improvements and some alterations in our understanding of these gender conditions in the Scioto-Paint Creek area, and more broadly in Ohio, might be obtained if the numbers of skeletons identified to sex were increased substantially by DNA analysis. Some of the gender patterns found by Field et al. (2005) and Rodrigues (2005) were based on small numbers of sexed individuals and might change with a larger sample. In addition, an analysis of the musculoskeletal stress markers of Hopwellian human remains from the Scioto-Paint Creek area has not been made. Rodrigues' (2005) study of MSM was limited to the Turner site in southwestern Ohio. A study for the Scioto-Paint Creek area could shed important light on occupational and role differences between men and women there, and in contrast to role differences in southwestern Ohio.

ECONOMIC ORGANIZATION AND SOCIO-POLITICAL RELATIONS

In both this book and *Gathering Hopewell*, the authors and I have not ventured to reconstruct the forms of economic organization that Scioto Hopewell peoples might have had internal to the region. Nor have we considered the relationship of economic organization to socio-political relations among individuals and social groups, such as how control over material acquisition, production, and/or distribution might have been used politically for gain in prestige, power, and/or authority. Our silence on these matters results largely from the lack of much direct evidence in the Scioto Hopewell record for specific forms of economic organization, and our unwillingness to lay crossculturally inspired economic and political interpretations upon Scioto Hopewell peoples without that empirical backing (*contra.* Braun 1986:117; Brown 1981:36; 1997:243; Ford 1974; Milner 2004:94–95; see above, Social Competition).

Common subjects of economics that require study in the Scioto-Hopewell case include the social organization of production, distribution, exchange, and consumption; surplus; Hopewellian measures of value of exchangeable items (e.g., labor, raw material qualities); and labor specialization. The issues of production, distribution, exchange, and consumption each entail sensitivity to and defining of native categories of things that were thought exchangeable or not considering their social functions and ideological loadings, as well as defining of "spheres of exchange" (Bohannan 1955). By the latter is meant kinds of things that might or might not have been thought exchangeable for one another, given their native classification into categories with different qualitative meaning and value. One essential part of this definitional work is breaking apart the etic category of fancy artifact classes lumped under the label of "social valuables" or "prestige goods" into kinds of items that differed in their social functions, ideological loadings, and qualitative values, and thus whether they could be exchanged and, if so, their rough equivalencies (e.g., Table 4.1; Bayman 2002; Carr 2005f:241–245, table 6.1; Carr and Case 2005b:206–207, table 5.4; Carr et al. 2005, appendix 13.2; Winters 1968).

Production

The production of the ceremonial paraphernalia used by sodalities (e.g., metallic breastplates, earspools, platform smoking pipes, large obsidian bifaces) has already been considered above. A privileged few members of a sodality, all of its members, or talented artists outside of the sodality might have made its ritual items, depending on the technical complexity of the artistic processes involved and possibly on who had and did not have access to sacred knowledge and formulae necessary for producing the items (see above, Production of Ritual Paraphernalia). Who produced the diverse, relatively uncommon kinds of paraphenalia used by Scioto Hopewell leaders of the shamanic, shaman-like, and nonshaman-like kinds (e.g., metallic headplates, carved batons, copper and mica crescents, reel-shaped gorgets, certain copper geometrics, Table 4.1) is unknown. One possibility is the leaders, themselves, considering the crossculturally common equation or functional linkage between the power of crafting materials and the power of crafting social and sociopolitical relations as a leader (Helms 1993:69–77). Another possibility is select artisans as individuals or as groups analogous to the Tsimshian's Gitsontk sodality of carvers, who made paraphernalia for Tsimshian chiefs (Shane 1984; Spielmann 1998:155, 2002:200).

Production of some kinds of ritual items by groups of persons who worked together is evident at the Seip earthwork (Baby and Langlois 1977, 1979), but the social composition of those work groups has not been identified. Sodality members who were readying themselves for their collective rites is one possibility. Some other kinds of ceremonial paraphernalia possibly used by individuals on their own for their own purposes (e.g., cones and plummets for divining, flutes) were likely produced by these lone individuals, perhaps in conjunction with their having "bought" the prerogatives to produce and use the item (Penney 1989:159–229 and ethnohistoric references therein).

The role of sacred knowledge in limiting who could and could not produce various kinds of ceremonial paraphernalia is difficult to grapple with empirically because it is hard, if not impossible, to specify who produced those items compared to who used and/or were buried with them. There are hints, however, of sacred knowledge having been a key restricting factor in the manufacture of certain kinds of items. The very, very narrow range of stylistic variation of the animal effigy smoking pipes found at the Tremper and Mound City sites suggests a very small number of artisans (Otto 1984:24, 1992:5) and limitation on who was allowed to make them. The cautious saving of most obsidian and quartz debitage from knapping obsidian and quartz points, and the depositing of the debitage in compact ceremonial settings (Hopewell Mound 11, Crematory Basin; Stubbs, Koenig Cache; Cowan 2005; Shetrone 1936:202) implies restrictions on contact with obsidian and quartz, and probably those who could have handled it. The lack of nearly all forms of fancy raw materials and production debris from working them, other than mica and Indiana hornstone, at domestic sites in southern Ohio (Dancey 1991; Dancey and Pacheco 1997b; Prufer et al. 1965) suggests limitations on minimally where these materials could be worked, if not by whom. Only mica scrap has a widespread distribution across domestic sites as well as ceremonial centers, implying relatively freer access of individuals to working it and more open availability to any sacred knowledge and formulae that might have been involved in working it. Indiana hornstone is less widely distributed among domestic and ceremonial sites, but does occur in some domestic sites in significant quantitities, suggesting openness in working it. It's significant presence at only some domestic and ceremonial sites seems to reflect when nodules of the material became available to local peoples by direct procurement or exchange (Pacheco 1993), rather than any cultural restrictions on who could work it or where it could be handled.[46]

Although specialization in production of ceremonial parphernalia by sodalities and select persons within sodalities is likely, and specialization by small groups of artisans outside of sodalities is a possibility, there is not convincing evidence for specialization by local symbolic community. It is true that certain raw materials and paraphernalia were deposited in quantity in only particular earthworks: mica cresents at Tremper; platform pipes at Tremper and Mound City; quartz projectile points at Mound City; mica mirrors and galena cubes at Mound City and Hopewell; large obsidian points, hornstone bifacial disks, and cones and hemispheres at Hopewell; copper celts at Hopewell and Seip; copper breastplates at Hopewell, Seip, Liberty, and Old Town; and large "Copena" pipes at Seip. However, the differentially concentrated distributions of all of these kinds of ceremonial paraphernalia can be explained by three intersecting factors: the differing times of use of these different sites, the different times of origin of various sodalities and their rise and fall in popularity over time, and distinctions in site function – specifically, Mound City and Hopewell as places of burial of disproportionately large numbers of leaders and prestigious individuals, in contrast to Seip, Liberty, and Old Town where broader social spectra of individuals were buried.

Whether any utilitarian goods were produced by specializing individuals, households, or communities is unknown. The roughly equitable distribution of potting clays, lithics, wood, bone, and other natural resources among households and across valleys and local symbolic communities in the Scioto-Paint Creek area does not necessarily imply a lack of specialization. In small scale societies, different villages may specialize in making different kinds of utilitarian goods, despite environmental homogeneity in raw materials, as a social strategy for developing exchange networks and alliances (e.g., Chagnon 1968:100–101; Spielmann 2002:198 and references therein).

Local Exchange

It is possible that households and kin dispersed over the Scioto-Paint Creek area exchanged foods with one another directly with some regularity (Ford 1974). However, spatial leveling of subsistence risks might equally have been achieved through logistical trips to different natural food patches. This option appears to have been open to Scioto Hopewell peoples, given the lack of evidence for local or regional population packing (Chapter 2, Ecological Setting, Opportunism; Chapter 3, Sustainable Communities; above, Social Competition). Food was shared and exchanged through ceremonial feasting within and around earthen enclosures (Seeman 1979b), but the frequency of such events and the amount of food exchanged and its impact on annual diet are unknown. Utilitarian ceramic vessels were exchanged distances as great as about 25 kilometers radius and with frequency, as evidenced by a chemical analysis of vessel pastes and natural clays (Yeatts 1990; see also Carr and Komorowski 1995). Prestige goods in the form of shell and pearl necklaces and copper bracelets might have been exchanged to balance social debts, as compensation for damages, as bride-price, and for other social transactions. There is no direct evidence for these activities, but they were common historically among Woodland Indians (see shell and copper in Table 11.3, Appendix 11.8). Few, if any, of the diverse kinds of elaborate ritual paraphernalia made of fancy, exotic raw materials and used by sodalities (e.g. metallic breastplates, metallic earspools, obsidian bifaces, animal effigy platform smoking pipes) or by leaders (e.g., metallic headplates, carved batons, copper and mica crescents, reel-shaped gorgets, certain copper geometrics) would likely have been exchanged. Rather, their retention is what one would expect, given their instrumental purpose in defining the social-ceremonial roles of individuals. Moreover, animal effigy platform smoking pipes embodied the personal relationship of an individual to his or her animal tutelary spirit, with which an individual would not have wanted to part. Ceremonial paraphernalia that were likely produced by individuals for their own purposes (e.g., cones and plummets for divining, flutes) might or might not have been considered exchangeable. The power that such an item might have been thought to accrue over its history of use could have discouraged its exchange. So, too, could have the personal relationship that an individual developed with a ceremonial item over time, especially if that item were thought to have personhood (Hallowell 1960). However, prerogatives to the manufacture and use such items might have been "sold" and "bought" (Penney 1989:159–229). In general, evidence for the lack of interregional exchange of many kinds of fancy ceremonial paraphernalia – including effigy platform pipes, bird-effigy Hopewell ware vessels, ceramic figurines, metallic earspools, metallic sheathed panpipes, and copper celts (Bernardini and Carr 2005; Carr 2005d:592–594; Keller and Carr 2005; Penney 1989; Ruhl 2005; Turff and Carr 2005), and possibly alligator teeth, barracuda jaw scratchers, and obsidian (Bernardini and Carr 2005; Griffin 1965, 1973) – parallels the above arguments for such items not having been exchanged locally.

The frequency and geographic distances of marriage exchanges in the Scioto-Paint Creek area and elsewhere in Ohio, and their relationship to the degree of social competition over mates, have not been documented (see above, Social Competition). Some insights into frequencies and distances of marriage exchanges could be gotten through bone and dental genetic, chemical, and/or morphological studies of descent, relatedness, and local out-marriage/in-marriage ratios, drawing upon the skeletal samples of different communities excavated from different rooms within the charnel buildings under the Hopewell 25, Seip-Pricer, and Ater mounds, and from other smaller mounds.

Surplus

Whether Scioto Hopewell households produced food surpluses annually, whether the food requirements of social gatherings for ceremony and to build earthworks drove a surplus production of staples dedicated to times of gathering, and what roles prestigious individuals might have had in driving any surplus food production are all unknown. Storage pits are rare in the Middle Woodland houses in southern Ohio at large, and none are known from charnel buildings. However, alternative forms of storage remain a possibility (Chapter 2, How Important Was Farming?).

Socio-Political Uses of Economic Relations

Without much of an empirically firm understanding of the local economic organization of Scioto Hopewell peoples, we are not currently in the position to study how individuals and social groups might have used economic relations to their advantage to generate prestige, power, or privilege (if any), and to secure and retain specific leadership positions within and across local symbolic communities. For example, without knowing what categories of individuals had rights to produce specific kinds of paraphernalia and symbols of religious potency, it is unclear who, if anyone, might have used such control over production to leverage socio-political gain and how operationally they might have done so (for possibilities, see DeMarrais et al. 1996:16; Helms 1976; Penney 1989). Without knowing the patterns and intensities of local exchange of foods and utilitarian goods through either secular or ceremonial spheres in the Scioto-Paint Creek area, one cannot begin to explore whether and how heads of households, lineage or clan segments, or communities might have orchestrated such exchanges to their or their social unit's advantage (for possibilities, see Braun 1986; Ford 1974).

Some might be tempted to argue that control over the production of fancy ceremonial paraphernalia by leaders, sodalities, clans, or other individuals or groups went hand-in-hand with these persons or groups broadcasting their power through elaborate material displays during social gatherings at ritual centers, as evidenced by the large ceremonial deposits generated there. However, without knowing who produced particular kinds of paraphernalia, and given the likely cooperative and complementary social relations rather than intense competition expressed through such displays (see above, Social Competition), this linkage appears more misleading than productive. Consider also the Tsimshian case (Shane 1984; Spielmann 1998:155, 2002:200), where leaders who displayed fancy ceremonial paraphernalia were disconnected from the means of production of those paraphernalia by the Gitsontk sodality of carvers, who controlled the production of ritual paraphernalia for Tsimshian chiefs and commoners.

What does appear correct is that fertile ground for exploring how prestige, power, privilege (if any), and leadership were created among Scioto Hopewell peoples probably lays more in the realm of religious beliefs and practices and their connection to the material than in the arena of secular economic activity. This situation is indicated by the heavy balance for Scioto Hopewell leaders and sodalities to have been shaman-like practitioners rather than secular ones (Chapter 4, Power Bases of Leadership).

COMPARING HOPEWELL SOCIAL AND RITUAL ORGANIZATION IN SOUTHWESTERN OHIO AND THE SCIOTO-PAINT CREEK AREA

In *Gathering Hopewell* (Carr and Case 2005c), many details of the social and ritual lives of Hopewell peoples in the central Scioto valley are reconstructed and reported. Comparable reconstructions for the Little and Great Miami drainages in southwestern Ohio are limited in the book to issues concerning gender: the roles, relative prestige, gender categories, and geographic mobility of males and females (Field et al. 2005; Keller and Carr 2005; Rodrigues 2005). A broader array of sociological topics can now begin to be explored for Hopewell peoples in southwestern Ohio with the availability of new mortuary data on them, reported here in the HOPEBIOARCH data base. A total of four large ceremonial centers (Turner, Fort Ancient, Stubbs, Miami Fort) and 14 smaller ones are documented for the Little and Great Miami drainages. Many of the detailed topics that have been considered for the Scioto drainage, however, still remain intractable in the Miami drainages. Reasons include the occurrence of only one known charnel house with possibly a large burial population (Whittlesey's mound, Stubbs earthwork) in the Miami drainage, compared to the numerous large charnel houses in the Scioto drainage; the lack of systematic excavation of the one know charnel house in the Miami drainages; the fewer grave goods generally placed with the deceased in the Miami valleys; and the unavailability of the human remains uncovered at most excavated mortuary sites in the Miami valleys, which precludes modern age-sex determinations and bone and dental morphological, chemical, and genetic assays. Most Hopewell ceremonial centers in the Little and Great Miami valleys are hilltop enclosures, which apparently seldom have mortuary facilities.

Community and Ceremonial Spatial Organization

The intertwined topics of community organization at multiple scales and the organization of mortuary and other ceremonies across potentially multiple, complementary sites can be explored with data from southwestern Ohio to a degree, in a qualitative fashion. Five spatial clusters of earthen enclosures in southwestern Ohio (Figure 15.2, Table 15.1) suggest the possibility of five different sustainable communities in the area, each of a geographic scale similar to or somewhat smaller than that of the sustainable community documented for the Scioto-Paint Creek area in the late Middle Woodland (Chapter 3, Sustainable Communities, An Example of a Sustainable Community). However, because most of these sites are enclosures without burial mounds, and few have been excavated and radiocarbon dated, tying the sites within a cluster together socially by expressive mortuary artifact styles and temporally with relative or absolute dates is largely not possible at this time.

Within clusters, the complementarity of the ceremonial functions of certain pairs of sites can be suggested on the basis of whether or not they include burial mounds, their burial patterning, their complementary shapes, and/or their complementary elevations and placement on the landscape. The pairs of sites include Fort Ancient and Stubbs, Pollock and Bull Run, and Fortified Hill and Pleasant Run (Figure 15.2; Table 15.1). Each pair could represent ceremonially differentiated centers built by a single local community within its own lands, or built by multiple local communities who cooperated in constructing centers in each others' lands. The distance between sites of a pair can suggest whether they likely occurred within the lands of one or two local communities, but not the number of such communities involved in building them (Chapter 3, Sustainable Communities).

The Fort Ancient and Stubbs enclosures lie only about 8 kilometers apart along the Little Miami river, and were largely coeval, having been built over a similar, long period of time (see above, Chronology, Beyond the Scioto). The two sites clearly differ in their primary ceremonial functions. Ceremonies for processing, burying, and honoring the dead appear to have been among the main uses of Stubbs, whereas these kinds of rites appear largely incidental to the ceremonies that occurred at Fort Ancient. Specifically, Stubbs contained a large, multilobed mound that covered a series of large rooms that were defined by large, widely spaced posts and that probably were not roofed. The rooms may or may not have been connected together into a large charnel building like the posted and unroofed Tremper charnel house. There is evidence from surface finds on the mound's remnants that one or more rooms were used to bury the dead (Cowan 2006). By analogy to Scioto Hopewell charnel houses, mortuary-related rites would have been the major function of the whole room complex at Stubbs; but this cannot be said with certainty. In contrast, the Fort Ancient earthwork contains no Middle Woodland charnel structures. The bulk of deceased Middle Woodland persons were buried in an ossuary in the Great Gateway that connects the North and South Forts, in a similar deposit in a small earthen mound just south of the Great Gateway, in an apparently accretive pile of stone graves on terraces below the west side of the South Fort, and in more discontinuously distributed stone graves on a terrace east of the Great Gateway (Connolly 2004:47; Moorehead 1890:37–41, 84–86). Fort Ancient is more readily seen as a ceremonial enclosure for primarily rites not focused on the deceased.

Other evidence of the differing major ceremonial functions of Stubbs and Fort Ancient is the dissimilar landforms upon which they were constructed and their different relative elevations. Fort Ancient stands on a promontory-plateau 250 feet above the floor of the Little Miami valley (Otto 2004:3) whereas Stubbs was built on lower and more accessible ground – a terrace just above the floodplain of the Little Miami valley. Fort Ancient's greater height is reinforced by its location upriver from Stubbs. These topographic differences between the two sites probably had cosmological significance in the eyes of Miami Hopewell peoples (to follow the logic of Riordon [2004b]; see below), and probably reflect the different kinds of ceremonies for which the two sites were intended and constructed.

Significantly, the distance of 8 kilometers between Fort Ancient and Stubbs is analogous to the 6.3–9.6 kilometers distances between pairs of functionally differentiated ceremonial centers in the Scioto-Paint Creek area that fell within the lands of single local symbolic communities (Seip and Baum; Liberty and Works East; Hopewell and Old Town; see Chapter 3, Sustainable Communities). It can thus be suggested as a working hypothesis for future research that Fort Ancient and Stubbs were ceremonially differentiated centers within one local symbolic community. The scale of each of these earthworks, however, would suggest the hands of many people from multiple local symbolic communities.

Other examples of ceremonial centers in southwestern Ohio that may have been paired, functionally differentiated, and built by one or more communities, and that are inviting for future study, have been pointed out by Riordon (2004a:238–239, 2004b). The earthworks pairs are Pollock and Bull Run, which are only a mile apart, and Fortified Hill and Pleasant Run, which are less than a mile apart. These pairs are two of five cases of earthwork building in the Little and Great Miami valleys that appear to illustrate a general cosmological principle about relationships among places that was held by Hopewell peoples in that valley. The principle distinguishes pairs of closely spaced earthworks, or parts of a single earthwork, that were built on high versus low ground and that also differ in shape. Riordon (2004b) suggested that the higher of a pair of works may reference an Above realm ("astral or solar sphere"), whereas the lower work may reference "this world". In three instances, the elevated earthwork is a circle or approximates it while the lower earthwork is a square or contains a square element. Thus, the elevated, circle-like Pollock contrasts with the lower, square Bull Run earthwork; the elevated, irregular circle-like Fortified Hill contrasts with the lower, square Pleasant Run earthwork; and the Milford Works' elevated circle contrasts with its lower, flattened circle with an intrusive rectangle.[47] The Fort Ancient and Stubbs pair of earthworks, discussed above, partially fit the pattern, with higher, irregularly shaped Fort Ancient contrasting with lower, square-and-circular Stubbs (see above).

The short distances between Pollock and Bull Run and between Fortified Hill and Pleasant Run imply that each of these pairs of sites fell within the lands of a single local symbolic community. However, each pair may have been constructed by people from multiple, neighboring local symbolic communities.

Study of the internal spatial organization of cemeteries in the Little and Great Miami valleys, in order to infer aspects of community organization, may be productive in one or two instances. For the Scioto valley, such studies were invaluable. There, the Hopewell 25, Seip-Pricer, Seip-Conjoined, and Ater mounds each had beneath them distinct clusters of burials, separated from one another in different charnel rooms or buildings. The clusters could be compared to one another with rich demographic, artifactual, and tomb form data and shown to have been the dead from different local symbolic communities who gathered together for burial ceremonies (Chapter 3, An Example of a Sustainable Community; Carr 2005a). This model of analysis, however, is largely impracticable with the mortuary remains from the Miami drainages. Clusters of burials within charnel rooms may have existed under the multilobed mound at the Stubbs earthwork, but it was largely destroyed before the burial areas could be excavated. Only the central portion of the mound remains (F. Cowan, personal communication 2007). At Turner, the multilobed, conjoined mounds 3, 4, 5, 6, 7, 9, and 14 had burials only under Mound 3, and there only four burials. The Turner Great Burial Place, which probably laid below a single mound, was excavated only in part, here and there, with the distances between excavations made by different archaeologists known only approximately. Thus, any spatial clusters of graves that might have existed under the mound cannot be defined. In addition, artifacts are sparse in the graves, limiting social analysis.

However, individuals within the Great Burial Place do separate cleanly into an eastern spatial group versus a western one by body orientation (east–west orientation, north–south orientation, respectively; Greber 1979:53–54). It would be worthwhile to compare these two social categories of people and to evaluate whether they came from different communities by applying archaeological criteria for identifying communities, as was done for spatial groups of burials in Scioto valley charnel houses (Carr 2005a). Individuals from other cemeteries within the Turner earthwork could also be brought into the comparison. Encouragingly, Ruhl (1996:61–64; Ruhl and Seeman 1998:658) did find statistically significant differences in the size and/or morphology of earspools placed with the two differently oriented groups of individuals in the Great Burial Place, as well as differences among them, earspools found in the Mound 12 cemetery, and earspools found in Mound 1 of the Marriott group.[48] The two groups within the Great Burial Place, as well as burials from other cemeteries in Turner, could also be profitably compared to one another using bone and dental morphological and genetic measures of biodistance, and chemical measures of residence at birth and through life, to inquire into possible differences among individuals in their community affiliation and residence. Persons from distant regions might also be identified through these biodistance studies. Twenty or more skeletons are curated and provenienced from the Great Burial Place, and individuals from other cemeteries at the site may also be available for study (see Note 11).

A biodistance and residence study of the Middle Woodland skeletons dug up from different locations within the Fort Ancient site might be also prove productive for determining whether one or more communities buried their deceased there – if the skeletons are still curated and identified to provenience (Chapter 7, Fort Ancient Earthwork).

In the course of such osteological and dental work on the Turner human remains and any from Fort Ancient, it would also be possible to investigate patterns of post-marital residence (e.g., matrilocality, patrilocality).

Whether persons from a given local symbolic community buried their dead in both large earthworks like Turner and Fort Ancient and smaller, neighboring mounds cannot currently be assessed. Small mounds that are close to the two earthworks and that were recorded by Mills (1914) have not been excavated. The closest small, excavated burial mounds to Turner are 20–40 kilometers distant – beyond the diameter of a sustainable community in the Scioto drainage (Chapter 3, Sustainable Communities). The mounds also contain few skeletons. Small, excavated burial mounds are even more remote to the Fort Ancient earthwork.[49]

Ceremonial Gatherings

Some of the topics about ceremonial gatherings that have been or could be investigated for sites in the Scioto drainage can also be examined for sites in southwestern Ohio. These subjects include the size and social role compositions of ceremonial gatherings, with multiple cultural implications; the geographic distances from which people came to attend ceremonies, with implications for alliance building; and ritual dramas. A comparison between the Scioto region and southwestern Ohio along these several lines would provide a welcome perspective on interregional diversity in Hopewell ceremonialism.

The sizes and social compositions of ceremonial gatherings of Hopewell people in southwestern Ohio have been previously reconstructed only for the Turner site (Carr, Goldstein, et al. 2005), and in this case as part of a pan-Ohio sample of sites and study rather than to explore the unique characteristics of gatherings at Turner, itself. With newly assembled information from the Great and Little Miami drainages on an additional 19 large and small ceremonial centers, from which were excavated 127 graves with 184 individuals, it is now possible to describe the sizes and social compositions of ceremonial gatherings there, and to compare them to ones in the Scioto-Paint Creek area. At the 20 southwestern Ohio sites, including Turner, there are 19 ceremonial deposits and 37 graves with 40 individuals, each with redundant examples of artifact classes that indicate ritual gatherings and that are telling of their nature.[50]

Three kinds of studies should produce significant insights. First would be to compare the sizes and social role compositions of gatherings at the Turner earthwork in southwest Ohio to those at the Hopewell and Seip earthworks (considered individually and combined) in the Scioto-Paint Creek area. All three of these ceremonial centers are large and were used and built by multiple local symbolic communities, making them roughly functional equivalents among the broader spectrum of ceremonial centers in the two areas. Also, Turner likely spans the time approximately represented by Hopewell and Seip combined, from the middle to late Middle Woodland (see above, Chronology, and Its Implications for Defining Communities and Community Organization). Such a study would reveal how similar or different Hopewell ceremonies in southwestern Ohio and the Scioto-Paint Creek area were in their scale, functions, functional diversity, organization, scheduling, and perhaps their means of integration, coordination, and scheduling at the pinnacle of Hopewell social-ceremonial complexity.

A second likely productive study would be to compare the sizes and social role compositions of all 20 documented, large and small ceremonial centers in southwestern Ohio to the 16 documented large and small centers in the central to southern Scioto drainage. My sense is that the gathering size distributions for both regions are dominated by frequent, small gatherings and have only a few large gatherings; however, in the Scioto drainage, the size distribution may be more continuous, with a fair proportion of intermediate size gatherings, whereas in southwestern Ohio, intermediate size gatherings may be proportionally rare (see Carr, Goldstein, et al. 2005:509, table 13.8). This pattern could imply that Hopewell community organization was simpler and less multi-scalar in southwestern Ohio than in the Scioto drainage, perhaps with weaker and/or more fluid local symbolic communities in southwestern Ohio (Chapter 3). In tribal societies, weaker and/or more fluid local symbolic communities can be expected in settings with lower population densities.

A third form of study that would likely offer insight would be to calculate for each region the proportion of gatherings within cemetery-bearing ceremonial centers that resulted in artifact accumulations within graves compared to gatherings that led to artifact accumulations in ceremonial deposits lacking human remains. I think it will be found that the proportion of gatherings leading to accumulations within graves was much higher in the Scioto-Paint Creek area than in southwestern Ohio. This would suggest a closer integration of ceremonies of various functions within funerary rites of separation, liminality, and/or reincorporation in the Scioto-Paint Creek area than in southwestern Ohio, and the more central position of death in the ceremonialism and perhaps religious thought of Hopewellian peoples in the Scioto-Paint Creek area. This finding would not be surprising, given the different overall thrust of the functions of ceremonial centers in the two areas: specifically, the fairly large proportion of earthen enclosures in the Scioto-Paint Creek area that include burial mounds and the very low proportion of earthen and stone enclosures in southwestern Ohio that do. Most enclosures in southwestern Ohio are hilltop forts that lack burial mounds (Riordon 2004a). In turn, the finding would speak once again to the diversity rather than the uniformity of "Hopewellian thought and practices" across regional traditions in eastern North America (Carr 2005d:577–578, 616–621; Turff and Carr 2005:691–693), and to a very specific manner of difference.

The distances from which people came to attend ceremonies in southwestern Ohio Hopewell sites could be studied with bone and dental morophological, chemical, and/or genetic information for individuals in several cemeteries of moderate to large size: the Great Burial Place within the Turner site, and the smaller cemeteries of Purdom and Glen Helen, and the combined sample of neighboring Campbell and Boblett cemeteries (see Note 12 for the accessibility of human remains). Whether the associated individuals of a cemetery were members of one local symbolic community, several such communities, and/or more distant populations would have implications for understanding community organization, possibly at multiple geographic scales, and perhaps alliance formation among communities if they buried their dead together. Especially relevant to the subject of alliance building, but not accessible for bioarchaeological study, is the ossuary in the Great Gateway at Fort Ancient, where the remains of at least 25 persons were commingled (Moorehead 1890:84) and recall the commingled remains at the Tremper site in the Scioto valley (Chapter 3, A Second Example of a Sustainable Community). Other mass graves at Fort Ancient that may be pertinent to the issue of alliance building are the 18–20 persons buried together in a pile of stones on the terrace east of the Great Gateway (Moorehead 1890:84), the more than 20 persons buried under a layer of stone on one of the terraces of the bluff on the west side of the South Fort (Moorehead 1890:39–40), and the approximately 12 commingled persons buried in another terrace half way down the bluff (Moorehead 1890:87–88). Unfortunately, it appears that all of the bones from the Great Gateway ossuary and the other mass graves were either not collected in the field or have since been discarded.[51]

Ritual dramas are evident in the remains placed in the Central Altars of Mounds 3 and 4 at the Turner site. A likely purpose and meaning of the drama expressed at Mound 4 has been discussed (see above, Ceremonial Form: Ritual Dramas), while the nature of the drama that occurred at Mound 3 has yet to be interpreted.

Leadership

The kinds of leadership roles that were found in southwestern Ohio Hopewell societies, the degree to which the power bases for those roles were more sacred (shaman-like) or secular in nature, and whether leadership roles tended to be centralized in the hands of a few social positions and people or more widely distributed can each be addressed. Burials from both the large and rich Turner earthwork and some smaller mound sites (Boyles Farm No. 6, Purdom, Richard Shumard's Farm, Twin Mounds, Campbell, Manring, Shinkal), as reported in the HOPEBIOARCH data base, are useful for these studies. The degree to which leadership roles and their bundling into multi-role leadership positions were institutionalized cannot be estimated with these mortuary sites, for the lack of repeating examples of leadership paraphernalia of given classes. This may suggest poorly institutionalized roles or the strong tendency for mortuary symbolism among southwestern Ohio Hopewell peoples to have been subdued. Changes or stability in the several aspects of leadership mentioned above cannot be tracked well over time, currently, for lack of a temporal series of large burial populations. However, with extant mortuary data, insight can be gotten into whether shaman-like concepts and practices were pervasive across the general populace or more restricted to leaders. The subject of the criteria by which individuals were recruited into leadership positions can be partially addressed. Gender as a criterion has already been evaluated by Field et al. (2005) and Rodrigues (2005). The importance of age to recruitment, and whether leadership positions were achieved or ascribed by other social principles, can be examined to some degree for some positions using the demographic information reported in the HOPEBIOARCH data base for the Turner site. It might be possible to significantly enlarge the sample of skeletons from Turner that can be aged and sexed, beyond what Field et al. and Rodrigues used, by untangling the mislabeling of skeletons from the Turner and Madisonville sites at the Peabody Museum of Archaeology and Ethnology, Harvard University (Teresa

Rodrigues, Penny Drooker, personal communications 1997; see Note 11).

Social Ranking

The burial population from the Turner site has potential for exploring whether social ranking was marked there by the artifact classes placed with individuals and the forms of their tombs. The burials from Turner that are recorded in the HOPEBIOARCH data base include 72 with information on whether they died as adults or children, 32 of these with more specific age information, and 18 with information on their sex (13 males or possible males; 5 females or possible females). Procedures for identifying ranking with these kinds of mortuary data have been refined and presented by Carr (2005f). The smaller cemetery sites reported in the HOPEBIOARCH data base have insufficient burial populations, burials with prestigious artifact classes, and age-sex data for investigating social ranking.

Clan Organization

The animal totems or eponyms of clans of Hopewell peoples in southwestern Ohio, like those in the Scioto-Paint Creek area, are knowable from the power parts of animals – their teeth, jaws, claws, talons, and feet bones – that were made into pendants and buried with individuals or placed in large ceremonial deposits. Seven strong reasons for equating these kinds of artifacts with clan symbols are given in Chapter 4 (see Clan Organization). Animal power parts were found in southwestern Ohio in large numbers at the Turner site in the Central Altar of Mound 3, Altar 1 of Mound 4, and with five individuals within the Great Burial Place. The species represented include bear, canine, large feline, deer, elk, fox, bay lynx, raccoon, beaver, opossum, and badger. All of these species were clan totems or eponyms for Hopewell peoples in the Scioto-Paint Creek area, save the badger and perhaps deer and opossum. Scioto Hopewell clan totems that are not represented at Turner are limited to raptors and nonraptorial birds. Smaller burial sites in southwestern Ohio broaden the range of clan totems a bit. Two marmot jaws, one muskrat bone, and one squirrel bone were recovered from a few graves at the Purdom and Campbell mounds. Whether the muskrat and squirrel bones were power parts and referred to clans is unknown. In either case, marmot, muskrat, and squirrel are not among the animal associations known for clans in the Scioto-Paint Creek area. Bear canines were found at the small sites of Irvin Coy, Twin Mound, and Campbell, as they were at Turner.

Knowledge about the animal clan totems and eponyms of Hopewell peoples in southwestern Ohio might be augmented by identifying the species of the 2,000 small mammal canine pendants and the 600 small mammal phalanges found in the large ceremonial deposit in the Central Altar of Mound 3. Apparently only some of these canines and none of the phalanges were identified to species (Willoughby and Hooton 1922:46, 55–56, plate 12e).

Other aspects of clan life in southwestern Ohio appear largely unanswerable with extant archaeological documentation. Animal-associated clan markers were seldom buried with individuals in southwestern Ohio; only 15 cases are reported in the HOPEBIOARCH data base. Difficult topics include the relative sizes of clans, the social roles into which particular clans were recruited, whether clans varied significantly in their prestige and wealth, whether phratries or moieties existed, and seven other characteristics considered for the Scioto Hopewell clans (see above, Social and Ritual Parameters of the Clan System).

Sodalities and Ceremonial Societies

The kinds of sodalities, shaman-like professional societies, and clan-specific ceremonial societies that may have existed in southwestern Ohio can be investigated reasonably well with archaeological data from the sites of Turner, Fort Ancient, and Stubbs. At these three sites, as in the grand ceremonial centers in the Scioto-Paint Creek area, there are certain artifact classes that are found in ceremonial deposits in redundant, large numbers. These remains give a first hint of the possible assembly of the members of sodalities, shaman-like professional societies, or clan-specific societies for collective rites, followed by the members decommissioning their ceremonial equipment together. In the Scioto-Paint Creek area, the deposits commonly contained one kind, or largely one kind of ceremonial equipment, suggesting the gathering of members of one kind of group for exclusive, or largely exclusive ceremonies (e.g., the quartz projectiles deposited in Mound City, Mound 3, Altar and Crematory Basin). Much less frequently, the deposits contained a diversity of kinds of ceremonial parapheralia used by different groups, implying their joint assembly (e.g., Hopewell Mound 25, Altar 1; for details, see Chapter 4, The Social Compositions of Gatherings). At Turner, Fort Ancient, and Stubbs only six large ceremonial deposits have been excavated, and in contrast to the Scioto-Paint Creek cases, four suggest socially diverse gatherings (Turner Mound 3, Central Altar; Turner Mound 4, Altar 1; Fort Ancient Powell Cache, Fort Ancient Cowan-Wolfe Cache) and only two imply a socially homogeneous gathering (Turner Mound 15, Cache; Stubbs Koenig Quartz Deposit).

The artifact classes at Turner that occurred redundantly in large numbers in ceremonial deposits and that potentially marked sodalities, shaman-like professional societies, or clan-specific ceremonial societies include: 53 copper earspools, 36 bear canines, 25 stone reel-shaped gorgets, 11 obsidian projectile points along with 11 mica schist effigy projectile points, 13+ tear-drop shaped pendants with and without center holes, 17+ brachiopod fossils, 12 alligator teeth, 10+ large lumps of cannel coal, 284 deer and elk astragali, 600 small mammal phalanges, and 2000 small mammal canine pendants. The artifact classes at Fort Ancient that similarly were found in large numbers in deposits include: 100 mica sheets, 37 galena cubes, 14 obsidian straight or curved bifaces, 5 quartz bifaces, 5 quartz crystals, 12+ Harrison county chert disks, and 7 slate gorgets. At Stubbs, 150 kilograms of raw and worked vein and crystal quartz, including biface fragments, were found in the Koenig deposit. Of these nineteen artifact classes, only eight are found in large ceremonial deposits in the Scioto-Paint Creek area: earspools, bear canines, obsidian projectile points, quartz projectile points, mica sheets, galena cubes, quartz crystals, and Harrison county chert disks. There, earspools have been identified to have marked a sodality of unknown purpose, and bear canines a bear clan-specific ceremonial society involved in mortuary practices (processing corpses?, psychopomp work?) and/or doctoring. Mica mirrors and galena cubes possibly indicate members of two professional sodalities of shaman-like practitioners. Whether obsidian points marked a professional society of shaman-like practitioners is less clear (Chapter 4, Sodalities and Ceremonial Societies). Other ceremonial societies or possible ceremonial societies that have been identified in the Scioto-Paint Creek area but that are not evidenced in the deposits at Turner, Fort Ancient, or Stubbs are ones marked by breastplates, smoking pipes, and perhaps canine, fox, elk, and raccoon power parts. Two breastplates and four smoking pipes did occur individually in six burials at Turner, and one breastplate was found in the Powell Cache at Fort Ancient, but there is no evidence in the form of massive deposits of them that they represented ceremonial societies there. The overall picture is one of contrast between the Scioto-Paint Creek area and southwestern Ohio in the kinds of ceremonial societies that formed in the two regions. This is a significant fact in relation to the question of what "interregional Hopewell" was, and whether or not it was a coherent system of social organization, ceremonial rites, symbols, and/or spiritual beliefs (for this discussion, see Carr 2005d:576–577, 616–621; Turff and Carr 2005:691–693).

Future research on the ceremonial societies of Hopewell people in southwestern Ohio would best begin by rigorously examining the 19 artifact classes that potentially marked ceremonial societies for their correspondence to six archaeological criteria that identify sodalities archaeologically. These criteria concern the residential and kinship affiliations of ceremonial society members, the numbers of members, their age and sex distributions, and prestige variation among ceremonial societies (Chapter 4, Sodalities and Ceremonial Societies). Of the 19 classes, eight – earspools, mica mirrors, galena cubes, stone reel-shaped gorgets, deer astragali, elk astragali, small mammal phalanges, and small mammal canines – occur in large enough numbers in ceremonial deposits to argue that their owners came from multiple local symbolic communities and were moderately common in their communities. Four classes – earspools, bear canines, mica mirrors, and galena cubes – are found in burials at Turner ($n = 13$, 7, 4, and 4 graves, respectively) and can be examined for their age and sex distributions tentatively. Differences in prestige between deceased persons with the four kinds of items can also be explored. The Turner burial data does not, however, allow the kinship affiliations of persons with one or more of these four artifact classes to be assessed, for the paucity of clan markers in graves at the site.

If it is assumed that markers of ceremonial societies in the Scioto-Paint Creek area also symbolized ones in southwestern Ohio, even when the markers have yet to be found in large numbers in ceremonial deposits there, then other artifact classes found in burials at Turner should be evaluated for their adherence to the six criteria for identifying sodalities, to the extent possible. These artifact classes include breastplates (2 graves) and smoking pipes (4 graves).

To the extent that some evidence points to one or more artifact classes potentially having marked ceremonial societies, their sociological characteristics and workings can be explored, with varying degrees of confidence. Examples include: the likely ceremonial functions of the groups; which ones cooperated in complementarity to perform large ceremonies; whether any of the different ceremonies performed by different sodalities and societies linked together over time as a ceremonial cycle; the degree of overlap in the memberships of the groups; whether they differed much in prestige and power; whether they were organized into a ranked hierarchy, with membership in one group as a requisite for membership in another; perhaps whether the ceremonial societies internally had grades of members; the degree to which leaders of particular kinds were well networked socially through membership in one or more ceremonial societies; and the relative importance of geographically dispersed clans compared to sodalities and ceremonial societies in integrating residential communities and local symbolic communities. For example analyses, see Thomas et al. (2005) and Carr (2005a:280–286). Data for investigating these topics are fairly sparse in southwestern Ohio compared to the Scioto-Paint Creek area. Data from both large ceremonial sites and small mound groups in southwestern Ohio should be used.

Further Studies of Gender Roles

The issue of the subsistence activities and roles that were taken on by females compared to males in southwestern Ohio Hopewell societies, and patterns there compared to Scioto Hopewell societies, could prove to be very important for understanding the economic foundations of social life in these areas. Rodrigues (2005:418) discovered, through osteological analyses of a small sample of 19 skeletons from the Turner site, that males and females shared the domestic tasks of grinding nuts and seeds and preparing hides. Females were found to have been more active in flintknapping using a hammerstone and in running, possibly associated with hunting, than were males. These observations run counter to the strong ethnohistoric pattern among native North Americans and world-wide in pre-agricultural and agricultural societies for females to work soft substances such as hides and clay, males to work hard substances such as stone, bone, wood, and metals, and for females and young to obtain plant foods and smaller mammals while males hunt larger mammals that involve intense running (Driver 1969; Murdock and Provost 1973). A systematic analysis of the varying kinds of utilitarian equipment found in the graves of Hopewell females and males throughout southwestern Ohio sites, and further osteological analyses of skeletons from the area for indications of specific tasks and overall work load, would be welcome tests of Rodrigues' findings. For example, a female buried at the Headquarters village held a prepared flint core in her hand, implicating her in flint knapping (Lee and Vickery 1972), as Rodrigues' study would predict. In addition, the sample of identified males and females available for such studies could be enlarged through DNA analysis of human remains. Sites with curated human remains that are useful for extending Rodrigues' study in the above ways include Glen Helen, Purdom, Campbell, Boblett, and perhaps Headquarters, and Miami Fort (see Note 12 on curation).

Firm knowledge of the different subsistence activities that males and females performed in southwestern Ohio Hopewell societies could give insight into the personal qualities that defined masculinity and femininity there. In turn, these concepts could have been one factor that contributed directly to the much more important place that women appear to have had in leadership and prestigious sodality roles than did men in Hopewell societies in southwestern Ohio, both absolutely there and relative to the pattern in the Scioto valley (Field et al. 2005:394, 398).

Extending the sample of individuals from southwestern Ohio that are sexed and studied osteologically and for burial patterning might also improve our understanding of the number of genders recognized by Hopewell peoples in the area, gender inequity in personal prestige and leadership, the distributions of physical traumas and disease loads among the sexes in relation to their social roles, and the lack of contribution of gender patterning to any single, interregional Hopewellian ideology. Investigation of these topics has barely begun (Rodrigues 2005; Field et al. 2005; Keller and Carr 2005).

CONCLUSION

Hopewell peoples in the Scioto valley and in southern Ohio, generally, left a spectacular and intimately expressive material legacy of their lives. This record has invited investigation and interpretation by professional archaeologists for more than 150 years and still remains deep and rich in the understandings of Hopewell peoples that it has to offer. The very many new projects for future research presented in this chapter, the diversity of questions they might answer, and what Hopewell peoples still have to teach us attest to the vibrancy and creativity of their lives. It is Troy Case's and my sincere hope that the detailed data on Ohio Hopewell bioarchaeological and archaeological records that we have assembled and organized in this book, our overviews of Scioto Hopewell life as currently pictured, and our thoughts on productive, pointed future research projects stimulate your curiosity and excitement about past Hopewell peoples and ease your way in coming to know them better.

NOTES

1. Two radiocarbon dates from the Tremper site fall at 100 B.C. ± 100 (Prufer 1968:153), and 40 B.C. ± 70 (Emerson et al. 2005:195). The four earliest of seven dates from the Mound City site indicate that its construction was begun later than Tremper's: 150 B.C. ± 150 (Mound 13); A.D. 0 ± ? (Mound 3); A.D. 0 ± ? (Mound 23); A.D. 60 ± 100 (midden created prior to building the enclosure and incorporated within it as Feature 35) (Brown 1994:49; Maslowski et al. 1995:29–31; Prufer and McKenzie 1975:359–360; Ruby et al. 2005:161). Subsequent "acceptable" Middle Woodland dates from Mound City include A.D. 172 ± 58 (Mound 10), A.D. 180 ± 80 (Mound 13), and A.D. 270 ± 60 (Mound 10) (Brown 1994:50; Maslowski et al. 1995:33).
2. Seeman's (1977:50) smoking pipe form Tremper-A was popular in Illinois around A.D. 1 (Seeman 1977:52). The McFarland phase ceramic assemblage from the Yearwood site, Tennessee "offer[s] the best comparison [of Southeastern pottery] with Mound City." The weighted average of radiocarbon dates from Yearwood (Butler 1979: 155, table 20.1) is A.D. 32 ± 31 or 3 B.C. ± 31, depending on whether or not a late outlying date is included in the average (Brown 1994:56).
3. Burials 6 and 7 under Hopewell Mound 25 were in Cluster F, near to Cluster E, in the western portion of the mound. Burial 2 under the Seip-Pricer mound was in the West Cluster. Both Cluster E and the West Cluster included the greatest proportion of individuals with items of prestige and wealth, compared to other clusters of burials in those mounds.
4. Skeletons 260 and 261 under Hopewell Mound 25 occurred in Cluster E. The celt on the clay platform under the Seip-Pricer mound was in the West Cluster.

These two clusters had the greatest proportion of individuals with items of prestige and wealth, compared to other clusters of burials in those mounds.

5. The radiocarbon dates from West Mound are A.D. 60 ± 200 and A.D. 120 ± 200, uncalibrated (M-650, M928, respectively) (Prufer 1968:153).
6. There are respectively 2, 3, and 1 inhumations from the West, Rockhold, and Bourneville mounds extant in the collections of the Ohio Historical Society, Columbus, Ohio (Ohio Historical Society, personal communication, 2006). The Bourneville specimen is very fragmentary and does not offer much hope for having ancient organic material. One of the Rockhold specimens is also fragmentary.
7. The northward expansion of earthwork building possibly evidenced by the construction of Tremper and then Mound City assumes that the Carriage Factory mound, located near Mound City, was built after Tremper. It is not known, however, when the Carriage Factory mound was constructed. Further, the many undated earthen enclosures in the Scioto Paint-Creek area, and the lack of dates for most of the many small mounds at the Hopewell site, make the proposed history of ceremonial use of the Scioto drainage tentative.
8. The second, more variable radiocarbon date from Esch Mound 1 would date it to A.D. 1. The two dates are: A.D. 270 ± 90 and A.D. 1 ± 120 (Maslowski et al. 1995:30, 34).
9. A gravel-filled pit located near one the platform mounds that were structurally a part of the Octagon earthwork within Newark produced two dates: A.D. 180 ± 80 years (Beta 76909) and A.D. 300 ± 80 (Beta 76908) uncalibrated and uncorrected (Lepper 2005; Maslowski et al. 1995:33, 34). One pit that contained mica sheets and that was associated with a rectangular structure (Hale's House) just outside the Oval Enclosure of Newark produced a radiocarbon date of A.D. 310 ± 90. A second shallow basin associated with the house was dated to A.D. 105 ± 90 (Lepper 1998:122; Maslowski et al. 1995:32, 34).
10. Pollock has been dated by at least 15 radiocarbon assays (Maslowski et al. 1995:29–34; Riordon 1996:248), which range fairly continuously between 75 B.C. and A.D. 330. Riordon (1996:242; 1998:81–82) has summarized that construction began on Pollock no later than sometime in the first century A.D. and continued through the third century, calendrical time. Five stages of construction over this period have been identified (Riordon 1998:81–82). Miami Fort has only one, highly variable date, A.D. 270 ± 150, from a sample taken from the lower portion of the northern embankment (Fischer 1968:19).

    The Todd Mound, 33BU205, has been dated by four radiocarbon assays. However, no information on internal proveniences is currently available, so the mound is not reported in the HOPEBIOARCH data base. The mound was excavated in 1977 or 1978 by Pat Tench and one other graduate student at the University of Cincinnati with the help of volunteers from the Central Ohio Valley Archaeological Society (Pat Tench, personal communication 2005). At present, the field notes and photographs of artifacts cannot be located. The artifacts and human remains taken from the mound are housed at the University of Cincinnati, and are currently being inventoried by Prof. Ken Tankersley.

    The Twin Mounds site, which is recorded in the ASU data base, has no direct radiocarbon dates. However, it is located on the same promontory as Miami Fort, which is only about 0.6 mi away. Miami Fort does have one radiocarbon date, just mentioned.
11. From the Great Burial Place at the Turner site, 64 individuals were removed. At the Peabody Museum of Archaeology and Ethnology, Harvard University, mislabeling and confusion of curated skeletons from the Turner and Madisonville sites has reduced the number of skeletons clearly attributable to the Great Burial Place to about 20 (Teresa Rodrigues, Penny Drooker, personal communications 1997). This number might be increased by a systematic investigation of the skeletal collection labeled as having come from Madisonville for individuals actually attributable to Turner. An additional 23 skeletons were excavated from Mounds 1, 2, 3, 11, and 12 at Turner, are reported in the data base, and might be curated and provenienced at the Peabody Museum.
12. The numbers of inhumations excavated from small mound sites in southwestern Ohio are: Purdom Mound 1/2 ($n = 9$), Purdom Mound 3/4 ($n = 3$), Glen Helen mound ($n = 7$), Campbell Mound 1 ($n = 7$), Boblett Mound 2 ($n = 1$). Additional cremations were found at Purdom and Campbell Mound 1 but are not relevant to radiocarbon dating. Most inhumations from Purdom and Glen Helen (Dayton Museum of Natural History) and Campbell (Clark County Historical Society, Springfield) are currently curated, although not all can be associated with particular burial numbers and, thus, grave content. Remains of individuals in the collection from Campbell are mixed together to a degree. None of the individuals excavated from Manring Mound 1 ($n = 1$) and Manring Mound 2 ($n = 2$) is curated at the Clark County Historical Society or the Ohio Historical Society. It is not clear whether the skeletons exhumed from the sites of Headquarters ($n = 3$) and Miami Fort ($n = 5$), which were curated in the Department of Anthropology, the University of Cincinnati, can be located now.
13. From the West, Rockhold, and Bourneville mounds, there are respectively 12, 3, and 1 inhumations or cremations, or a total of 16 individuals, extant in the collections of the Ohio Historical Society, Columbus, Ohio (Ohio Historical Society, personal communication, 2006). From the Seip-Pricer mound, 87 individuals are curated there, mostly cremations (Konigsberg 1985).
14. Of the 54 individuals and 111 individuals inventoried by Johnston (2002:307–309) to have been recovered from Hopewell Mounds 23 and 25, respectively, only 16 and 38, respectively, could be located in museum archives.
15. Related but different orientations are expressed by the square of the Seal earthwork, which has its minor axis through opposite sides oriented north–south, and the Portsmouth Group B, U-mound, which has its major

axis oriented north–south. Equinox sunrise and sunset only approximate cardinal east and west, and are only approximately perpendicular to cardinal north and south.

16. A related line of evidence that may pertain to the strength of social and ritual ties that linked peoples of the Newark and Scioto-Paint Creek areas is the use of Flint Ridge flint, which outcrops approximately 10 miles from the Newark earthworks, by peoples in the Scioto-Paint Creek area. It is unclear whether this situation implies the involvement of Newark peoples in mining Flint Ridge flint and their exchanging it to peoples in the Scioto-Paint Creek area, or the direct procurement of the flint by Scioto Hopewell peoples, themselves, at Flint Ridge. It is unlikely, however, that persons from the Scioto-Paint Creek area and elsewhere who might have made pilgrimages to the Newark site were given Flint Ridge flint or artifacts as tokens of their ritual experiences there – a suggestion made by Lepper (2006:129). Tokens of pilgrimage and vision quests are typically exotic materials and items that are rare back home (e.g., Coleman and Elsner 1995:100 and Morinis 1992:6 in Lepper 2006:129; Gill 1982:102; see also Carr 2005d:582–585). In contrast, Flint Ridge flint was distributed in quantity and widely across sites in the Scioto-Paint Creek area. It is found within habitation sites, between habitation sites, in rock shelters, within and around geometric earthworks, on mound floors, and within mound fill (P. Pacheco, personal communication, 2007). At the McGraw site, blades of Flint Ridge flint dominated the blade assemblage (80.3 %) and chips of Flint Ridge were common (15.0 %) (Pi-Sunyer 1965:79, 85). Two to three hundred Flint Ridge blades were found at each of the McGraw, Brown's Bottom No. 1, and Ilif Riddle No. 1 habitations (ibid.; P. Pacheco, personal communication 2007; Prufer 1997:362). Four to a dozen blade cores of Flint Ridge flint have been excavated from each of the McGraw site (Pi-Sunyer 1965:85), Brown's Bottom No. 1, and the Overly Tract habitations (P. Pacheco, personal communication 2007). Site A on the Robert Harness farm contained a cache of 2,427 broken biface fragments of Flint Ridge flint (Coughlin and Seeman 1996:236). A token of Flint Ridge flint obtained during pilgrimage of a Scioto Hopewell person to Newark would not have stood out against this backdrop use of Flint Ridge flint in the Scioto-Paint Creek area.
17. Perhaps relevant to interpreting the four conjoined mounds that comprised the central mound of the Cherry Valley mound group is the similar conjoining of four mounds to build the Eagle mound in the center of the Great (Fairgrounds) Circle. The Eagle mound covered a building or two adjacent buildings that had mortuary functions. Within the building(s) was a stone altar covered with calcined bones, charcoal, and ashes (Lepper 1998:125; Smucker 1881:266 cited therein).
18. Both the relative frequencies of performance of the various kinds of ceremonies held by historic Woodlands and Plains Native Americans and the diversity of kinds of ceremonies held (Table 4.11) indicate that the issues of world renewal, connections between the living and the deceased, and passage of the deceased to an afterlife – although important – were not the common foci of Woodlands and Plains ceremonial life. The relative frequencies of different kinds of ceremonies is my subjective assessment from reading the literature cited in Table 4.11.
19. Another skeleton that has its arms spread out, but less widely, is the middle-aged adult, Burial 42 under Mound 25 in the Hopewell earthwork. (Ohio Historical Society, catalog no. P396/B3/F2/E6/Photo 856.)
20. DeBoer's (2004:99–100, Figure 12) interpretation of the several artifact classes in Burial 12 under Mound 7 in the Mound City earthwork as elements of a single costume is unlikely. The social and ritual roles marked by those artifact classes were usually segregated from one another and distributed among different individuals in Scioto Hopewell societies (Carr, Goldstein, et al. 2005:214–224, table 5.5).
21. Fine-grained data for tracking rates of ceramic exchange among households over the course of the Middle Woodland are available for study through Christopher Carr, Arizona State University. The data include characterizations of several hundred vessels for the mineralogy of their temper particles and texture of their pastes through petrography and the chemistry of their pastes by INAA and electron microprobe. The sites from which the vessels come include ones in the Scioto-Paint Creek area (McGraw, Harness-28, Mound City, Seip, Edwin Harness mound), in the northern Scioto drainage (DECCO), and in the neighboring Licking valley (Murphy, Newark Campus). The same ceramic characterizations are also available for Early Woodland, early Late Woodland, and late Late Woodland sites in these regions.
22. For Ohio Hopewell societies at large, Seeman (1988:573) argued "that the cooperative aspects of Hopewell interaction recently have been perhaps overemphasized – and the evidence for potential competition largely ignored. High levels of Hopewell cooperation imply at least some competition for resources and social position as well, and certain themes in Hopewell iconography, the elaborate patterns of Hopewell personal decoration and hairstyling, the conspicuous consumption of exotic artifacts in public ceremonies, and 'monumental' earthwork construction must be seen as relating with this emerging, broadening perspective on Hopewell exchange and ceremonialism (see Bender 1985; Braun 1986)."

Buikstra and Charles (1999:205), speaking theoretically about ceremonies in mortuary settings, have said "... formal and stylized ancestral cult rituals define contemporary power arrangements, while grave rites constitute one of the battle grounds for disputing those arrangements ... Those aspects of the cult that focus on the ancestral grave are more concerned with political competition than with glorifying rigid status hierarchies or group unity. Working out the tensions in such dualities serves to recreate society, perhaps in an altered form." Concerning Illinois Hopewell, Buikstra and Charles (1999:220) have spoken of "... elaborate rituals that served to negotiate fragile power relations of the Middle Woodland social and political landscape." They compared Illinois Hopewell and Archaic mortuary sites, saying "[Archaic] kin groups came to the flood plain Bullseye site to engage in the competitive behaviors that established their place among their contemporaries and to create alliances ..." (ibid., p. 211). "Archaic peoples attempted to become more powerful through graveside ostentatious display ... The monuments built by Hopewell people also reflect social and political aspirations of individuals, kin groups, and communities" (ibid., p. 220). "Rather than simply being contests for competitive ostentation, however, the flood plain landscape now served the ever-larger audiences that met to celebrate the world order" (ibid., p. 215).

In recent textbook renditions of Ohio Hopewell life, Fagan (1995:416) has spoken of Hopewell life as involving "competitive displays of wealth and prestige, in both life and death" between Big Men. Milner (2004:94–95) stated, "Common burial in elaborate tombs or structures served to reaffirm group affiliation while reinforcing the social standing of key lineages within local communities. The most influential people were ones who were able to marshal the resources they needed to organize impressive displays related to funerals and celebration of ancestors ... it is even possible that gift-giving, commonly practiced during the historic period as part of significant events, put people in debt of their hosts ... One is reminded of the Northwest Coast where large quantities of items, many of which had symbolic significance, were presented, distributed, and destroyed on occasions calculated to enhance the prestige of the individuals who sponsored them."

23. See Gillespie (2001, 2002) for similar concerns about the Western views of the self and personhood being assumed inappropriately in the interpretation of Mayan archaeological remains.
24. That multiple local symbolic communities came together to build the earlier Hopeton earthwork may be indicated by variation in the symbolic colors of the soils used to build different segments of the walls (Lynott et al. 2005). For details, see Chapter 5, Note 9.
25. The only likely evidence of violence in the lower Illinois is a suite of six skulls in Feature 1 of Mound 3 at the Elizabeth site (Leigh et al. 1988:46–49, figure 5.8a). The skulls are of males, ranging from 22–30 years old to 47+ years old. They were in various states of disarticulation when buried: crania with articulated mandibles and cervical vertebrae that suggest decapitation, crania with articulated mandibles, alone, and crania lacking both mandibles and vertebrae. It is possible that they were victims of feuding among local groups, who were killed over a range of time.
26. Additional insight into the possibility of separation of bodies of persons who died "bad" deaths from those of persons who died "good deaths" could be gotten by a detailed osteological study and reading of field notes aimed at searching for whether instances of other kinds of "bad" deaths, beyond those caused by interpersonal violence, are also missing from the mounds. Premature fetuses, mothers and fetuses who died during birthing, and persons with unhealed bones who clearly died from a sudden accident, rather than interpersonal violence, are examples.
27. These statistics pertain to only those modified human remains in Seeman's (1988:570–571) table that come from sites in the Scioto drainage (Tremper, Hopewell, Seip, Harness, and Ater) and exclude the tabulated isolated skulls from sites in southwestern Ohio (Turner, Marriott Mound 1). The sample used here is 22 individuals who were aged to a numeric age range, rather than simply adult or subadult, and 15 individuals whose sex was determined with confidence or some question. The statistics reported in the text differ from Seeman's (1988:570, 572) summary of the table's patterning because his summary includes modified human remains from southwestern Ohio in addition to those in the Scioto drainage. One third of the sample of aged and sexed remains that Seeman used comes from southwestern Ohio, and two thirds from the Scioto drainage.

    Seeman's mixing of individuals from two distant and culturally different groups into one pan-Ohio characterization is inappropriate because the level of social competition in southwestern Ohio may have been much higher than that in the Scioto drainage, for reasons given in the text. Also, the practices of modifying human remains and placing them in burials may have had different meanings and purposes in the two regions. An interregional difference of some kind is clear. At Turner, by Seeman's table, 7 (88 %) of 8 sexed human remains are male, whereas in sites in the Scioto drainage, only 7 (47 %) of 15 sexed remains are male. (Modified human remains in the two regions are similar in their percentages of young versus old individuals.)

    Two definitions of young are used here, yielding the 36 % to 54 % range given in the text. If a young person is considered to be less than 30 years old, which is a generous definition compared to the expected age at death, 36 years, as determined from individuals buried in the Seip-Pricer mound by Konigsberg (1985), then the percentage of individuals who are old in the sample of Scioto modified human remains is 36 %. If "young" is defined to mean of draftable age, probably unmarried, about 25 years old or less, then the percentage of individuals who are old in the sample of Scioto human remains rises to 54 %.
28. If the modified human remains were trophy heads of persons from distant lands outside of the Scioto drainage, then their inclusion in the charnel house would not be out of line psychologically. However, this situation would not support the position that Scioto Hopewell individuals and social groups had intensely competitive relationships with one another.

29. For example, consider the people who lived in the neighboring Hocking valley east of the Scioto drainage, or in Kentucky to the south, who were contemporaneous with Scioto Hopewell societies but were largely unreceptive to Scioto Hopewell beliefs, ceremonies, and material culture (Black 1979; Blazier et al. 2005; Murphy 1975:219–229). Whether Scioto Hopewell people took heads from them is an important question for future research.

    An ethnographic case where internal social competition and prestige-building are not the motivations for taking heads of persons in other societies is that of the Ilongot of northern Luzon, the Philippines (Rosaldo 1989). The Ilongot view head hunting as a vital, psychologically necessary aspect of the grief process upon some devastating loss, such as the death of a loved one. They say that taking the head of a member of a neighboring tribe is a way for them to release their anger and thereby lessen their grief. Similarly, Gardner (1964) reports that the Dugum Dani of New Guinea will kill a member of a neighboring tribe in order to reinvigorate their souls (*endai egen*) from the grief they feel at the death of one of their own.
30. For the same reasons given in the text, future studies of social competition and modified human remains should distinguish between internal affairs within the Scioto drainage and those in each other region of Hopewellian development. For example, differences in community organization, population aggregation, and territoriality between Hopewellian peoples in the Scioto valley compared to the Illinois River valley (Ruby et al. 2005) are well known and essential to the subjects. Likewise, it is important to distinguish between the internal affairs of peoples within the Scioto drainage and external relations among Hopewellian peoples in different regions across the Eastern Woodlands at large – the topic of the "Pax Hopewelliana". These two scales of interpretation were blurred by Seeman (1988).
31. In the Scioto valley, the local symbolic community that contained the pair of earthworks, Liberty and Works East, possibly extended westward from the Scioto valley into main Paint Creek valley as much as 4.4 kilometers – half the distance between Liberty and Works East. In the North Fork of Paint Creek, the local symbolic community that included the pair of earthworks, Old Town and Hopewell, possibly extended southeastward beyond Hopewell by as much as 4.8 kilometers – half the distance between Old Town and Hopewell. Subtracting the 4.4 kilometer possible westward extension of the Liberty-Works East community and 4.8 kilometer possible southeastward extension of the Old-Town Hopewell community from the 20.2 kilometer distance between the Hopewell site and the confluence of Paint Creek with the Scioto river yields a distance of roughly 11 kilometers between the Old Town-Hopewell local symbolic community and the Liberty-Works East local symbolic community. In the main Paint Creek valley, the local symbolic community that included the pair of sites, Seip and Baum, possibly extended eastward past Baum by as much as 3.1 kilometers – half the distance between Seip and Baum. Subtracting this 3.1 kilometers and the 4.4 kilometers that the Liberty-Works East community might have extended westward up main Paint Creek from the 28 kilometer distance between Baum and the confluence of Paint Creek with the Scioto yields a distance of about 20.5 kilometers between the Seip-Baum community and the Liberty-Works East community. Subtracting the 4.8 kilometers that the Old Town-Hopewell community might have extended southeastward from Hopewell along the North Fork of Paint Creek and the 3.1 kilometers that the Seip-Baum community might have extended eastward of Baum along main Paint Creek from the 26.2 kilometer distance between Baum and Hopewell yields a distance of approximately 18.3 kilometers between the Old Town-Hopewell community and the Seip-Baum community. All distances are measured here as approximately river trend-line distances rather than air distances. See Chapter 3, Note 18 for some of the benchmark distances upon which the calculations made here are based.
32. The paleoethnobotanical remains from the extensive excavation of the Brown's Bottom No. 1 site have been preliminarily reported, based on 22 soil samples totaling 110 liters from 7 Middle Woodland features (Steinhilper and Wymer 2006). The diversity of Eastern Agricultural Complex seeds at Brown's Bottom is similar to what is found in Licking valley sites, with erect knotweed and maygrass dominant and goosefoot secondary. However, the percentages of these species vary considerably from one site to another, suggesting differences in local productivity and use. The same is true of nut species. At Brown's Bottom, black walnuts were preferred over hickory nuts and acorns 3 to 1, whereas in Licking valley sites, hickory nuts, or hickory nuts and acorns, comprised nearly the entirety of each nut assemblage examined (Wymer 1996:figure 3.3). Also, hazelnuts have not yet been identified at Brown's Bottom, whereas they were a component of the nut assemblages of all examined Licking valley sites (Wymer 1996:figure 3.3). Finally, reliance on nut resources compared to seed foods of all kinds appears to have been much greater at Brown's Bottom than in Licking valley sites (D. Wymer and P. Pacheco, personal communications 2006). The count of seeds per gram of nutshell found to date at Brown's Bottom is 56 (Steinhilper and Wymer 2006), whereas at the Murphy and Campus sites in the Licking valley the counts are approximately 770 and 4,860, respectively (D. A. Wymer, personal communication 2007).

    The ubiquity of all kinds of identified seeds across features at Brown's Bottom (70 % of samples) is lower than in Licking valley Middle Woodland sites (82 %, Table 2.2). Likewise, the ubiquity of nuts at Brown's Bottom (75 %) is lower than in Licking valley sites (84 %, Table 2.2). The density of all kinds of seeds per liter at Brown's Bottom (maximum of 10 counts/liter in the pit feature with the greatest density), is much lower than in Licking valley sites (30 counts, 22 counts) (D. A. Wymer, personal communication 2007).

33. The lack of depictions of females in Scioto Hopewell art may indicate that they were not unusually valued and competed for.

    Birth and survivorship sex ratios are hard to model, given the limited number of Scioto Hopewell individuals who can be sexed. It is not clear from the hunting and gathering and horticultural tasks that Scioto Hopewell men and women would have undertaken (e.g., hunting deer and small animals, fishing, gathering mollusks, nuts, and green plants, and clearing forests for swidden plots) that either men or women lived more dangerous lives, which would have upset the sex ratio. A demographic study of the Seip-Pricer mound, which contained a sampling of individuals from three local symbolic communities, indicates their having had a fairly balanced sex ratio (Konigsberg 1985). However, only 26 of the 123 individuals buried in the mound were sexable, and a few of these were from strata above the charnel house floor or were unprovenienced.

    The degree of polygyny of Scioto Hopewell peoples, and most other tribal peoples, cannot be confidently estimated from the frequency of graves having an adult male and multiple adult females (possible wives). In polygynous societies, husbands are commonly older than their wives and die before their wives. The multiple wives tend not to be buried with their husband upon his death or thereafter but, instead, are given away in marriage to other men. Thus, the paucity of Scioto Hopewell graves with a man and multiple women does not translate directly into a low frequency of polygyny.

    Among primary forest and long-fallow swidden horticulturalists, where land is readily available and the cost of having additional wives is low while their extra labor is valuable for producing surplus food, economic polygyny is common and advantageous for men attempting to build their prestige. However, these conditions do not appear to pertain to Scioto Hopewell peoples, who relied heavily on wild plants and animals, and for whom there is no evidence of their having stored food in quantity and generated surpluses.

    It is likely that Scioto Hopewell peoples were moderately patrilineal in ethic and practice (Field et al. 2005). However, the nuances of their kinship system, how kin were distributed over the landscape, and how these conditions might or might not have encouraged polygyny is currently unknown.

34. In the double burial, 260–261 under Mound 25 of the Hopewell site, both individuals had headplates. Above the two individuals, rather than laid out on the same floor with their bodies, were placed 69 copper and iron celts and 94–95 copper and iron breastplates. These were arranged in an intermixed fashion. The association of the celts and breastplates with the two individuals probably resulted from the gifting and decommissioning of the celts and breastplates by celt and breastplate owners in a ceremony focused on the grave of the two deceased leaders with headplates. It is much less likely that the two leaders with headplates "owned" the celts and breastplates placed above them.

35. The physical accomplishments of young males and females that gained them a leadership position marked by metallic celts could have been a part of their initiations to adulthood or subsequent paths to important adult statuses. Both interpretations are possible because the age distribution of persons buried with celts includes individuals estimated at 5–8 years, 9 years, 14–16 years, and 14–19 years, in addition to adults of unidentified ages.

    To speculate, the accomplishments could have been long journeys that they made to the Upper Great Lakes for the copper from which their celts were made or to distant meteorite falls for the iron from which their celts were made. Celts may have had symbolic associations with building dug-out canoes used for long journeys and related meanings (Bernardini and Carr 2005:635–636). Success in warfare is less likely to have been the form of accomplishment marked by metallic celts, given the equivalent number of identifiable females and males who were buried with metallic celts. However, the sample of individuals is small.

36. The possibility that the metallic celts and breastplates placed over Burials 260 and 261 were the remains of a ritual drama is suggested by the orderly spatial arrangement of the celts and plates. These produce the image of a bird-man in profile, in the common style of bird-men depicted by patination on celts and breastplates, themselves (Carr 2000c, d; Carr and Lydecker 1998). In Negative 39670 at the Field Museum of Natural History, Chicago, rotated 180 for proper orientation, the bird-man faces left, in profile. The head has been composed from breastplates and unidentified (metallic?) sheet artifacts. The upper beak is rounded and not that of a raptor. The neck is made from the form of one breastplate oriented vertically. The blocky body has been composed from many breastplates and celts oriented horizontally in a regular pattern like a brick wall.

    It is also important that very few of the metallic celts deposited over Burials 260 and 261 (Bernardini and Carr 2005, appendix 17.1) were miniatures. This situation makes it unlikely that the celts were tokens of power produced or sponsored for production in number by one or a few leaders marked by celts, and then handed out to Scioto Hopewell people and visitors in order for them to play roles in a ritual drama and to integrate them. This idea has been posed by K. Spielmann (personal communication 2006; see also Spielmann 2002:202) for interpreting some large ceremonial deposits.

37. The persons who were buried with copper-nostril inserts are Burials 6 and 7 under Mound 25 at the Hopewell earthwork and Burial 2 under the Pricer mound at the Seip earthwork. The persons who were buried with a barracuda jaw are Burials 25, 41A, and 45A under Mound 25 at the Hopewell earthwork.

38. The number of shamanic and nonshamanic leaders, sodality members marked by earspools and breastplates,

and other prestigious persons marked by crescents and reel-shaped gorgets who offered gifts to the deceased, per deceased person, was 24–30 times greater for the Mound 25 population than the Mound 23 population (Carr, Goldstein, et al. 2005:508–509, tables 13.7 and 13.8). Also, Mound 25 contained five large ceremonial deposits of fancy artifacts, whereas Mound 23 had none.

It is not possible to assess how the tombs in which the deceased were buried differed between Mounds 23 and 25. Moorehead (1922) did not document tomb architecture in Mound 23, although he did state that most burials in Mound 23 occurred in log tombs (Lloyd 1998:8, 2000).

39. It is possible to distinguish fairly well the burials placed in the south section of the charnel house under the Edwin Harness mound from those placed in the middle and north sections. Putnam (1886b) dug the north and central parts of the mound. The two shafts of Squier and Davis (1848) also were dug in these sections. Moorehead in his 1896 season (Moorehead 1897b) and Mills in his 1903 season (Mills 1903; see also Murphy 1978) dug the south and some of the middle section of the mound. Burials removed by Moorehead in 1896 and Mills in 1903 can be used in the proposed comparison with burials from the McKenzie mound group. See Greber (1979b:31, 34, figure 6.4, table 6.3) for a map and table of the different areas and sets of burials excavated in the Edwin Harness mound by these archaeologists. Also see Squier and Davis (1848:178, figure 67) and Moorehead (1897b:223–224, figures 16 and 17). The burials excavated by Mills in his 1905 excavation apparently came from the north section of the mound (Greber 1979b:34–35, tables 6.3 and 6.4).
40. If it is assumed for the moment that inhumation represents a higher social rank, cremation a lower social rank, and some other form of disposition outside of mounds perhaps a yet lower rank, then this symbolism could explain the different age-sex distributions and the different frequencies of prestigious roles of the deceased buried in different, large charnel houses of the later Middle Woodland period in the Scioto Paint Creek area. Inhumation, which predominates at the Hopewell and Old Town earthworks, would suggest that those sites were burial places for high ranking individuals. Their high rank would explain their predisposition to having commonly attained roles of leadership and other social importance marked by metallic headplates, celts, breastplates, and/or earspools, as well as other elaborate ceremonial paraphernalia. Their having commonly filled leadership and other important roles would in turn explain why they are largely adults and, at least in the case of Hopewell, more commonly male. In contrast, cremation, which predominates at the Seip, Liberty, and Ater earthworks, would suggest that these sites were burial places for lower ranking individuals. Their lower rank would explain why they less commonly attained leadership and other important roles, and, in turn, their more normal age-sex distributions, at least at the Seip-Pricer and Ater mounds, where mortuary demographics are better known.

    Although initially promising, interpreting these different sites as places for burying persons of different rank meets with problems. The obvious, crossculturally common criteria for establishing differences in rank among persons – differences in community affiliation and in the ecological potential of the community's lands, and differences in descent – are not observed among the burial populations of these sites. The charnel houses under Mound 25 at Hopewell, the Pricer and Conjoined mounds at Seip, the Edwin Harness mound at Liberty, Ater mound, and perhaps the Conjoined mound at Old Town each contained persons from the same multiple (three or two) communities (Carr 2005a). Also, those buried under Hopewell Mound 25 and the Seip-Pricer mound were members of a broad and similar range of clans – Canine, Feline, Raptor, Raccoon, Beaver, and Nonraptorial Bird (Thomas et al. 2005:364, table 8.11). What criteria might have distinguished the proposed high rank, inhumed people at Hopewell and Old Town from the proposed lower rank, cremated people at Seip, Liberty, and Ater is unclear, and a reasonable question for future research.
41. Opossum teeth pendants were also found in association with dog, fox, raccoon, bay lynx, and badger teeth pendants in the Central Altar under Mound 3 at the Turner site in the Little Miami valley, Ohio (Willoughby and Hooton 1922:46–47, 56), at a distance from the Scioto-Paint Creek area. The facts that canine, fox, raccoon, and feline have been recognized as eponyms of clans in the Scioto Paint Creek area, that the opossum teeth pendants were found in association with the pendants of teeth of these other species, that all of these animals were represented by their power parts (teeth), and that the power parts were made into pendants for personal ornamentation, imply that opossum was a clan eponym like canine, fox, raccoon, and feline in the Little Miami valley and Scioto-Paint Creek areas. This evidence from the Central Altar under Turner Mound 3 is somewhat weaker than that from the Burnt Offering under the Seip-Pricer mound, given that the Turner site is distant from the Scioto Paint Creek area.
42. There are 15 other known burials in the Scioto drainage, in the sites of Hopewell, Seip, and Ater, that have unmodified pieces of turtle shell or turtle shell artifacts – rectangular book-mark shaped items with designs, a tablet, combs, an atl-atl effigy, and a bird engraving – but these are not obvious clan markers, in contrast to turtle shell pendants.
43. A fabric bag that probably held many decommissioned platform pipe fragments, many pearl and shell beads, a number of galena crystals, a galena bead, and whitneyite was found at the Mound City site under Mound 8 adjacent to the central altar – the "Depository" (Mills 1922:436–437). The fragmentary nature of the pipes and the large size of the bag (ca. 18″ × 20″) suggest that this was not a sacred pack. However, a search

of the published literature and field notes for similar bagged or wrapped, whole, ceremonial artifacts that might represent sacred packs would be worthwhile.

44. The idea that the common occurrence of bear canines in graves resulted from the Bear Clan having contributed bear canines to the graves of some individuals when processing them could be evaluated by determining the relative frequencies of deceased persons who had bear canines placed on or near their bodies compared to deceased persons who wore bear canine necklaces around their neck and probably owned them.
45. It is true that platform pipes, small obsidian spears, and earspools were deposited, on one occasion each, in large numbers (200 or more) in a ceremonial deposit (Mound City Mound 8; Hopewell Mound 25, Altars 1, 2), with the number of items approaching the number of adults who might have resided within a local symbolic community in the Scioto-Paint Creek area. However, in each of these three cases, contextual evidence suggests that multiple communities rather than one were involved in the decommissioning ceremony. Thus, rather than each deposit indicating sodality-based production of ceremonial equipment for a whole local symbolic community, each deposit more likely represents the decommissioning of a sodality's parphernalia at a collective rite of its own many members from multiple communities.
46. Indiana hornstone constituted most of the lithic artifacts and debris at the Murphy V domestic site and moderate percentages of the lithic artifacts and debris at the Murphy IV and Murphy VI domestic sites in Licking valley (Pacheco 1993:192, 193, 195, 212), as well as a significant proportion (6.0 %) of the artifacts and debris from the McGraw domestic site in the Scioto valley (Pi-Sunyer 1965:79). Only about 1.5 % of the lithic assemblage from the Brown's Bottom No. 2 site in the Scioto valley was Indiana hornstone, and only two pieces of it were among the ca. 22,000 lithic artifacts and debris found at the Murphy II site (Dancey 1991:55, 58–59). Indiana hornstone constituted moderate to low but significant proportions of the lithics from the Mound City, Seip, and Hopewell earthworks (28 %, 10.9 %, 4.5 %, respectively), but was almost completely absent from the Liberty earthwork (0.08 %) (Vickery and Sunderhaus 2004:178–179, table 12.3).
47. In a fourth case, the Turner site, the elevated element is again a circle but the lower element is an ellipse. Riordon's (2004b) fifth case, Fort Ancient, is less convincing. It contrasts the elevated and supposedly irregular circle of the South Fort with the lower North Fort which has a number of supposedly rectilinear embankments. A different or complementary idea is the upper–lower elevation distinction between Fort Ancient as a whole and its neighbor, the Stubbs earthworks (see text, above). All seven of the earthworks just discussed are within 50 miles of one another within the Little and Great Miami drainages. The seven are posited by Riordon (2004b) to represent a local ceremonial and religious tradition.
48. Ruhl (1996:61–64) found that earspools buried with persons oriented north–south versus east–west in the Great Burial Place were statistically different in the mean diameters and cup diameters of their obverse (front) plates, and in the abruptness of the concave–convex transition between their cups and surrounding annuli. Earspools interred with persons in the Great Burial Place, Mound 12, and Marriott Mound 1 were statistically distinct from one another in the ratios of the areas of their cups and annuli, and in the ratio of the diameters of their obverse and reverse plates.
49. Richard Shumard's Farm, with its one inhumation, is about 20 kilometers away from the Turner earthwork. The Perry Township site, with its two burials, and the Joseph Boyle's Farm site, with three skeletons and a few cremations, lie yet farther away from Turner, more than 40 kilometers away.
50. The ceremonial deposits that reveal ceremonial gatherings include: 12 at the Turner earthwork (Carr, Goldstein, et al. 2005:509, table 13.8, appendices 13.3 and 13.4), 3 at the Fort Ancient earthwork (Cowan-Wolfe Cache, Powell Cache, Mound 50 Deposit), 1 at the Stubbs earthwork (Koenig Quartz Deposit), 1 at Purdom Mound 1-2 (Deposit J), and 2 in Campbell Mound 1 (Deposit 1, Stone Altar). The graves that have redundant artifacts and indicate ceremonial gatherings include: 32 or 35 at the Turner earthwork (Carr, Goldstein, et al. 2005:509, table 13.8, appendices 13.3 and 13.4), depending on whether the artifacts buried with multiple persons in a grave are counted as one gathering or multiple gatherings; Fort Ancient, the Moorehead 1890:87 mass burial; Manring Mound 2, the Altick 1941:4 burial; Purdom Mound 1-2, Burial M; Perry Township Mound, Burial 1; and Glen Helen Mound, Burial 1M. The large number of bear canines found in Boblett Mound 2, Burial 1 appear to have been part of the ceremonial costume of this individual rather than contributions to him or her from many other individuals.
51. The human remains excavated by Moorehead from the Fort Ancient site are not curated currently at the Field Museum of Natural History, the Ohio Historical Society, Harvard University's Peabody Museum of Archaeology and Ethnology, or the Smithsonian Institution's National Museum of Natural History, as determined by collections managers in 2007. Robert Connolly (2007, personal communication) found a note from the late 1930s in the records of the Field Museum saying that all fragmentary material from the site had been consigned to waste. Many of the human remains from the ossuary in the Great Gateway, the terrace east of the Great Gateway, and the terraces west of the South Fort at Fort Ancient would have been fragmentary and would possibly have been deaccessioned then, if they were removed from the field at all.

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Tables

Figures

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Coda

Out of respect for Ohio Hopewell people
and the civilized world that they created,
let us listen carefully to what they had to say
about themselves.
Their voices can be found,
if only we delve deeply into their material legacy
for its inherent patterning,
all the while actively inquiring into
our own Western and personal biases.
Their history was theirs for the making and living,
and is for us but to appreciate,
be taught,
and say thanks.