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ORIGINAL PAPER

Fortifications and Enclosures in European Prehistory: A Cross-Cultural Perspective

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Abstract This article reviews recent research into the archaeological interpretation and investigation of fortifications and enclosures during the Neolithic and Bronze Age in Europe. Recent methodological, technological, and cultural developments have expanded our understanding of the temporal, spatial, and formal variability of these features on the landscape. Interpretations of this variability also have varied with different theoretical trends in the discipline. We advocate a cross-cultural approach that focuses on the occurrence of enclosures and fortifications over the long term at the continental scale. Such a macroscalar approach complements interpretive frameworks at the regional and microregional scales. The geographic and temporal distribution of these features indicates that social institutions associated with principles of segmentation and substitutability became formalized and tethered to the landscape during the Neolithic.

Keywords Fortifications · Enclosures · Warfare · Europe · Neolithic · Bronze Age · Copper Age

Introduction

During the sixth millennium B.C., some of the farming and herding populations in Europe began constructing various combinations of ditches, walls, earthworks, and stone enclosures. Some were built directly around settlements—for defense, as animal pens, or to define the settlement perimeter. Others were constructed in locations not directly associated with settlements,

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but where places on the landscape had significance for rituals, burials, or facilitating exchange.

These features—Europe's earliest ''monumental'' constructions—have held our imaginations since at least the Middle Ages, when Merlin was thought to have constructed Stonehenge (see Trigger 1989, p. 32, Fig. 3). As our understanding of the European past has changed, so have our views and interpretations of these prehistoric features. Early antiquarians such as John Aubrey (1626–1697) attributed the construction of sites such as Stonehenge and Avebury to druids (Stukeley 1743; see also Hunter 1829; Trigger 1989, p. 48). And before the development of radiocarbon dating, some attributed the construction of Britain's megalithic henges to the Mycenaeans of the Aegean where architects also used big stones, called ''Cyclopean masonry,'' in the construction of palaces and other structures (Childe 1925; Clarke 1968; see also Chippindale 1983; Renfrew 1973). Similarly, fortified prehistoric sites in Spain were attributed to the Phoenicians (Monks 2000, p. 38). Largely as a result of radiocarbon dating techniques, the greater antiquity and indigenous nature of such features is now better understood.

More recent approaches have used the presence of monumental features to argue for the existence of hierarchical ''chiefs'' in the Neolithic (e.g., Renfrew 1974). Other synthetic treatments argue that these features indicate symbolic changes in how humans perceived their relationship to their surroundings (Whittle 1996). Still others view these and other Neolithic monuments as ''fundamental to the persistence and direction of social memory'' (Edmonds 1999, p. 134; see also Bradley 1998).

The wide geographic, temporal, and formal variability of these features has stymied archaeological understandings of their functions. Although the tradition of building enclosures and fortifications lasted for several thousand years, such construction practices were neither ubiquitous across the European continent nor consistent through time. As a result, it is difficult to identify one specific reason for their existence. Just as the frequency and location of their construction varied, the social roles the features played changed along with the needs and wants of the people who interacted with them.

From the perspective of the *longue durée*, enclosures and fortifications began to appear during the Neolithic (c. 6500–3000 B.C.; see Figs. 1, 2). The variability in their spatial distribution and form, however, decreased considerably by the end of the Bronze Age (c. 1000 B.C.). As such, the tradition of constructing enclosures and fortifications is a geographically and temporally defined social phenomenon that is important for our understanding of Neolithic and Bronze Age social organization, and for the establishment of the various long-term social trajectories European societies assumed en route to becoming the ''barbarians'' we know from Greek and Roman literature.

Many recent treatments of this topic have focused on detailed examinations of specific sites (e.g., Gillings and Pollard 2004) or microregions (e.g., Whittle 1997; Whittle et al. 1999). Others have been regional syntheses (e.g., Darvill

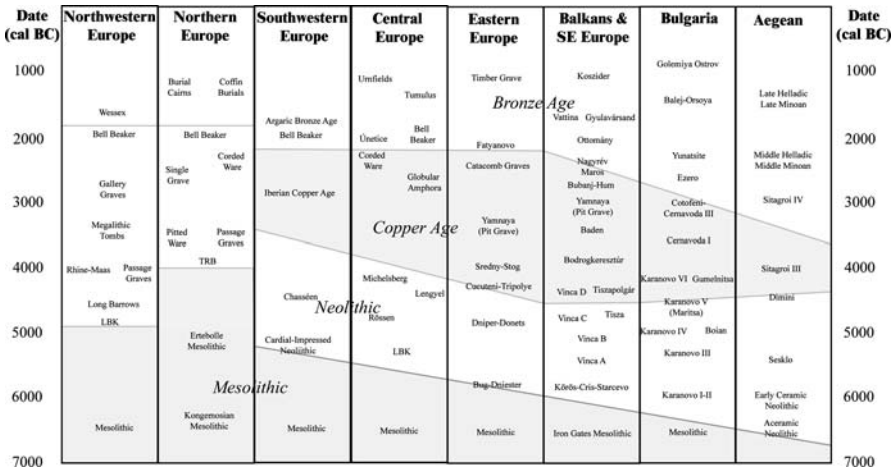

Fig. 1 Simplified European prehistoric chronology by region. Adapted from Bogucki and Crabtree (2003, pp. xxvi–xxvii), Boyadziev (1995), O'Shea (1996, p. 36), Parkinson (1999, Fig. 4.4, p. 150), and Whittle (1996, p. 42, 148)

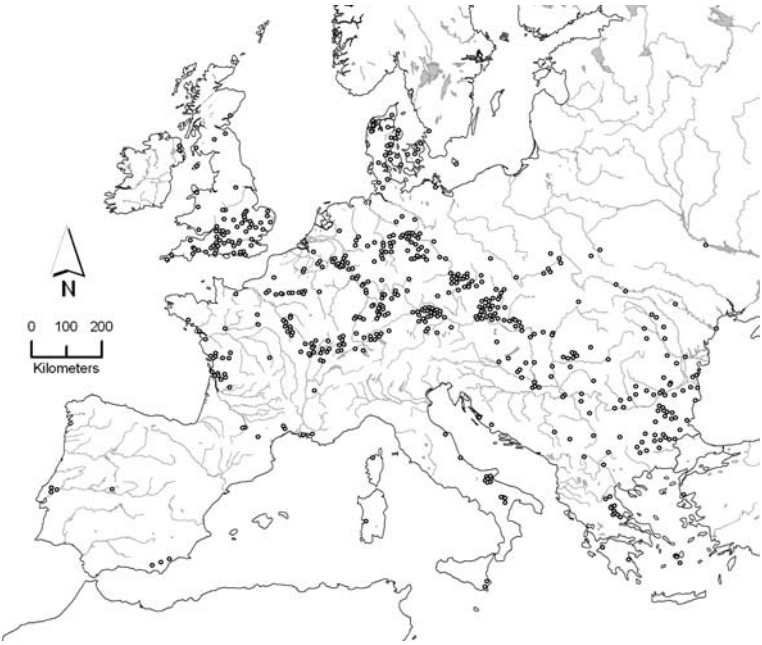

Fig. 2 Distribution of enclosed and fortified Neolithic and Bronze Age sites in Europe. Approximate site positions redrawn from Andersen (1997, pp. 134–135), with additions from Darvill and Thomas (2001b, p. 8). Geographic base layers provided by ESRI (2002), projected as Europe Albers Equal Area Conic. For a distribution by period, see Andersen (1997, pp. 278–279)

and Thomas 2001a; Varndell and Topping 2002) that examine this formal, spatial, and temporal variability at larger geographic scales.

From our perspective, one of the most interesting aspects of enclosures and fortifications is the patterning they exhibit on a macroregional, continental scale over several millennia. We argue that the study of European enclosures can benefit from comparison to similar structures in other parts of the world. Comparing the variability exhibited by prehistoric European enclosures to contexts where similar ''monumental'' features have been constructed allows us to explore the emergence of different social institutions associated with territorialism, corporate group integration and interaction, and social boundary maintenance. By employing a cross-cultural framework to examine the spatial layout and cultural occupations associated with fortifications and enclosures, it is possible to develop models that represent different regional processes within Europe. Cross-cultural models that approach patterns at the continental scale cannot replace site-based and microregional levels of analysis, but a grander perspective can be used to complement these local approaches.

We begin with a brief history of research into Neolithic and Bronze Age enclosures and fortifications and discuss how recent technological, methodological, and social developments have altered our perception of the formal, spatial, and temporal variability exhibited by the features on the landscape, and how this has altered models of European prehistory during the Neolithic and the Bronze Age. We then identify how the interpretation of these features within their social contexts relates to general theoretical trends within European prehistory. In particular, we discuss how changing perceptions of warfare and symbolism in the past have influenced the interpretation of ditches and other features around sites.

In the final section, we compare Neolithic and Bronze Age fortifications and enclosures from Europe to analogous prehistoric features from Mesoamerica, the Near East, and eastern North America. We argue that in different parts of the world the appearance of fortifications, enclosures, and other monumental and communally constructed features was associated with the formalized representation of segmentary social units on the landscape. The emergence of these social institutions occurred in a variety of different economic, environmental, and historical settings, but all seem to have been associated with the development of what anthropologist Ray Kelly (2000) has called a social calculus based on a notion of social substitutability.

The concept of social substitutability goes hand in hand with the concept of social segmentation, wherein societies are divided into equivalent social segments, such as descent groups, that can be grouped together into progressively more inclusive units (Kelly 2000). Social substitution involves a cultural logic that permits the cultural substitution and equation of an individual with a specific group with which that person is a member.

We argue that the emergence of a social calculus based on a concept of social substitutability would have encouraged the creation of features on the landscape such as fortifications and enclosures. From this perspective, features such as

fortifications built for defense from another group are similar to features built to bring groups together for rituals, such as enclosures and henges; the two are simply different forms of intergroup interaction, one peaceful, the other more violent. By analyzing the variability exhibited in the creation of such features in different regional trajectories and understanding the social contexts in which such features have emerged, it is possible to identify patterns of social interaction that occurred during their construction and to differentiate the role such sites would have played within those different regions.

Terminology, chronology, and geography

We focus our discussion on the construction of fortifications and enclosures on the European continent throughout the Neolithic and the Bronze Age, from c. 6500 to 1000 B.C. These 5,500 years include a dizzying number of geographic regions and hundreds of archaeological cultures, phases, and periods. Many of the absolute dates for periods vary considerably across this vast geography, and some periods exist in some regions but not in others. For example, southeastern Europe has a formal Copper Age (also called Final Neolithic, Eneolithic, and Chalcolithic) that separates the Neolithic from the Bronze Age, but northwestern Europe does not. A very simplified regional chronology for nonspecialists is included in Fig. 1, which also contains absolute dates for the periods and archaeological ''cultures'' (i.e., Linearbandkeramik [LBK]) discussed in the text.

The past century of research into Neolithic and Bronze Age enclosures and fortifications has produced dozens of terms, many of which are used interchangeably, to refer to formal types and their associated characteristics. Table 1 lists several of the terms most commonly used for different types of enclosures and fortifications in different parts of Europe. This list is not intended to be a concise glossary but rather is presented to convey a sense of how terms have been applied, albeit inconsistently and haphazardly, to refer to different types of features and sites.

The spatial distribution of sites with fortifications and enclosures across Europe is shown in Fig. 2, and examples of their formal variability are presented in Figs. 3–6. These illustrations are not intended to represent the full spectrum of variability but to provide a variety of examples from different parts of Europe that are discussed in the text.

Formal, spatial, and temporal variability

Archaeologists have recognized prehistoric enclosures, fortifications, and henges as the earliest examples of monumental construction in Europe since at least the late 19th century (Siret 1893; see also Whittle 1988, p. 1; Fig. 1). Some enclosures of earth and stone on the European landscape are known to have been used for ritual activities by indigenous groups during the Roman

Table 1 Terminology employed in the descriptions of enclosures and fortifications in Europe

Term	Language	Region of use	Basic definition
Causewayed camp	English	UK	Site with surrounding banks and/or ditches, with entrances, usually no settlement
Causewayed enclosure	English	UK	Site with surrounding banks and/or ditches, with entrances, usually no settlement
Crab's claw	English	Italy, France	Site surrounded by ditches with ''crab-claw''-like entrances
Ditched enclosure	English	UK	Site surrounded by ditches, usually with entrances
Earthwork	English	Generic	Any feature, such as a bank, which involves the moment of earth
Einhegung	German	Central Europe	Literally ''enclosure,'' a general term used for sites with encircling features
Enciente	English, French, Spanish	Western Europe	Ditch or fortification surrounding a site
Enclosure	English	Generic	General term for any feature surrounding a site
Erdwerke	German	Central Europe	Any feature, such as a bank, which involves the moment of earth
Fortification	English	Generic	Interpretive term implying a defensive purpose for an enclosure, usually involving a palisade
Grabenwerke	German	Central Europe	Ditch surrounding a site
Henge	English	UK	Upright stones or wood with spaces surrounding an area, usually with no settlement
Hillfort	English	Generic	Elevated settlement surrounded by ditches
Interrupted ditches	English	Northwestern Europe	Discontinuous ditches with many ''entrances''
Kreisgrabenanlagen (or Ringgrabenanlagen)	German	Central Europe	Circular ditches, fortifications, and sometimes henges
Kreispalisadenanlagen	German	Central Europe	A fence of closely arranged wooden posts surrounding a site
Neolithic camps	English	Northwestern Europe	Site with surrounding banks and/or ditches, with entrances, usually no settlement
Palisade	English	Generic	A fence of closely arranged wooden posts surrounding a site
Rondel, Rondell, or Roundel	English, German	Central Europe	Site surrounded by multiple concentric ditches, usually no settlement
System ditches	English	Northern Europe	Discontinuous ditches with many ''entrances''

period. But the antiquity of the features—which date to the Neolithic, Chalcolithic, and Bronze Age—began to be clarified only at the end of the 19th century, when systematic investigations were performed at sites such as Los Millares in Spain (Siret and Siret 1887). Not until the development of

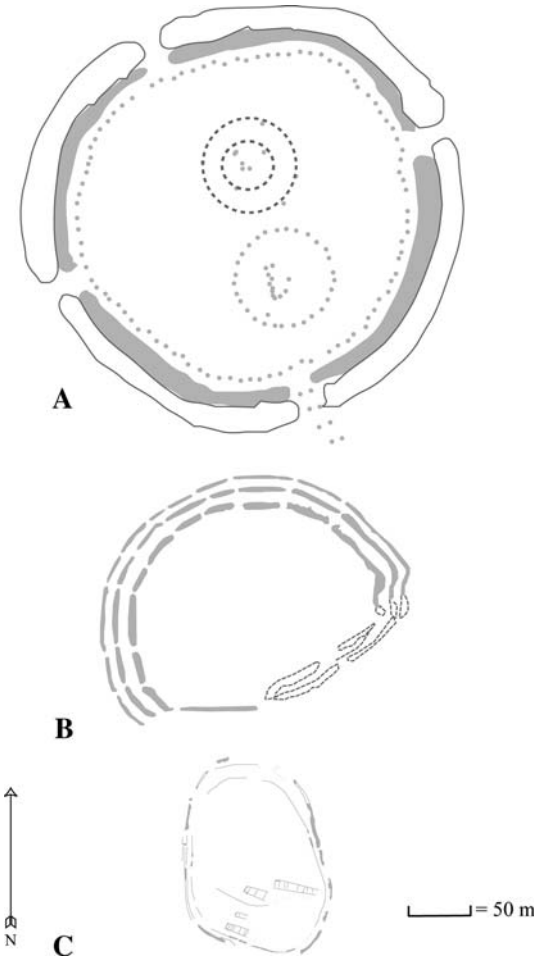

Fig. 3 Fortifications and enclosures from northwestern Europe. (**A**) Avebury, Wessex, England, third millennium B.C. Gray area shows excavated ditch, surrounded by embankment. Small dots within enclosure show location of stones. After Gillings and Pollard (2004, p. 8), with modifications. (**B**) Champ-Durand, western France, c. 3500 B.C. Gray areas show multiple discontinuous ditches surrounding an ''empty'' area. Several secondary burials derived from the ditches, which may have been foundation trenches for stone walls. After Burnez (1993, p. 74), with modifications. (**C**) Darion, Geer Valley, eastern Belgium, LBK, c. 5500–5000 B.C. Walled ramparts and palisades surrounding longhouses. After Cahen et al. (1990) with modifications

radiocarbon dating and its widespread application in Neolithic and Bronze Age contexts across Europe, however, did the temporal and spatial variability of these features become fully appreciated (Renfrew 1973).

Recent research on prehistoric enclosures and fortifications has tended toward synthetic attempts to make sense of the spatial, temporal, and formal variability that has emerged from the detailed examination of specific sites and local regions. Most recent syntheses have been regional in scope and have concentrated on detailed historical trajectories rather than considering variability at the continental scale. These detailed analyses were prompted by trends in the discipline toward regional analyses (see Galaty 2005) and by the development and widespread application of aerial photography, radiocarbon dating, and satellite and site-based remote-sensing technologies. Another contributing factor has been the expansion of laws and, more importantly, money for managing and preserving cultural heritage within Europe.

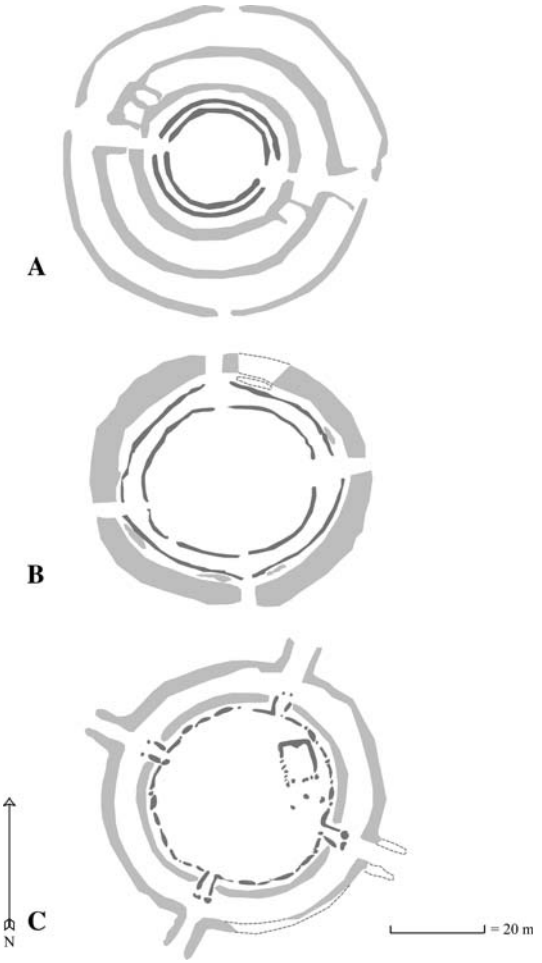

Fig. 4 Circular ditched enclosures in central Europe. (**A**) Osterhofen-Schmiedorf, Lower Bavaria, Germany, Lengyel. (**B**) Těšetice-Kyjovice, Moravia, Czech Republic, Lengyel (Moravian Painted Ware), 2nd half of 5th millennium B.C. (**C**) Bučany, Slovakia, Lengyel. These enclosures are frequently incorporated into larger settlements. After Milisauskas and Kruk (2002, p. 233) and Petrasch (1990)

Synthetic approaches

In the introductory article to an edited volume entitled *Enclosures and Defences in the Neolithic of Western Europe* (Burgess et al. 1988), Whittle argued that the study of enclosures had finally joined the study of megalithic tombs as a distinctive research problem within European Neolithic and Copper Age archaeology (Whittle 1988, p. 1). That publication, which was based on an international conference held in Britain in the early 1980s and built on Whittle's (1977) earlier review of early Neolithic enclosures in northwestern Europe, was part of a trend toward characterizing the variability exhibited by prehistoric enclosures and fortifications. Other examples include Petrasch's (1990) *Mitteleneolithische Kreisgrabenanlagen in Mitteleuropa*, Kaufmann's (1990) edited volume *Jahresschrift für Mitteldeutsche Vorgeschichte*, No. 73, and Harding and Lee's (1987) *Henge Monuments and*

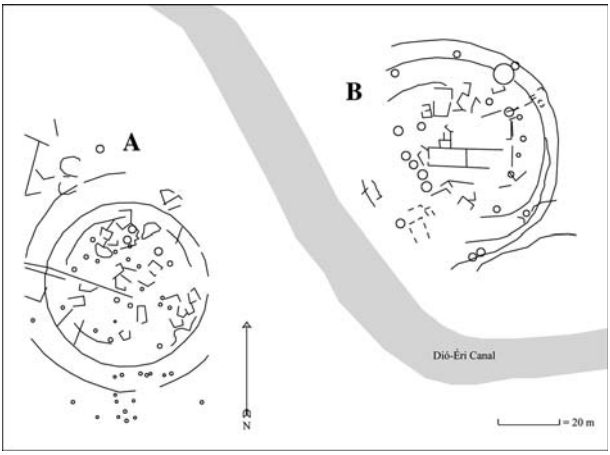

Fig. 5 Early Copper Age fortified settlements, southeastern Hungary. Magnetometric map of the Tiszapolgár settlements of Körösladány-Bikeri (**A**) and Vésztő-Bikeri (**B**), 4500–4000 B.C. The settlements are either contemporary or sequential and are surrounded by a wide outer ditch and an inner palisade wall. After Parkinson et al. (2004) with modifications

Related Sites of Great Britain. Synthetic treatments aimed at understanding the variability exhibited by prehistoric enclosures and fortifications continued throughout the 1990s with Whittle's *Europe in the Neolithic* (1996) and Andersen's (1997) comparative analysis. As evident by the titles, these volumes vary tremendously in the extent to which they are synthetic and in their geographic scope, but all are attempts at moving beyond descriptions of single sites or microregions.

In their recent introduction to *Neolithic Enclosures in Atlantic Northwest Europe*, Darvill and Thomas (2001a) note that enclosures are far more geographically widespread and variable than previously thought, extending the boundaries well into the Atlantic fringe, back in time, and with varying degrees of site enclosure. They attribute this new perspective to two major trends that occurred since the early 1980s: (1) regional projects and site revisits aiming to discover more enclosures in the known, ''core'' areas (see Whittle 1977), and (2) more research at sites outside the ''core,'' which extended the distribution of enclosures into areas where they were previously unknown, or quite rare, such as along the Atlantic fringe of continental Europe and across many islands beyond.

At present, it appears that the tradition of building prehistoric enclosures and fortifications extended across the entire European continent (Fig. 2), becoming more common in the northwest after the earliest examples in the lower Danube (5500 B.C.), and emerging in the British Isles by about 3800 B.C. (Darvill and Thomas 2001b, p. 9). The types of features vary dramatically and include sites with different numbers of ditches, walls, and stones of different sizes. The relationship of those features to each other and to settlements also varies widely. Several recent syntheses discuss in greater detail the variation of these

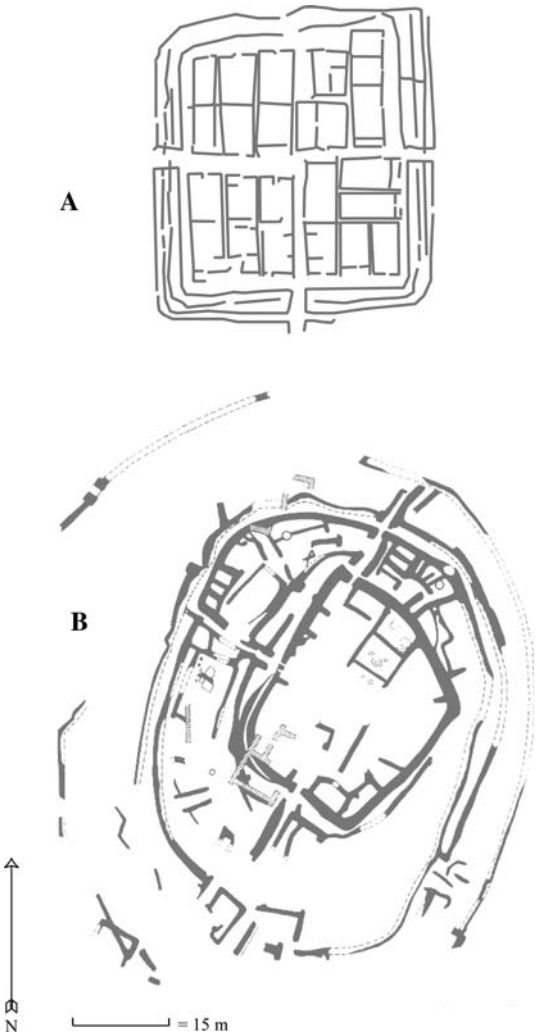

Fig. 6 Later Neolithic tell sites in Bulgaria and Greece. (**A**) Polyanitsa, northeast Bulgaria, Late Neolithic and Eneolithic, 5th millennium B.C. After Andersen (1997, p. 147) and Todorova (1982, 1986), with modifications. (**B**) Dimini, Thessaly, northern Greece, Late Neolithic, 5th millennium B.C., after Hawkes (1974, p. 116), with modifications

features on the prehistoric landscape, especially Darvill and Thomas (2001a), Varndell and Topping (2002), Andersen (1997), and Whittle (1996). When these are paired with the earlier synthetic volumes, such as Burgess et al. (1988) and Whittle (1977), they provide a vast database that can be used to track how these similarities and differences in site enclosure have come to be recognized and understood over time (see also Bibliography of recent literature).

Site-based and regional approaches

These syntheses have been necessary to help make sense of the explosion of information generated from half a century of detailed analyses of specific sites and

regions. Several factors have contributed to our detailed understanding of specific sites and regions. Probably most important in this regard is the general trend in European prehistory toward the ''region'' as the primary unit of analysis. Galaty (2005) suggests European regional studies are fast becoming a standard analytical framework in European archaeology. He traces this trend toward regional analyses to the 1950s and 1960s when topographic survey projects first were conducted in Europe. These were followed by a new wave of European survey projects published in the 1980s and 1990s, which shifted focus from the global archaeological trend toward ''landscape studies.''

Regional and landscape studies in Europe have varied dramatically in their theoretical orientation, ranging from phenomenological approaches (e.g., Tilley 1994, 2004) to projects that successfully combine elements of processual and postprocessual schools of thought (e.g., Thurston 2001). The geographic scale of regional and landscape projects has varied considerably as well, falling within national boundaries, topographic boundaries, or traditional European geographic areas such as Bohemia, Moravia, or Transdanubia.

Examples of such studies that have focused on enclosures and fortifications include the collections in Kaufmann's edited volume (1990) of central and eastern European sites and Trnka's (1991) detailed descriptions of Middle Neolithic enclosures in Austria, Germany, and the former Czechoslovakia (see also Meyer 2003).

These regional approaches have provided a context for understanding the occurrence of prehistoric enclosures on the landscape. This has had varied implications in different parts of Europe. For example, Galaty (Galaty 2005, p. 297; see also Bradley 1998) observes that in parts of Europe—such as in Britain—where Neolithic and Bronze Age habitation sites are more difficult to identify but where monumental sites (e.g., enclosures, henges, barrows) are common, archaeologists have tended not to focus on the analysis of settlements themselves but rather have used these monumental sites as a proxy for understanding the distribution of groups across the landscape and the degree to which their experience of the landscape was dictated by social concerns over subsistence needs. By contrast, in those areas where habitation sites are identified more easily, for example, in the Mediterranean and in central and southeastern Europe where tells are common in these periods, but where elements of the ''sacred landscape'' are less conspicuous, archaeologists have tended to emphasize ecological approaches.

Theoretical perspectives notwithstanding, these regional and landscape-based research projects have provided us with the cultural backdrops necessary for interpreting enclosures and fortifications on the landscape (e.g., Bender 1993; Darvill 1997; Edmonds 1999). Before this trend, a site-based perspective dominated this and most other aspects of European prehistoric research. Combined with technological developments in radiocarbon dating, especially AMS (Accelerated Mass Spectrometry) techniques, as well as in aerial photography and remote sensing, these regional data sets have broadened our understanding not only of the spatial distribution of these features on the landscape

but also of the temporal development of the sites themselves within their regional contexts.

One important realization that has been essential to the interpretation of these features has been the tendency to view enclosures and fortifications as palimpsests that have been created, in some cases, over hundreds or thousands of years. While monumental sites were understood to have been created over long periods of time, it was not until the widespread application of systematic large-scale excavation, geophysical prospection, and radiocarbon dating that the time depth associated with these features could be fully appreciated and the implications of these patterns could be incorporated into archaeological models (Edmonds 1999, p. 59).

The site of Avebury in the upper Kennet Valley of north Wiltshire in southern England is a good example of how our interpretation of individual sites has changed over time (see Fig. 3A). The site was the subject of antiquarian interest for several hundred years (see Ucko et al. 1991, p. 10) and was documented during the 17th and 18th centuries by Aubrey and Stukeley. Ucko et al. (1991, p. 241) trace the beginnings of systematic and scientific archaeology at the site to 1908, when an excavation campaign was undertaken by the British Association for the Advancement of Science. During that time Harold St. George Gray tried to date the stone circles at the site via principles of stratigraphy and artifactual association. Although previous work at the site indicated that the artifacts were prehistoric, it was not until the ceramics from Avebury were analyzed alongside sequences recently available from Windmill Hill and other Wiltshire sites that Avebury could be securely assigned to the transition between the Neolithic and the Bronze Age (see Ucko et al. 1991, p. 242).

It was not until the last quarter of the 20th century, however, that the time depth and phases of the development of the site could be delineated more precisely in radiocarbon years (see Gillings and Pollard 2004, p. 24, Table 2, based on Whittle 1993). As recently as 2004, Gillings and Pollard (2004, p. 42) have described the component chronology as ''woefully inadequate.'' They attributed this to the paucity of modern excavation within the henge and from the scant datable material. The radiocarbon dates include ten dates that relate to episodes of henge construction and eight that relate to pre-enclosure activity and occupation outside the henge. There are no dates for several features at the site, including the inner circles and settings, the avenues, or the primary bank. Stonehenge, by contrast, boasts 54 reliable dates but still suffers from problems of dating (Bayliss et al. 1997). Hence, although radiocarbon dating can help clarify phases of construction and development at these kinds of sites, it by no means constitutes a panacea for decoding their sometimes very detailed chronological puzzles.

The widespread application of absolute dating methods, therefore, has added two dimensions of variability to our understanding of Neolithic and Bronze Age enclosures and fortifications—temporal variability associated with the construction and use of specific features and the distribution of the features across the continent. The contrast between Childe's (1925) original chronology and

Renfrew's revised temporal framework based on radiocarbon dating pushed the European Neolithic back nearly 3,000 years, creating the autonomous development of Neolithic European enclosures and a Bronze Age ''Wessex without Mycenae'' (Renfrew 1968, 1973, pp. 96–97).

In addition to absolute dating techniques, large-scale horizontal excavation has proven to be one of the most important contributions to our understanding of prehistoric fortifications and enclosures in the 20th century. For example, some British enclosures initially were labeled ''causewayed camps'' by analogy to Roman fortifications (Curwen 1930; Evans 1988). However, the lack of structures that could be associated with habitation within the enclosures posed an interpretative problem, and the ditches themselves initially were considered to be pit houses. Bersu's large-scale excavation of Rössen culture enclosures in central Europe revealed rectangular houses that were more reasonably interpreted as habitations (Bersu 1938, 1940). By the 1950s there was a growing sense that British enclosures differed from the inhabited examples from the continent, and alternative interpretations of settlement free enclosures such as ''cattle kralls'' (Piggott 1954) and ''ritual exchange grounds'' (Smith 1971) became more widely accepted. Hundreds of subsequent large-scale horizontal excavations have demonstrated that ''vacant enclosures'' occur throughout parts of continental Europe as well (see Figs. 3 and 4).

The details of individual site histories also have been advanced by chemical techniques such as isotopic analyses, as indicated by the announcement in 2004 that at least three of the ''builders'' of Stonehenge were Welsh, or the earlier assertion that the so-called King of Stonehenge (aka the Amesbury Archer; see Stone 2004) was, in fact, from central Europe. These assertions were prompted by bone chemistry studies that linked burials near the site to these other regions. Like several hard-science techniques in archaeology, when methods of isotopic analysis initially were developed, they promised to solve several of our questions about the past. But, as with most techniques, as soon as they began to be used to help answer questions about the past, they came under scrutiny and have been significantly revised and reevaluated (see Burton and Price 2003; Burton et al. 2003).

One of the most important technical developments for understanding prehistoric European enclosures and fortifications has been the widespread application of site-based remote-sensing techniques such as magnetometry, electric resistivity, and ground-penetrating radar. Several of these techniques were developed decades ago, but because their cost initially was prohibitive, they became commonplace as exploratory methods only during the last decade. Although these methods have impacted our knowledge of stand-alone monumental sites and complexes in western Europe such as Avebury (see Gillings and Pollard 2004; Ucko et al. 1991) and Stonehenge (e.g., Parker Pearson et al. 2004), they have revolutionized our understanding of the relationship between fortifications, enclosures, and settlements in prehistoric central and eastern Europe.

One area in particular that has benefited from the application of these site-based remote-sensing techniques is the Great Hungarian Plain, where Neolithic and Bronze Age tell sites have been the focus of intensive, systematic research since at least the middle of the 20th century (Kalicz and Raczky 1987; O'Shea 1996). There, ditches and palisades had been documented around a handful of Middle and Late Neolithic settlement sites before the end of the 1980s (Horváth 1988, 1989). Most of these features had been discovered either during large-scale horizontal excavations or via hand coring or augering in the vicinity of settlement sites. Now such features are considered a common phenomenon on prehistoric sites in the region largely because of the more widespread application of site-based remote-sensing techniques (see, e.g., Raczky et al. 2002; Schier and Draovean 2004). In concert with soil chemistry studies, magnetometric surveys in southeastern Hungary have demonstrated that these features continued into the Copper Age (see Parkinson et al. 2004a, b; Sarris et al. 2004; Fig. 5), a period thought to have been more peaceful when fortifications became ''superfluous'' (e.g., Bognár-Kutzián 1972).

Aerial photography and prospection from low-flying aircraft also have contributed significantly to our understanding of the layout and distribution of enclosures throughout the 20th century (e.g., Griffith 2001; St. Joseph 1945; Whimster 1989). The dramatic political changes throughout Europe over the last two decades has led to major advances in this domain (e.g., Becker 1996; Oexle 1997). The relaxation of restrictions on flight paths in some central and eastern European countries led to an explosion of aerial reconnaissance in regions that previously were off limits. Braasch (2002) notes that most countries in western Europe never restricted flight paths or aerial photography. In contrast, few possibilities were available in Soviet bloc nations from 1939 or 1940 until 1989 or 1990. This led to a biased view of feature distribution on the continent that gradually is being corrected by more recent research in those regions. Petrasch (1990, p. 413) notes that before 1970 only three enclosures were known from southeastern Bavaria, but with the use of aerial photography this number is now over 3,000 (see also Gojda 1997).

One other important factor that has contributed to our increased understanding of enclosures and fortifications in prehistoric Europe is the increased concern with preserving cultural heritage in the face of development (see papers in *Archaeologia Polona*, vol. 38, 2000). Due at least in part to the guidelines set out in the revised European Convention on the Protection of the Archaeological Heritage in 1992, there has been an increasing concern with preserving and documenting archaeological resources in the face of development.

Like aerial reconnaissance, the concern for cultural heritage management has had an unbalanced history throughout Europe. In general, western continental Europe and Great Britain have had a longer history than their central and eastern European counterparts. For example, Avebury and Stonehenge have been recognized as UNESCO World Heritage monuments since 1986. Similarly, the Paleolithic caves in the Vézère Valley in France have been listed

since 1979. Countries in central and eastern Europe have nearly no prehistoric sites on the list and significantly fewer sites overall.

This unbalanced situation has changed considerably throughout the development of the European Union (EU), especially because of infrastructural projects in those countries that were admitted more recently. This has had a dramatic affect on those ten countries that were admitted in 2004, most of which are in central and eastern Europe. These include the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, and Slovenia. Bulgaria and Romania hope to follow in 2007. Most of these countries underwent dramatic political and economic transformations during the last two decades and were encouraged to make significant investments in infrastructure before their full admission to the EU. Of particular relevance to archaeology were investments in transportation and in cultural resource and heritage management that resulted in both the construction of new roads and funding for cultural resource management (CRM).

The combination of a growing concern for cultural heritage along with fledgling market economies and dramatic investments in transportation and energy infrastructure led, especially in eastern Europe, to the discovery, exploration, and documentation of several prehistoric sites that previously had been completely unknown or very poorly understood. The nature of rescue excavations during the construction or expansion of highways or gas pipelines has led to a unique archaeological perspective that emphasizes large horizontal exposures over detailed stratigraphic analyses. This, of course, is necessitated by the hurried environment created by trying to document and remove cultural remains in the shadow of construction crews and equipment. In several parts of eastern Europe, for example, motorway sites are excavated using bulldozers to remove some or all of the plowzone or, in some cases, to remove all the cultural levels to the sterile subsoil. Similar techniques also were used in western Europe (Sommer 2000). What this methodology lacks in attention to stratigraphic detail it makes up for in the large-scale horizontal exposure of sites.

Although the large-scale horizontal exposure of sites was a long-standing tradition in eastern Europe and the former Soviet Union, the practice has been encouraged by recent CRM projects that have dramatically altered our understanding of the relationship between enclosures, fortifications, and settlements. In addition to providing invaluable information regarding settlement organization, this methodology also results in the discovery of burials that frequently are not represented on the surface and are discovered only during subsurface excavation. For example, during the construction of the M3 motorway in Hungary, which connects a 175-km stretch from Budapest to the Ukrainian border and runs through a substantial section of the Tisza Valley, over 150 sites were discovered or encountered, several of which had large surface exposures of 30–40 ha (Kovács et al. 1997). Similar results occurred in East Germany (Stäuble 2002).

The scale of some rescue projects also adds another spatial dimension to our understanding of the past. Because gas lines and highways tend to be long and

linear, they add a data set that can complement those collected via systematic regional survey projects, which tend to cover blocks of the landscape. For example, the M5 motorway project in Hungary, which extended from Budapest to the Serbian border, identified over 100 archaeological sites within one 48-km stretch (Szalontai 2003). Similar comparisons can be made in different parts of Hungary with data collected during the Magyarország Régészeti Topográfiája surveys (see, e.g., Ecsedy et al. 1982; Jánkovich et al. 1989, 1998). By combining data collected via systematic surveys and through CRM projects, the researcher can gain an appreciation for the formal, spatial, and temporal variability of fortifications and enclosures on the landscape.

Interpretive frameworks and theoretical trends

The recent explosion of information about the formal, spatial, and temporal variability of European fortifications and enclosures has been accompanied by changing theoretical perspectives regarding the role these features played in different social contexts. Earlier perspectives that emphasized the political implications of the labor invested in the construction of the monuments and their functional role as centers of trade or for defense were replaced in the late 1980s and throughout the 1990s with growing concern for the symbolic roles of monuments on the landscape. Even more interpretations have been influenced by a more general discussion within anthropology about the nature and frequency of warfare in small-scale societies. Although these varied theoretical perspectives are welcome for expanding the ways in which we think about the past, they have tended to emphasize patterns at the local and regional scale. This particularistic approach has shifted the theoretical focus of most researchers away from more generalizing approaches that attempt to understand long-term processes over larger geographic areas.

The main interpretive conclusion to be drawn from the last 20 years of archaeological research on enclosures and fortifications is that there is none. As Darvill and Thomas (2001b, p. 13) note, ‘‘The idea that all Neolithic enclosures had a similar role or function within the societies that created and used them is as laughable as the idea that some kind of universal classification can be applied to all sites.’’ This statement is as indicative of the diversity recognized in the features themselves as it is indicative of a theoretical trend away from generalizing models.

This is a marked contrast from earlier discussions, which frequently ventured into more generalizing frameworks. For example, in his discussion of the distribution of enclosures in central and western Europe, Whittle (1988) noted a pattern that included small defensive enclosures in Bohemia and Moravia and the flourishing of large ritual enclosures in Britain by the later third millennium. Enclosures in the TRB (Trichterbecher or Funnel Beaker culture) area were no longer in use at that time, and the tell area of the Balkans did not have enclosures. This led Whittle to suggest that enclosures may not have been ‘‘appropriate’’ within the system of tell settlements, perhaps

because the tells themselves were the centers of ritual focus. In the same volume, Chapman (1988) discussed the topic of enclosures and their relationship to dispersed and nucleated settlements from a more general perspective that, in his terms, marked a conceptual shift in how ''space'' is translated into ''place'' by human groups.

It is difficult to find such generalist approaches to understanding these features in more recent publications. Whittle (1996) is one of only a few who are willing to venture into a discussion of enclosures as a general cultural phenomenon that was established early and remained in cultural memory, but then elaborated and changed as cultural traditions diverged. This is a far cry from asserting a common function or role for enclosures, but it recognizes that they might be understood as social phenomena that occurred within a set of spatially and temporally defined cultural contexts. Like Smith (1971) before him, Whittle (1996, p. 366) relates the construction of ditched enclosures to the creation of common identities, as gathering places for feasting, mortuary ritual, prestation, and the celebration of a ''shared sense of origin and belonging.'' Whittle's synthesis stands out not only for its breadth and depth in organizing and explaining the variability exhibited in the archaeological record of the European Neolithic, but also because it attempts to make sense of patterns at the continental scale. Whittle also is one of the few western European researchers who pays fair attention to data from eastern Europe (but see also Milisauskas 2002).

Other synthetic treatments of enclosures in European prehistory veer away from modeling the development and spread of these features as a general social phenomenon. Instead they focus on understanding enclosures within specific culture historical sequences. For example, Andersen's (1997) extensive monograph juxtaposes the Sarup enclosures from Denmark against 815 enclosed Neolithic sites from across Europe. His intent in presenting this massive amount of information is to provide a backdrop for understanding the Danish enclosures, using both the European archaeological record as well as ethnographic information as a sort of middle-range theory for understanding the Sarup enclosures as ceremonial centers for burial that integrated scattered settlements (Andersen 1997, p. 309). Although the last two pages of Andersen's monograph address the issue of enclosures as a general phenomenon, his primary intention is to understand site function at Sarup, not to build a more general model.

Although they vary considerably in the geographic scale at which they approach the topic, several regional syntheses have appeared recently that provide various interpretive frameworks for understanding enclosures and fortifications within their regional contexts. For example, Petrasch's (1990) synthesis examines the variability exhibited in Middle Neolithic (Lengyel culture) contexts in central Europe to assess their role as central places. By identifying a lack of settlement within the enclosures, he concludes that these sites must have served as gathering places for ritual.

Many recent syntheses have stressed the monumental aspects of enclosures and their relationship to group identity, territoriality, and social memory (e.g.,

Bailey 2000; Bradley 1998; Edmonds 1999; Sherratt 1990; Tilley 1996). This emphasis on the symbolic aspects of monumentality is a striking divergence from previous models that used monumental architecture as a proxy for social complexity and as an archaeological indicator for the evolution of chiefly authority (e.g., Renfrew 1974). Although several of these authors are skeptical of approaches that stress specific functions of enclosures on the landscape, they tend to assume that the monumental nature of enclosures, megaliths, and barrows was recognized and appreciated universally. This contrasts sharply with the interpretation of similar monumental constructions in North America, which have emphasized the act of performing a communal task as much as the monumentality of the finished product (e.g., Mainfort and Sullivan 1998; Yerkes 2003).

This tendency to use symbolic, regionally specific, interpretive frameworks is reflective of a general trend in Neolithic archaeology. In his discussion of Neolithic archaeology, Bradley (1998) outlines two approaches to understanding the period, one that emphasizes the economic aspects of the transition to agriculture, and another that emphasizes the social impacts of the new ideas associated with farming. The latter, which he calls the ''economic approach,'' was particularly important in the 1970s and 1980s and presupposed that Neolithic systems of belief were a consequence of agriculture. The former he traces to Hodder's (1990) continental-scale approach in *The Domestication of Europe* and regional approaches such as Thomas' (1991) *Rethinking the Neolithic* and Tilley's (1996) *An Ethnography of the Neolithic*. Bradley (1998, p. 13) laments that, with the exception of Whittle's book, most studies ''align themselves on either side of an intellectual division which is hard to bridge.'' Thus, he argues, Neolithic studies have concentrated on either ideology or economy with little effort to examine the relationships between the two. Treatments of enclosures have followed a similar pattern, despite their obvious potential for exploring links between economic practices and ideology.

But just as interpretations of prehistoric enclosures have followed general trends in archaeological theory, an increased appreciation for their variability also has prompted theoretical inquiries into specific aspects of social behavior. One of the most obvious examples is the reinvigorated interest in prehistoric warfare, prompted at least in part by the publication of Keeley's (1996) *War before Civilization*. The germs of thought that resulted in Keeley's controversial book initially were sown during his collaborative excavations with Cahen at enclosed Early Neolithic (LBK) settlements in Belgium (see Cahen et al. 1990; Keeley 1992; Keeley and Cahen 1989). Keeley's book was written as a reaction to what he termed the ''pacification of the past''—a general trend he traces to post-World War II scholarship that emphasized neo-Rousseauian notions of primitive societies despite compelling evidence that fortifications were common in prehistoric Europe. Keeley cites ditches, palisades, and baffle gates as features that were most easily explained as fortifications.

Chapman (1999) criticizes Keeley's characterization of European prehistorians as pacifiers of the past, noting his omission of the work of Gimbutas (e.g.,

Gimbutas 1978, 1979, 1980), who frequently discussed models of invasion into Europe from the Pontic steppes during the Copper Age. Indeed, few archaeologists in central and eastern Europe had problems envisioning warfare as anything but commonplace during the Neolithic (e.g., Bognár-Kutzián 1972, pp. 170–171). If anything, eastern European models of social change throughout the 20th century relied too much on invasions and migrations as explanatory frameworks. Tell sites from the eastern Carpathian Basin and throughout the Balkan peninsula, which frequently were surrounded by ditches and ramparts, had long been interpreted as ''fortified'' centers (Horváth 1988; Kalicz and Raczky 1987; Kokkinidou and Nikolaidou 1999; Makkay 1982; Raczky 1988; Tasić 1995). Indeed Tringham's (1971) assertion that ditches were just as likely to have been used for animal keeping was, if anything, exceptional at the time. Only recently have scholars in this part of the world begun to adopt more symbolic models for the role of enclosures (e.g., Makkay 2001; Pleslova-Stikova 1980).

Similarly, Neolithic and Copper Age sites on the Iberian peninsula, such as Los Millares (Chapman 2003; Monks 1997), consistently have been recognized as fortified regional centers since they first were identified in the early 1900s. Likewise, the large sites with monumental enclosures in this part of the world (e.g., La Pijotilla, Marroquíes Bajos) have long been interpreted as heavily fortified centers (see Cruz-Auñón and Arteaga 1995; Nocete 1994, 2001). Monk's (1997, 1998) recent research in this part of the continent documents the temporal and spatial variability associated with defensive features and weapons and their relationship to feasting, trade, and ritual.

Throughout the 1990s several other books on ancient and ''primitive'' warfare appeared (e.g., Carman 1997; Carman and Harding 1999; Ferguson and Whitehead 1992; Haas 1990; Kelly 2000; Martin and Frayer 1992; Osgood 1998; Osgood et al. 2000; Otterbein 2004), several of which focus on prehistoric Europe. In addition to anthropological and archaeological perspectives, military historians also began to discuss the topic, adding a comparative perspective between states and nonstates and to discuss features such as fortifications, logistics, rationale for war, and evolution in military technology (e.g., Gray 1997; Keegan 1993; Lambert 2002; Lee 2004).

One result of this renewed interest in warfare, combined with the results of additional excavations at other sites throughout the European continent during the late 1980s and 1990s, is a general recognition that warfare was a common occurrence throughout the prehistory of Europe and that palisades and baffle gates should be considered compelling evidence. Rather than arguing about whether warfare occurred, most recent treatments have focused on describing the temporal and spatial variability associated with the phenomenon (e.g., Keeley et al. 2007). In addition to Monk's (1997, 1998, 2000) exploration of variability in the Neolithic and Copper Age of Iberia, discussed above, Chapman (1999) combines the analyses of site types and artifact classes potentially used as weapons to argue for a general increase in frequency and diversity of defenses and potential weapons throughout the Neolithic and Copper

Age of central and eastern Europe. Mercer (1999) assumes a similar diachronic approach to the evidence in the British Isles.

The gradual recognition of differences in space and time associated with prehistoric European enclosures and fortifications has led to more nuanced interpretations that draw from a variety of theoretical frameworks, most of which emphasize regional or local scales of analysis and interpretation. This trend away from more generalizing models that seek to explain archaeological phenomena at larger temporal and spatial scales has followed a general trend in archaeological research that began with a concern for regional analysis in the New Archaeology (e.g., Binford 1964; Clarke 1972) and gave way gradually to landscape studies and settlement pattern approaches (Galaty 2005). Similarly, the theoretical frameworks that emphasized labor and political organization (e.g., Renfrew 1974) have yielded to those that emphasize the symbolic role of monuments and their implications for understanding things like cultural identity and group memory (e.g., Edmonds 1999). This follows a healthy trend in the discipline that encourages theoretical eclecticism (see Fowles 2002; Parkinson and Galaty 2007). Finally, the issue of warfare and the potential use of enclosures as fortifications mimics a general pattern in archaeology, anthropology, and military history that has led to a more reasonable and realistic understanding of violence and warfare in different cultural contexts.

Enclosures and fortifications in cross-cultural perspective

With a few notable exceptions (e.g., Hodder 1990; Whittle 1996), most authors shy away from dealing with the more general question of why such features appeared and disappeared within a few thousand years in this corner of the world, favoring instead a focus on regional or local trends. This emphasis on the particularistic characteristics of different regional trajectories has discouraged the application of comparative frameworks for understanding the occurrence of enclosures and fortifications. Although some authors cite ethnographic or ethnohistoric examples in their interpretations of enclosures [e.g., Parker Pearson and Ramilisonina's (1998a, b) comparison of rituals at Avebury and Stonehenge to rituals in Madagascar], the use of these analogies is usually anecdotal and ad hoc. It seldom takes the form of an explicit comparison (but see Duffy 2005; Keeley et al. 2007).

The absence of explicit comparative frameworks for understanding the variability exhibited in prehistoric European enclosures is striking, for similar features occur not only in many ethnographic and ethnohistoric contexts but also in several well-known prehistoric and historic archaeological contexts. By exploring the variability exhibited in different parts of the world, it may be possible to better understand the variability exhibited in the European record as well as the similarities in social organization between the different contexts. Such a broad-brush perspective then can be used to supplement—but not replace—regionally and locally specific interpretive frameworks.

This section briefly reviews the temporal and formal distribution of enclosures and fortifications in other parts of the world and examines the relationship between these features and settlements in an attempt to identify patterns helpful in interpreting the variability exhibited throughout Europe. This is not intended to be a comprehensive overview of all enclosures and fortifications worldwide. Rather we aim to demonstrate some ways in which comparative archaeological contexts can provide an untapped resource for understanding variability in material culture.

We focus our discussion on the occurrence of fortifications and enclosures in four regions: Formative Mesoamerica, the Pre-Pottery Neolithic (PPN) Levant, and the eastern United States during the Archaic and Woodland periods. These case studies were chosen because they represent a range of different economic and subsistence systems that make good analogies to different contexts in Europe. Like most of the European contexts, the comparative examples are basically ''egalitarian'' or ''tribal'' societies that did not have institutionalized forms of hereditary inequality (see Fowles 2002; Parkinson 2002a). Our case studies are a sedentary autonomous village society in Formative Mesoamerica that was dependent on maize agriculture, a mobile hunting and gathering society in the Archaic southeastern United States that lived in dispersed, ephemeral settlements, a somewhat mobile horticultural society in the Woodland eastern United States that was dependent on hunting, gathering, and a few domesticates, and an autonomous village society in the PPN Levant that was dependent on Old World domesticates. The latter case also is related directly to the trajectory in southeastern Europe and the Balkans and indirectly to the rest of Europe.

Our brief survey suggests that at least in Europe, the Near East, Mesoamerica, and the southeastern United States there is a tendency of enclosures and fortifications to be associated with societies that seemed to have a ''social calculus'' (*sensu* Kelly 2000) that recognized formalized social segments and the principle of social substitutability. According to Kelly (2000), this principle is a defining element that differentiates war from other forms of violence, such as murder and capital punishment, that occur between individuals. Conversely, Kelly (2000, p. 160) relates the emergence of peacemaking institutions to the development of war, which leads him (2000, p. 161) to conclude that the development of peacemaking coevolved with the origins of war. In other words, the peaceful counterpoint to intergroup warfare is intergroup ritual.

We contend that a social calculus recognizing social segmentation and a principle of social substitution probably emerged earlier in these different parts of the world. However, the construction of fortifications and enclosures on the landscape indicates the formalized, material representation of these social institutions and their relationship to specific spots on the landscape.

Formative Mesoamerica

The earliest dated enclosure in the Valley of Oaxaca is a palisade from Tierras Largas phase (3500–3100 B.P.) San José Mogote (Flannery and Marcus 2003), an

early agricultural village without evidence of institutionalized inequality but with very good evidence for social segmentation. Flannery and Marcus (2003) interpret the palisade features as fortifications and relate their development to warfare and a context in which a principle of social substitutability prevails. Fortifications imply the social conditions where attacks occur on villages or groups rather than on individuals.

Similarly, the earliest evidence for constructed features associated with communal rituals from Oaxaca comes from the same site during the same period (Marcus and Flannery 2004). These communal structures—one-room, lime-plastered buildings (approximately 4 m × 6 m)—covered about 300 m^2. The buildings sat on platforms surrounded by a plaster apron and all had similar orientations. Marcus and Flannery (2004) interpret these structures as ''men's houses'' that began to replace more informal venues such as ''dance grounds'' that were the sites of ad hoc rituals during the Archaic period.

Although Flannery and Marcus do not address this issue directly, the co-occurrence of these two features at the same site at the same time almost certainly is not coincidental. Both features—the palisade and the men's houses—can be viewed as the result of more formalized social segments within Mesoamerican society during the Early Formative. However, whereas the palisade is indicative of group-oriented hostile interactions between social segments, the communal structures or men's houses are indicative of ritual or more amicable interactions that integrated social segments. Thus, the correlation between the palisade and the men's houses at Early Formative San José Mogote together may be indicative not only of the formalization of substitutable social segments but also of the tendency of those segments to interact in hostile or amicable ways.

In their recent overview, Clark and Cheetham (2002) use distributions of ceramics, lithic types, and figurines to document the development of similar social institutions among ''village-agriculturalists'' throughout Mesoamerica around 1500–1100 B.C., including social occasions involving ball games, costumed dancers, and music in highland Mexico; feasting, ritual drinking, and communal projects in Chiapas; and shamanistic practices and ancestor veneration in the lowland Maya region. They suggest that charismatic leaders, or ''aggrandizers,'' would have held central leadership positions in planning and sponsoring the activities that brought people together and that these ''tribal'' social contexts were critical for the development and establishment of institutionalized ranking in these various areas.

The Mesoamerican example provides an interesting comparison to some European Neolithic societies such as the tell-based societies in southeastern Europe, which from early in their occupation were surrounded by communally constructed features that could have been used as fortifications or as symbolic demarcations of the landscape (Fig. 6B). In contrast to the European case, however, where similar sorts of social institutions existed within unranked tribal social systems for thousands of years, in most parts of Mesoamerica the establishment of these social institutions related to social segmentation led to

ranked social systems within a few hundred years (see Clark and Cheetham 2002, Table 1; Flannery and Marcus 2003; Marcus and Flannery 2004).

For Neolithic Europe, Demoule and Perlès (1993, p. 370) note that several sites on the Thessalian Plain, such as Souphli and Acheilleion, were surrounded by boundary walls and/or ditches early on. More recent research suggests this tendency was more temporally and spatially widespread throughout northern Greece (see Kokkinidou and Nokolaidou 1999). In addition, the redundant organization of houses and other features at Early (e.g., Achilleion) and Middle Neolithic (e.g., Otzaki Magoula) sites in northern Greece indicates social segmentation was present in this region from the earliest establishment of villages in the late seventh millennium BC (see Halstead 1999; see also Perlès 2001, pp. 173–178). Although tell sites in the Balkans and the Carpathian Basin were not established until the end of the sixth millennium B.C., sites in those regions frequently boast evidence for communal construction either in the form of fortifications (e.g., Hódmezővásárhely-Gorzsa, see Horváth 1987) or as settlement boundaries (e.g., Ovcharovo, Polyanitsa, and Podgoritsa, see Bailey 2000; Baliey et al. 1998; Dumitrescu et al. 1983; Fig. 6A).

This association between autonomous agricultural villages and communal features in the form of ditches and walls surrounding the settlements also occurs in some early LBK contexts on the North European Plain (see Keeley 2002; Fig. 3C). Although sites in these contexts tend to have longhouses rather than the smaller houses that predominate further south, the recurrence of the longhouses on LBK settlements suggests a similar formalization of redundant social units (Keeley and Cahen 1989).

Pre-Pottery Neolithic Levant

Another part of the world where communally constructed monumental features occur in association with settlements is during the PPNB period (10,500–8,200 cal. B.P.) in the Levant (Bar-Yosef and Bar-Yosef Mayer 2002, p. 350), where terrace walls were built around early agricultural villages such as Beidha (Kirkbride 1966), ‘Ain Ghazal (Rollefson 2000), Tel Halula (Molist 1998), and Magzalia (Bader 1989). These are slightly later than the construction of the monumental tower and outer wall at PPNA Jericho, which may have been for defense (Otterbein 1997) or for hydrological regulation (Bar-Yosef 1986).

In contrast to the Mesoamerican example, where such features occurred relatively quickly after the establishment of autonomous villages, villages had existed in the Levant since the end of the Pleistocene when the Natufian hunter-gatherers began to settle down into permanent or semipermanent settlements (see Kuijt 1996; Kuijt and Goring-Morris 2002). Food production began in the region at the beginning of the Holocene during the PPNA period and accompanied the construction of communal buildings such as the tower at Jericho (Bar-Yosef 1986) and other structures such as the ‘‘kiva’’ at Jer el Ahmar (Stordeur 2000a, b).

Bar-Yosef and Bar-Yosef Mayer (2002, p. 351) suggest communally constructed features continued into the PPNB period at sites such as Beidha, 'Ain Ghazal, Navali Çori, and Çayönü, when ceremonial centers began to occur more frequently throughout the landscape. They also identify several sites where religious activities seem to have been the central focus, including Göbekli Tepe, Kfar HaHoresh, and Ba'ja. They argue that these features suggest a segmented form of territorial social organization for the PPNB period and that the ceremonial centers served to integrate settlements across large territories by providing venues for social interaction (see Bar-Yosef and Bar-Yosef Mayer 2002, Fig. 8).

The Near Eastern example provides an interesting contrast with the European and Mesoamerican sequences because it represents a prehistoric trajectory where sedentism preceded agriculture by several thousand years. At the same time, it differs from Mesoamerica but shares with Europe the feature that autonomous agricultural villages persisted for several thousand years before there is evidence of institutionalized hereditary social ranking. Although there is evidence for several patterns of social change from the Natufian throughout the Pre-Pottery Neolithic, such as changes in house form, settlement organization, increased compartmentalization within settlements, population growth, nucleation, and changes in mortuary practices (see Byrd 2005; Kuijt 1996, 2000; Kuijt and Goring-Morris 2002), there is little evidence throughout these periods for fortifications around settlements. As Bar-Yosef and Bar-Yosef Mayer (2002, p. 359) note, the tower at PPNA Jericho functioned differently from Bronze Age or Medieval towers, which tended to be built outside the perimeter of the wall, apparently to shoot climbing attackers.

This lack of fortifications around settlements is especially striking given the tendency throughout the PPNB period toward rapid population growth and settlement nucleation—factors that should, it would seem, encourage raiding and warfare (see Kelly 2000). Nucleation itself can be a replacement for fortification, insomuch as it discourages attack (Tuzin 2001), but the evidence from the Levant suggests that the nature of interaction between the farming and foraging groups who lived in the region was predominantly peaceful throughout the Pre-Pottery Neolithic and played out in the form of trade, exchange, and ritual gatherings.

At the beginning of the Pottery Neolithic, c. 8000–7750 B.P., many, if not most, of the large PPNB villages in the south-central Levant were abandoned and replaced with new, smaller hamlets. Kujit (2000) attributes this in part to environmental shifts but also to inherent limitations in the social organization of Late PPNB societies, which could not deal adequately with social crowding and other issues of scalar stress (Johnson 1982; see also Bandy 2004; Parkinson 2006).

Despite the close geographic proximity and shared cultural heritages between the Neolithic societies of the Near East and Europe, there are few useful parallels to aid in understanding the roles played by fortifications and enclosures around settlements. This is particularly surprising for central and southeastern Europe, the areas that shared the closest cultural histories with

their Near Eastern counterparts. However, the organization and distribution of the nondomestic ''ritual'' sites that became common during PPNB do share some affinities with the causewayed enclosures that became common during the Scandinavian and British Neolithic and with later Neolithic and Copper Age societies in central Europe (e.g., Bodrogkeresztúr, see Kállay 1990; Makkay and Séfériadès 2002), where enclosures and henges occur not in direct association with settlements but as discrete entities on the landscape.

Prehistoric eastern United States

Still other parallels come from the midwestern and southeastern United States in the Archaic and Woodland periods. In those contexts earthen enclosures and ''monumental'' effigy mounds were constructed not directly in association with agricultural settlements, but isolated on the landscape by people who were primarily (in the case of the Woodland) or exclusively (in the case of the Archaic) hunter-gatherers. Although these features bear several resemblances to some of their Neolithic European counterparts, the nature of interaction that occurred at these sites seems to have differed in substantial ways.

By the middle of the Archaic period in the southeastern United States (c. 5800–3570 B.C., see Anderson 2002, Table 1), the hunter-gatherers who occupied the region began to construct massive earthen mound complexes at sites such as Caney, Frenchman's Bend, Hedgepeth, and Watson Brake (Fig. 7B). These sites have multiple mounds that in some cases were connected by earthen embankments, creating enclosed areas.

In their recent detailed synthesis of Watson Brake, a site in northeastern Louisiana, Saunders et al. (2005) trace the construction of the mounds to a group of mound sites throughout Louisiana and Mississippi that were established during the sixth millennium B.C. Others (e.g., Clark 2004; Sassaman and Heckenberger 2004) have argued that several of these sites also may share astronomical layouts. The sites vary considerably in layout, size, and associated features and artifacts (e.g., point types), but the mound-building tradition appeared approximately 6,000 years ago and lasted for roughly 1,000 years before disappearing (see Saunders et al. 2005, p. 663). The mound-building tradition reemerged in the Southeast during Poverty Point times, c. 2700–2300 B.P., but in contrast to the Middle Archaic mound group, which exhibits a considerable degree of formal variability from site to site, the later societies focused their efforts on constructing the mounds at only a few sites such as Poverty Point and Jaketown (Saunders 2004).

Anderson (2002) relates the establishment of mound groups during the Middle Archaic in the Southeast to the development of tribal forms of social organization, when the hunting and gathering bands that had occupied the region from the Paleoindian period began to integrate into more complex social units. He suggests that mound sites such as Watson Brake can be interpreted as evidence of regular intensive interaction between band-size social segments, where social tasks were carried out that could promote ''tribal'' solidarity. Anderson suggests that such social forms may have

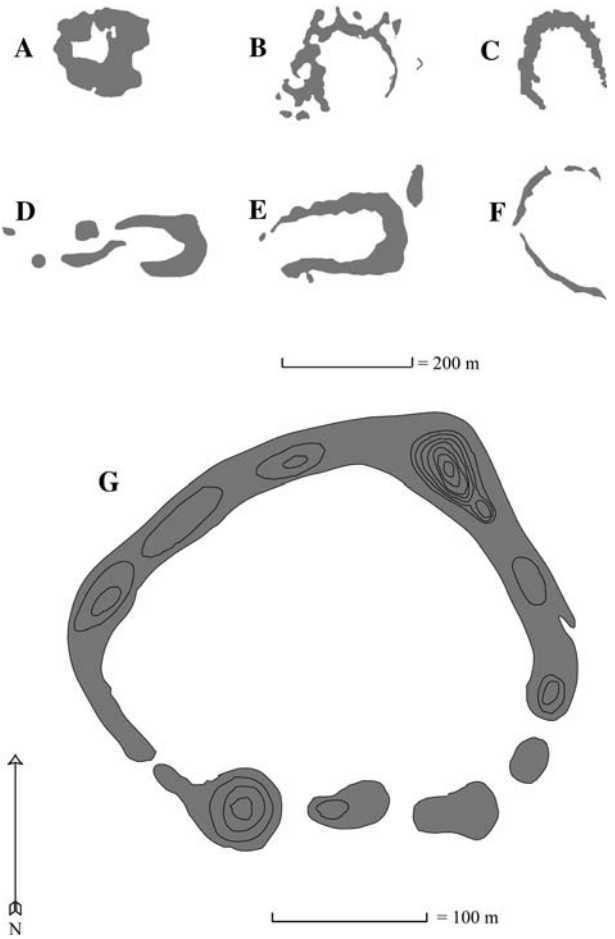

Fig. 7 Archaic sites in the southeastern United States. (**A**) Oxeye Island shell ring, FL. (**B**) Rollins shell ring, FL. (**C**) Guana River shell ring, FL. (**D**) Horr's Island shell ring, FL. (**E**) Bonita Bay shell ring, FL. (**F**) Joseph Reed shell ring, FL. (**G**) Watson Brake Mounds, Louisiana. Contour lines are 1-m intervals. After Anderson (2002, pp. 255–256) with modifications

developed as early as the late Paleoindian period, for example, during the Dalton Efflorescence (c. 12,500–11,200 B.C.) in the central Mississippi Valley, but that such early tendencies toward ''tribalization'' either did not take root or spread widely (Anderson 2002, p. 251). Sometime during the Archaic, however, the development of these social structures became common features across the eastern United States, as indicated not only by the Middle Archaic mound groups in Louisiana and Mississippi but also by early mound sites constructed of earth and shell in Florida (Fig. 7A–F). Other Archaic cultures such as the Shell Mound Archaic in the Midsouth and the Old Copper culture of the Great Lakes region emerged about the same time and indicate similar patterns towards regional integration.

Anderson (2002, p. 257) relates these social changes to increased population densities and climatic uncertainty during the Middle Archaic. Hamilton (1999) has suggested that the construction of mounds such as Watson Brake may coincide with the rise of El Niño-Southern Oscillation (ENSO) climatic events. Detailed analysis by Saunders et al. (2005), however, indicates that the mounds were built during stable climatic conditions, not unstable ones. Ultimately, they conclude that the causal relationship between mound building activity and environmental events is currently untestable.

These features bear striking resemblances to Neolithic enclosures, henges, and earthworks in parts of Europe that are isolated on the landscape or at least are not in direct association with settlements (e.g., in parts of Britain and Scandinavia and at some Lengyel sites in central Europe). In the British and Scandinavian cases, there are some additional parallels with the southeastern U.S. societies in regard to subsistence and/or mobility. While the Scandinavian societies, albeit reliant on wild resources, had been sedentary since the Mesolithic and gradually adopted a Neolithic economy (i.e., Ertebølle), the British societies were somewhat mobile throughout the Neolithic and continued to rely heavily on wild resources. In these cases, the model Anderson suggested for the role of mounds in the Archaic of the southeastern United States—as integrative centers that served to bring together disparate groups on the landscape—may very well apply (for similar positions see Piggott 1965; Smith 1971). However, such an argument cannot be proposed for explaining the appearance of such features in other parts of the European sequence, for example, during the Copper Age and later Neolithic of central Europe where sedentary farming societies had been established for nearly 2,000 years.

Although the mound cultures of the southeastern United States may bear some behavioral resemblances to European contexts, insomuch as the mound and enclosure sites may have served to integrate dispersed groups across the landscape, the nature of interaction that occurred at those sites seems to have been quite different. For the southeastern United States, several authors (e.g., Russo, Saunders, and Widmer; see Anderson 2002, pp. 256–257) have argued that the sizes of the individual mounds (of earth and shell) within a site may be related to the size and abilities of the individual groups that created them. This suggests some degree of intergroup competition in performance and, presumably, consumption.

Most of the European sites do not exhibit such intrasite variability. Rather, the emphasis in the European enclosures seems to have been on the cooperative production of the whole rather than on the specific parts. In the Southeast, while there may have been some general layout that guided the overall pattern of mound placement and site development, the main emphasis seems to have been on the construction of the individual features, with the final form almost being an afterthought. This tendency persisted throughout the Archaic and reemerged again during Adena and Hopewell times, when the communal creation of seemingly idiosyncratic features such as effigy mounds and other earthworks on the landscape again brought together mobile groups from a large geographic area (see Bernardini 2004; Yerkes 2002).

Thus, although the construction of these enclosure and mound sites may have served similar integrative functions in the different societies who created them, the actual processes and events that were carried out at those sites differed considerably. This necessitates a deeper examination of the specific social processes that we lump together under the general rubric of ''communal labor.''

Throughout Europe during the Neolithic and Bronze Age, for example, the emphasis on communal work usually focused on the final form of the enclosure, henge, or earthwork, suggesting that an important reason for getting together was to work together as a whole to achieve a specific task. The archaeological manifestations of smaller corporate groups within this context either were intentionally de-emphasized or, during the construction of the feature, came to be masked by the work of the group as a whole. In the eastern United States, the emphasis seems to have been more on the construction of specific features within the site, suggesting that an important reason for getting together was to emphasize both the identity of smaller social units and their competitive relationships within larger corporate groups. The emphasis on the competitive nature of social relationships in the eastern United States may have been promoted by the lack of such integrative features at the local (i.e., settlement or village) level, which were well established within most parts of the European sequence since the beginning of the Neolithic.

This subtle, yet important, distinction between different sorts of communal labor—competitive versus cooperative—would have had serious implications with regard to the roles these special sites assumed within their different regional trajectories. In the eastern United States, mounds sites eventually became the venues within which political and economic disparities were manifested during the Mississippian. As such, they continued to remain social arenas where competitive interaction was carried out between social segments of different scales. In Europe, by contrast, such sites became rarer over time. By the end of the Bronze Age, most communally constructed monumental features on the landscape were fortifications that surrounded settlements, which became the primary focus of group-level competition. These different emphases in the nature of social interaction and integration, therefore, may help explain why the regions assumed such different economic and political trajectories over the long term.

Conclusions

In this review, we have attempted to outline the main factors that have influenced our archaeological understanding of enclosures and fortifications in European prehistory. We also have attempted to outline how these factors have been influenced by—and influenced in turn—theoretical trends in archaeology. Interpretive frameworks for understanding the roles these features played within the societies that created, maintained, and otherwise

interacted with them have tended to focus on the regional and local scales. Models that emphasize the monumentality of features and their implications for complex political organization have given way to landscape approaches and models that emphasize the symbolic roles of monuments as parts of larger regional settlement systems. A renewed interest in ancient warfare in small-scale societies has generated a great deal of discussion about how to identify fortifications and other material correlates of intergroup violence in the archaeological record.

We have focused our discussion on two omissions in recent research on fortifications and enclosures in European prehistory: the lack of more general models that attempt to understand the occurrence of these features at longer temporal and larger geographic scales, and the lack of explicit cross-cultural comparative frameworks in their interpretation.

With very few exceptions (e.g., Hodder 1990; Whittle 1996), most authors have been reluctant to approach the construction of enclosures and fortifications as a continent-wide phenomenon that lasted for several thousand years. This tendency away from more general models began in the 1960s and 1970s with a focus on regions as primary units of analysis during the New Archaeology (e.g., Binford 1964; Clarke 1972) and continued in the 1980s and 1990s with a focus on settlement pattern and landscape studies in Europe (see Galaty 2005). During this same time, technological advances have encouraged more detailed analyses at the regional and local scales. However, despite the widespread availability of geographical information systems (GIS) and satellite-based imagery that permits the exploration of these kinds of archaeological features at large, continent-wide scales of analysis, such studies are few and far between. Although Andersen (1997), Petrasch (1990), and others have compiled comprehensive databases that offer the potential for such detailed diachronic investigations, no one has attempted such a large-scale analysis.

The lack of explicit cross-cultural interpretive frameworks for understanding enclosures and fortifications and their relationship to settlements and other types of sites is similarly perplexing, especially because such strikingly similar features occur in a wide variety of temporal, geographic, economic, and political contexts. We attribute the absence of such explicit comparative frameworks to a recent tendency in archaeology toward theoretical frameworks that emphasize the historical particularities of regional sequences over general trends within different regions.

A more general cross-cultural perspective can be used to augment interpretive frameworks at finer temporal and geographic scales. Such comparisons can elucidate aspects of variability within the greater European sequence as well. For example, in our brief discussion of enclosures and fortifications in other contexts, we attempted to outline long-term patterns of change in subsistence, settlement organization, and political organization. Some fortifications around Neolithic European settlements bear striking resemblances to fortifications in Formative Mesoamerica, for example, and seem to co-occur with sedentary agricultural settlements that have other archaeological features indicative of redundant social segments (e.g., in the

Greek Neolithic and the LBK). The Mesoamerican example is much less helpful in understanding other European contexts because many of the ditched and causewayed enclosures in the British Neolithic and Later Neolithic enclosures in central Europe (e.g., Lengyel culture) do not occur in direct association with settlements.

By contrast, fortifications and enclosures were not commonly associated with the sedentary farming communities in the Pre-Pottery Neolithic of the Near East. In that context, special sites appeared during PPNA and PPNB that seem to have brought together disparate groups for ritual and exchange rather than for intergroup warfare.

Finally, the empty enclosures in some parts of Europe bear formal similarities to Archaic and Woodland mound groups in the eastern United States. The formal differences in site and feature organization suggest that although the creation of both sets of sites may have been the focus of communal activities, the nature of those communal activities differed significantly with regard to the emphasis placed on competition versus cooperation. These differences would have had significant implications for the long-term trajectories of social change in each region, especially pertaining to the possible venues where inter- and intragroup social competition could play out. More detailed examinations of these kinds of relationships may be useful in developing models for understanding more general trends both within Europe and between Europe and other parts of the world.

In concert with other authors who contend that models are more effective when they consider several different scales of analysis (see Fowles 2002; Neitzel 1999; Parkinson 2006), we suggest it will be helpful to focus these inquiries at several social, geographic, and temporal levels. The most general of these scales should question whether—or more appropriately why—features such as empty enclosures and fortifications appeared in different parts of the world during the Holocene and not before. These broad-brush inquiries also should question the extent to which the appearance of these features is associated with the appearance of other archaeological phenomena that suggest changes in social organization, such as the development of formalized social segments.

Our brief survey suggests that at least in Europe, the Near East, Mesoamerica, and the southeastern United States there is a tendency of enclosures as fortifications to be associated with societies that seemed to have a social calculus (*sensu* Kelly 2000) that recognized formalized social segments and the principle of social substitutability. Although these societies differed considerably in the extent to which they relied on wild versus domestic resources and in their degree of sedentism, they all exhibited similar systems of social organization that suggest the integration of social segments into larger, more formalized units on the landscape. Such social institutions probably developed earlier in all four regions, but the construction of these material features indicates a formalized, material representation that linked them to specific spots on the landscape. The critical change, therefore, seems not to have been the development of new social institutions related

to social segmentation and social substitutability—a process some have called tribalization (see Braun and Plog 1982; Emerson 1999; Fowles 2002; Parkinson 2002a)—but the institutionalized manifestation of those institutions in material culture at specific sites on the landscape.

Features and sites indicative of similar social institutions can be traced back into the European Paleolithic at sites such as Dolní Véstonice-Pavlov, an eastern Gravettian (Pavlovian) site in southern Moravia that served as a periodic venue for dispersed hunting-gathering bands to interact (Gamble 1999, p. 384). By the beginning of the Holocene, cemetery sites such as Oleneostrovskii Mogilnik in western Russia may have played a similar role in bringing together groups dispersed over large areas (O'Shea and Zvelebil 1984). However, before the Neolithic such features and sites were few and far between, suggesting either that the social institutions associated with segmentation and substitutability were not formally established or that such social institutions were not tethered to the landscape as they were in the Neolithic.

We suggest that a constellation of factors came together to create a social environment that encouraged the crystallization of these social institutions during the Neolithic. These factors include increased sedentism, territorialism, and food production. The crystallization of social institutions associated with a social calculus based on principles of segmentation and substitutability encouraged the creation of material features that linked them to the landscape. These features—enclosures and fortifications—are the different faces of intergroup interaction, one peaceful, the other violent. Conversely, the act of constructing, maintaining, using, and destroying the features would have encouraged the crystallization of the social institutions themselves, not only by providing venues and occasions for intergroup events, but also by constructing monumental artifacts on the landscape that embodied the relationship between the institution and the site on the landscape.

In the past, researchers working in both the Old and New Worlds suggested that these monumental prehistoric achievements could be carried out only with some sort of formalized political inequality (e.g., Renfrew 1974; Yerkes 2002). More recently, however, a greater appreciation for the great amount of economic, political, and ideological variability exhibited in egalitarian or tribal societies has developed (see Parkinson 2002a; Fowles 2002; Spielmann 1998). Several theoretical frameworks, and, of course, new terminologies, have been introduced that try to articulate methods for usefully sorting through the large amount of social variability exhibited in these kinds of societies. These include heterarchy (Crumley 1979; Ehrenreich 1995; Levy 1995; Rautman 1998; Rogers 1995), corporate versus network-based organizational strategies (e.g., Blanton et al. 1996; Feinman 2000), rituality (Yoffee 2001), hierocracy (Fowles 2003), and tribal cycles (Parkinson 1999, 2002b) among others. Nevertheless, our current understanding of the processes and conditions that led to the creation of these more formally integrated segmentary social systems in different parts of the world has been hindered by a lack of comparative research at these broader temporal and geographic scales.

Another important question is about the temporal durability of such systems once they appeared and the conditions under which some of these tribal systems gave way to more hierarchically organized political systems. Our overview suggests wide variability in different parts of the world. For example, Clark and Cheetham (2002) note that most tribal societies in Mesoamerica lasted only a few hundred years before ranking and institutionalized political inequality appeared. This is radically different from other parts of the world where tribal systems cycled for several thousand years between different numbers of levels of segmental units that were integrated in a group identity. More detailed comparative analyses of these patterns may reveal similarities in social organization within the different historical trajectories that can help outline how special sites and communal achievements provide venues for different forms of social competition and cooperation in which different political relationships can play out.

Of particular importance in this regard is not only the relationship between communal features such as enclosures and fortifications and settlements but also the relationship between settlements and other foci of inter- and intragroup activities such as mortuary rituals. Cemeteries and other mortuary sites have a special relationship in Europe and the Near East, and the nature of that relationship needs to be explored more explicitly for understanding the nature of social interaction in these different contexts. Indeed, a detailed analysis of prehistoric barrows and megalithic tombs in Europe would complement the present discussion because the geographic and temporal distribution of those features roughly mirrors the distribution of enclosures and fortifications on the landscape, suggesting that they were the results of similar social processes.

By dedicating some attention to these broader scales of analysis, it will be possible to develop comparative analytical frameworks that can augment detailed regional and local scales of analysis. A multiscalar approach will help us explore the social processes that led to the construction of monumental, communal features such as enclosures and fortifications, not only in Europe but in other parts of the world as well.

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