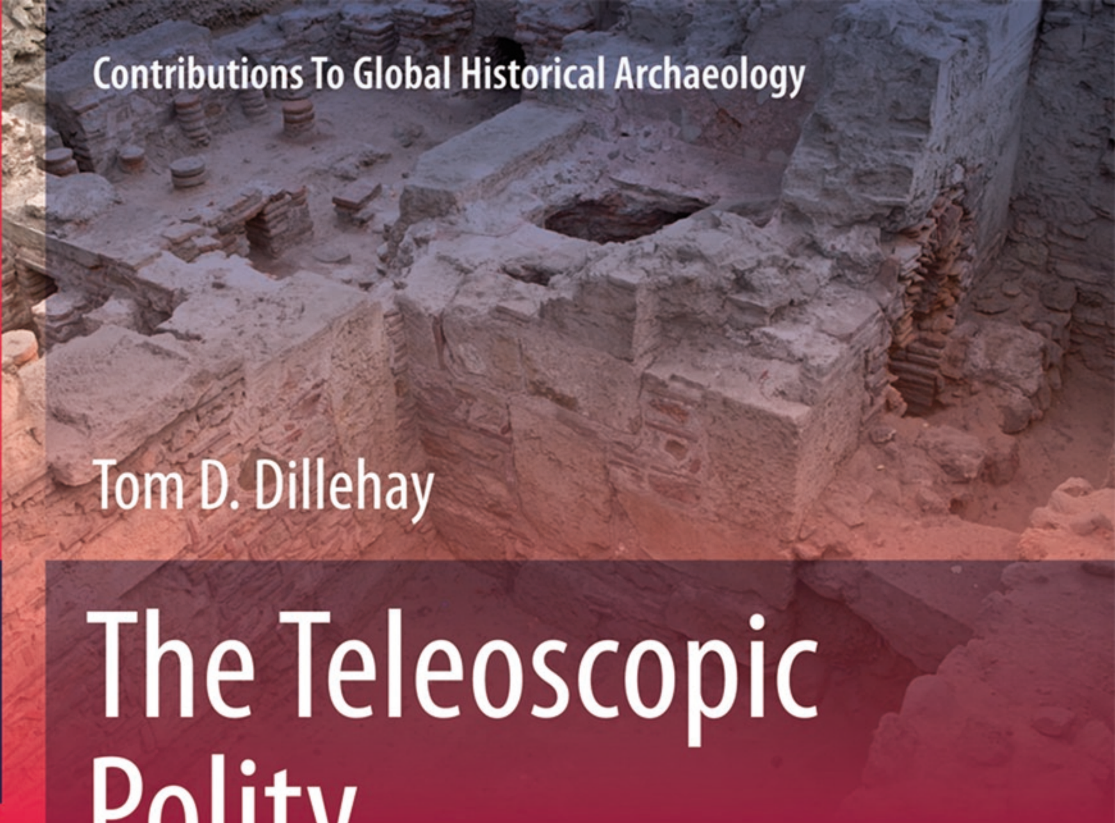

Contributions To Global Historical Archaeology

Tom D. Dillehay

The Teleoscopic Polity

Andean Patriarchy and Materiality

Springer

CONTRIBUTIONS TO GLOBAL HISTORICAL ARCHAEOLOGY

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The Teleoscopic Polity

Andean Patriarchy and Materiality

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Preface

This is the fourth and last published volume in the series that can be considered an archaeological and historical study of the Araucanian and Spanish interaction in the sixteenth and seventeenth century period in the Purén and Lumaco Valley in south-central Chile. The first tome, published by the Cambridge University Press in 2007 was a combined archival, archaeological, ethnoarchaeological, and ethnographical study of the Araucanian resistance to the Spanish Crown. The Purén and Lumaco Valley was chosen because it was the historically recognized center of political and military power fronting the Spanish. Beginning in 1978, when I was in the valley for the first time, I heard about and observed the high density of earthen mound sites there, which the local Mapuche called *kuel*. At the time, several of these were actively used in public ceremonies, and a few are still used today, though this tradition is dying quickly as modernization and change continue to take place in the valley. Upon observing these mounds for the first time, I immediately understood why the Spanish called the valley "*Purén Indomito*" (Unconquerable Purén). I had visited and carried out archaeological research in many parts of south-central Chile, but upon seeing these mounds and also visiting a few large domestic sites, dating to the late Hispanic and early Hispanic period, I knew the area represented a complex polity. The first volume addressed these issues from an interdisciplinary perspective. I was pleased when this book was awarded the Society of American Archaeology Book Award for 2008.

The second and third volumes dealt with site descriptions and settlement patterns and with a detailed analysis of the ceramics from the valley, respectively. These two volumes were published in the Vanderbilt University Publications in Anthropology of the Department of Anthropology. They are largely descriptive in nature.

This last tome primarily presents the archaeological data for excavated sites in the valley, most of which are mound or *kuel* sites. However, it also includes special studies related to the archival material, the archaeobotanical remains, and other analyses supportive of the excavation material. This volume also is largely theoretical, in addition to being descriptive, and argues that the Araucanian polity was a teleoscopic one, built up or extended from the lowest patrilineal level to a supra-regional level and centered around patriotism and patriarchy. I also refer to this organizational structure as a composite polity made up of four different domains, each somewhat independent but supportive of the others. This last volume sets out to give an empirical portrayal of these mounds and their associated settlements that began their history at least 1,000 years ago and appear to be coming soon to an end as active participants within traditional Mapuche ceremonies.

Abstract

This book addresses our understanding of indigenous proto-state or polity formation in the early Spanish period in the southern Andes and the sociocultural conditions that shaped a specific type of archaeological record. This record is characterized by a simple or unostentatious material culture for a polity-level of society. The historical focus is on the Araucanians or Mapuche of south-central Chile in the sixteenth to seventeenth centuries during the early Arauco War, when they successfully resisted the Spanish conquest for more than 250 years by forming a confederated proto-state.

The Araucanian polity was characterized by a simple or unostentacious archaeological record. This type of record prompts us to ask how and why certain complex meanings of social practice and social order were reflected in minimal or simple material signs. How was this record mediated by wartime conditions and, in turn, how did it condition the social relations of conflict? How were particular types of interaction and information constituted by specific sets of material conditions produced by the strategies and ideologies of groups engaged in warfare. Also important is how these conditions, as inferred in the archaeological record, agree or disagree with the non-material and material agency of patrilineality and patriarchy expressed in the historical texts of the period under study, and how these two agencies, as inferred from both the archaeological and historical records, contribute to a fuller understanding of the past. By attempting to answer these questions and by studying the archaeological expressions of these conditions, we stand to gain a better understanding of the emergence of increased political complexity in the past. This emergence was a process of fundamental importance not just for Latin American history, archaeology and political science, but for other areas of human study.

Acknowledgements

In the previous three tomes, I have given detailed thanks to the various Mapuche communities in the Purén and Lumaco Valley that so graciously gave us the permission to work on their lands and excavated with us as well. I once again extend a sincere and lasting appreciation to those communities and those many individuals within them who interacted with us and who taught us many things about the Mapuche past and present. I also thank the various Chilean and foreign (mainly the USA) institutions that administratively and/or financially supported our research. I also wish to thank Carlos Ocampo, a friend and archaeology colleague who served as the Chilean counterpart to this project. I deeply appreciate the field support and collaboration of Mario Pino, José Saavedra, Arturo Rojas, Orlando Tapia, Gerson Levy, and Raul Ortiz. I also thank Patricia J. Netherly for commenting on various sections of the book and for translating sections into English. Special recognition goes to the Mapuche of the Butarincon, Rucalleco, San Genardo, Tranaman, and Boyonko communities for graciously supporting our research and for giving us the permission to work on their lands. And then there is one other person who has contributed on nearly every front, by encouragement and by frustration. This is Dana D. Nelson. Lastly, I thank the editors, especially Charles Orser and staff of the Springer Press in working with us to publish this volume.

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Part I
History and Polity

Chapter 1
Introduction

Tom D. Dillehay

In order to better understand the history and meaning of preindustrial complex societies in archaeology, a question we need to continually ask is how kinship, social structure, and political organization are intertwined and how this relationship is represented by the material record. Both the political and social behavior of a society are engaged with, and constituted by, the world of objects, artifacts, and ecofacts distributed across landscapes and in places. The results are social landscapes with specific meanings and agencies, landscapes that are creative, capable, and show growth and change as their histories unfold. A major part of this history is the engagement of other groups in the process of growth, which is not just about humans and their behaviors but also different objects, artifacts, and places. Objects have "effective agency" and its use and meaning go hand in hand (Robb 2004). As such, it is important to consider the specific cultural context of objects, their ability to affect future acts, the intentions behind the creation and manipulation of them, and their physical properties (see Boivin 2004; Ingold 2007). It is these physical qualities that structure interaction both between people and the objects. The material record of archaeology is about these engagements, interactions, and processes. Political, social, and kinship structures are extensions of what we know of such engagements through the metaphoric use of an embodied social life. Yet, this metaphoric perspective of the material record to understand the past has its limitations. For instance, there can be a gap or disconcordance between what we believe the material record represents and what it was meant to embody and reflect. This disconcordance is not easy to identify and mitigate archaeologically. When available, historical records, oral traditions, and ethnoarchaeological or experimental studies can close a gap, if applied to a specific cultural context or a set of questions specific to certain behaviors.

These topics are not always articulated in the archaeology of complex societies. Furthermore, the objects we excavate and the landscapes we interpret do not clearly represent all aspects of past social lives. And not all objects within a specific context

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share the same normative traditions, values, practices, and stocks of knowledge. What makes social experience meaningful are not the things themselves, such as the spatial arrangement of architecture or the presence of elaborate tombs. Rather, it is the context-specific, culturally filtered, and social nature of the engagements that made the materials meaningful social practices. We know that the material record is largely grounded in social practices. We also know that there is much more meaning and patterning than we can identify in the archaeological record, and that meaning can be very different from what we hypothesize and expect. Yet, this meaning can be identified better by studying a context-specific written record that documents the social and historical setting of the society in question, a context perhaps difficult to read archaeologically or materially but complemented by these approaches.

This book addresses our understanding of indigenous proto-state or polity formation in the early Spanish contact period in the southern Andes and the sociocultural conditions that shaped a specific type of archaeological record. This record is characterized by a simple or unostentatious material culture for a polity-level of society. The historical focus is on the Araucanians (or Mapuche as they are called today) of south-central Chile in the sixteenth to seventeenth centuries during the early Arauco War (ca. AD 1551–1641), when they successfully resisted the Spanish conquest by forming a confederated proto-state (Fig. 1.1). The Spanish called it the "*Estado Indomito*" ("unconquerable state"; Ercilla y Zuñiga 1569/1982) that developed in the latter half of the sixteenth century to stop the intrusion of this Iberian empire (Bengoa 2003; Zapater 1973). The Spanish recognized these developments as a political order (*ordo*) or *estado* that they called the "*Reino de Arauco*" (Realm of Arauco; see Chapter 3 for other possible meanings). In commenting on the *estado,* the Chilean historian A. Medina wrote that:

> The word "*estado"* in Ercilla [and Zuñiga] and the chroniclers has a precise meaning related to the general idea that the term had at that time: the territory ruled by a prince, monarch or sovereign, by a chief with subjects, by a lord of vassals or serfs; a lord who by his titles and rights would sometimes acquire a notable preeminence (Medina 1952, p. 144).

The *Estado* was located in the Purén (and Lumaco), Arauco, Mareguano-Catiray, and Tucapel regions of the Nahualbuta mountains along the Pacific coast (Medina 1978; Padden 1993; Zavala 2008; Fig. 1.2). In their thrust toward political solidarity to resist the Spanish, a truly centralized state authority was never achieved by the Araucanians due to certain political, economic, and demographic restraints centered on their inability (or unwillingness) to consolidate power within their territority and on the presence of a scattered but viable minority force of "friendly Indians" (*indios amigos*) who were allied with the Spanish against the resisting majority population (*indios enemigos*). In attempting to explain these developments in the initial center of Araucanian military resistance, the Purén and Lumaco Valley (Fig. 1.3), I venture into a little-studied field in colonial archaeology that is fundamental to understanding a particular type of polity formation. This is a patriarchical polity that guided the course of the Arauco War in the Araucania region, as it is called today. Previous studies on the Araucanians have discussed the decisions made by war leaders and their kinsmen to join the resistance movement and to accommodate their lifestyle

Fig. 1.1 Location map of the Purén and Lumaco Valley in south-central Chile.

within it (cf., Bengoa 2003, 2007; Boccara 2007; Villalobos and Pinto 1988; Zapater 1973; Zavala 2008).

I previously examined how indigenous patriotism and compatriotism in the beginning years of the *Estado* evolved during a period of sporadic but intense conflict (cf., Leiva 1977, 1984), revolutionary politics, the breakdown of much of

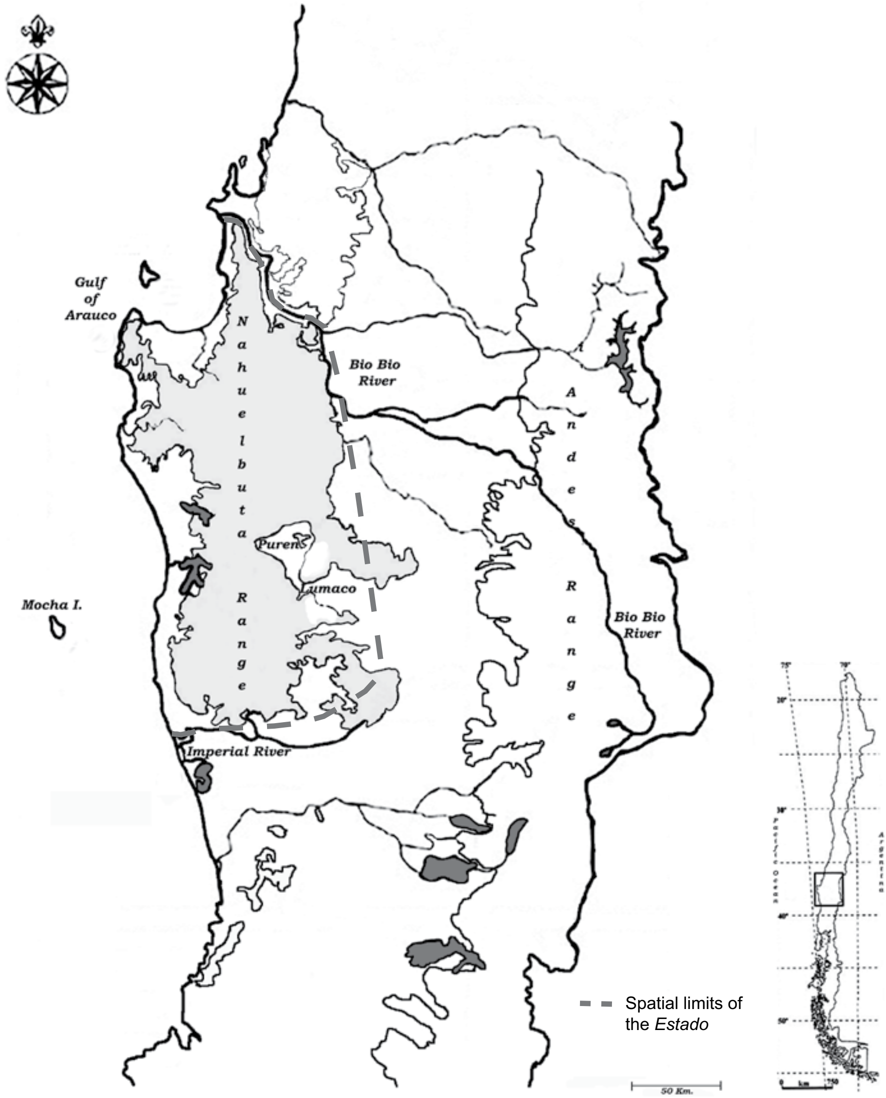

Fig. 1.2 Location of the Araucanian *Estado* and its four domains.

the population's demographic structure, and the increased use of artificial mounds (*kuel*) as divination oracles and mound complexes (*rehuekuel*) as political ceremonial nodes (Dillehay 1985, 2007, 2010; Dillehay and Zavala 2013) to coordinate the wider war effort. (Patriotism is ardent devotion to and, as needed, defense of a native or adopted country. Compatriotism is hailing from the same country.) It was through these nodes that I argued the Araucanians, particularly in the Purén-Lumaco area, attained greater political solidarity to form a more coordinated orga-

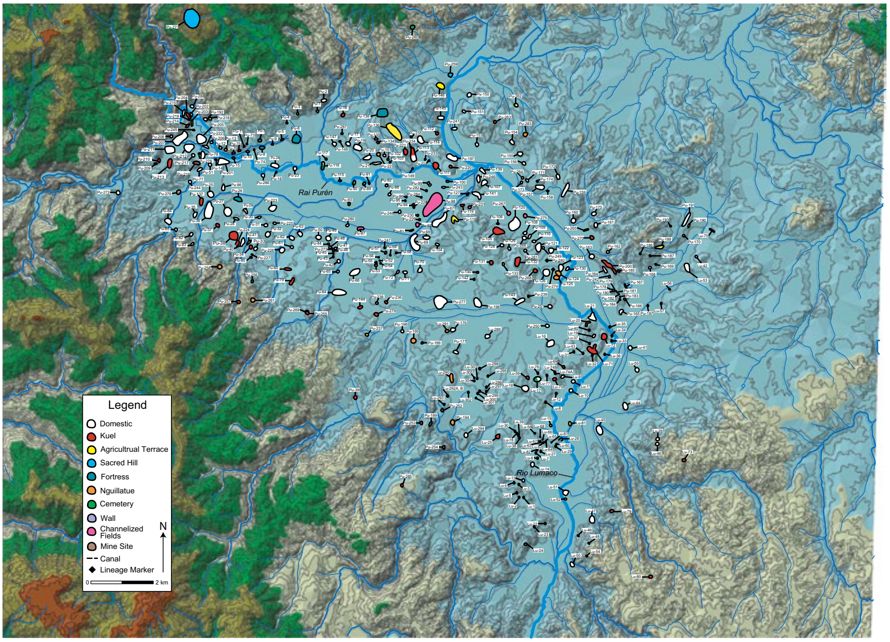

Fig. 1.3 Location map of the main geographic features and archaeological sites of the Purén and Lumaco Valley.

nization to successfully defy, defeat, and expel the Spanish. Before the arrival of the Spanish, the mounds were smaller, fewer in number and associated with territorially limited intermediate- or chiefdom-level societies probably in periodic conflict with each other. The prior study also examined how patrilineal communities (*lof* or *lebo*) that acquired a growing political and economic importance during this period set up new arenas of power (Wolf 1999) by invoking and reinventing higher geopolitical levels of leadership, sacred ancestral landscapes, and social prestige derived primarily from warriorhood and patriotism. I also argued that the power and authority of these arenas were enhanced through a specific political movement by war leaders (e.g., *quen-toqui*) to transform local patrilineal communities into nonlocal communities mixed with kin, non- or fictive kin, and groups demographically fragmented by warfare. The result was the formation of what I term here a *teleoscopic* polity, meaning it was an extensible or compressible structure by moving and fitting overlapping kinship units at increasingly higher scales of religiopolitical and socio-economic organization. It transformationally and rapidly expanded from local, more domestic, patrilineal communities at the lowest level to regional, more public, and powerful patriarchical communities under war leaders at the highest level. Increasingly significant in sustaining this patri-organization as it escalated from the smallest to the highest level were large-scale public gatherings of a combined political and religious nature (e.g., *cahuins, coyantuns,* and *nguillatuns*) at *rehuekuel* ceremonial centers (Fig. 1.4). These gatherings continue today at *nguil-*

Fig. 1.4 *TrenTrenkuel* (black arrow) and *ñichi* platform (white arrows) in Butarincon.

latun ceremonies among a relatively large Mapuche population, although they are much less politically oriented.

The last Chilean census placed the number of Mapuche at approximately 700,000–800,000 (INE 2010), with most living on scattered *reducciones* (cf., Faron 1962; Sáavedra 2002; Crow 2013). About 30,000 more live in the Andean mountains to the east in Argentina, making them the largest indigenous group in southern South America. The Mapuche were (and still are) a patrilineal, patrilocal, and bilateral society that reside in dispersed communities (cf., Cooper 1942; Faron 1962, 1964; Millalen 2006; Sáavedra 2002; Zapater 1973; Zavala 2008). In the anthropological literature, they are best known as having a mixed economy of *piñon* collectors in the Andes and fisherfolk, hunters, gatherers, and horticulturalists in the central valley and along the Pacific coast. Their past political organization was characterized by small to large *cacicazgos* or chiefdoms, except in times of war with the Spanish and later the Chileans when more formally semicentralized political units headed by *toqui* war leaders formed to defend their lands. It was not until the end of the nineteenth century that the Mapuche were finally defeated by the Chilean army and confined to *reducciones*. Because the Araucania region was never fully occupied and controlled by either the Spanish or the Chileans until the turn of the twentieth century, the Araucanians or Mapuche cannot be considered in terms of the classic cases of New World colonialism whereby other indigenous territories were settled and administered by European powers, with intermittent but generally unsuccessful periods of resistance. In fact, the Araucanians were the only ethnic group in American history to established a formal treaty and sovereign territorial border with the Spanish Crown (Bengoa 2003, 2007). Consequently, I prefer not to treat the Araucanian case like those of other American indigenous groups who were subjected to European colonialism, domination, and occupation and compromising acts of resistance. Instead, I prefer the notion of anticolonialism, considered here to be acts of political and cultural resilience that led to the development of a prolonged sovereign territory unoccupied and undominated by outside forces. This does not imply, however, that over the 350-year course of interaction between the Spanish (and Chileans) and the Araucanians that the former did not settle and control specific places, for it is well documented that Spanish forts and settlements appeared from time to time in certain locales (e.g., Arauco, Imperial, Villarrica, Valdivia), but they were shortly abandoned due to conflict with local groups (see Chapters 2 and 3).

Like most studies of the early American colonial period the Araucanian case is a discourse on power relations: how the Spanish empire affected indigenous community politics, how Araucanian leaders (*guen-toqui*, *ulmen, hechiceros*) controlled their communities, how commonfolk (*huenchu*) understood their subaltern position in the resisting society, how these people, in turn, influenced their political leaders, how these power relationships altered society and its political structure, and how conflict and demographic turmoil built increasingly higher levels within the indigenous power system (Ayers 1995; Bray 1994; Deagan 1995, 2002; Ewen 2002; Funari 2007; Gasco et al. 1997; Jamieson 2005; Lightfoot 2005; Rogers and Wilson 1993; Sluyter 2001; Charlton et.al. 2005; Thomas 1989, 1991; Williamson 2004; Van Buren 2010). This study also examines the interconnections of power, reciprocity, and obligation between patriarchical leaders and commonfolk during times of social and political upheaval. The wartime leadership of the Araucanians primarily relied on persuasiveness, appeal to ancestral religious convictions, and coercion to maintain power over the population at large, but leaders also tried to build support for their respective regimes through popular complicity, recruitment of fragmented sectors, mutual obligation, and traditional reciprocity, all part of a widespread hegemonic process (Dillehay 2007; Dillehay and Zavala 2013; Goicovich 2006; Sauer 2012; Zavala 2008). Yet, the relationship between the Araucanian population, their political leaders, and the sporadic military presence of the Spanish and their allied *indios amigos* was more complicated than one with just two distinct groups and a clear aggressor and victim. As discussed in later chapters, the demographic movements and support of commonfolk comprising dispersed populations in the countryside also influenced Araucanian polity formation and its politics, breaking down the barriers between the dominated and the dominator. That is, local populations did not act as a cohesive political unit to front the Spanish and their allies. Some populations moved in and out of the war effort, serving as *indios amigos* siding with the Spanish one moment and fighting with the *indios enemigos* against them the next (see Zavala 2008). Thus, many local groups experienced war and resistance differently, which, I believe, partially inhibited the permanent formation of a centralized authoritative system within the Araucanian polity, although the *Estado* and its major center of political resilience in the Purén and Lumaco Valley probably came closest to this type of formation, at least during the first century of the war (Dillehay 2007).

In summary, I focus on these events and developments through a combined analysis of the historical documents of the era and of the late pre-Hispanic and early Hispanic archaeological record of the Purén and Lumaco Valley. Spanish soldiers, clergymen, and bureaucrats wrote the archives in the decades following contact with the Araucanians. These records provide substantial information on the course of events and on the formation of the *Estado* and the four regions comprising it

Fig. 1.5 Map of the seventeenth-century extent of the Araucanian polity in comparison to that of the Inca state and the later expansion of the Araucanian culture into Argentina.

(e.g., Bengoa 1985, 2003; Dillehay 2002; Krumm 1971; Zavala 2008; Fig. 1.2). These regions (each covering ca. 700 km^2) played distinct yet overlapping roles to collectively act as a single composite polity, which became the earliest stronghold of resistance in the region (Dillehay 1990a, 1999, 2007; Rosales 1674/1989; Villalobos and Pinto 1985), and had lasting political and patriotic effects on nearly all other Araucanians. In the eighteenth century, the Araucanians expanded into

Argentina and were second to only the Inka empire in terms of its geopolitical expanse (Fig. 1.5) and cultural influence in the history of South America (e.g., Crow 2013; León 1991; Jones 1999; Mandrini 1984, 1992; Mandrini and Ortelli 2002; Nacuzzi 1998; Villalobos et al. 1982). This setting provides for the archaeological study of these events and patterns, for identifying the material correlates of certain behavioral and organizational patterns identified in the archives, and for building bridges between the material and written records pertinent to the Purén and Lumaco Valley.

Lastly, it is necessary to comment briefly on the use of the terms polity and the Andes. Modern historians have shown that the Araucanians continuously developed their local, regional, and interregional political organization to sustain an economic and demographic support system against the Spanish (Barros Arana 1999; Medina 1852/1952; Guevara 1925; Bengoa 2003; Goicovich 2007; Ruiz 2003; Téllez 2004; Zapater 1978). This organization can be considered anthropologically as heterarchically organized *cacicazgos* that were centralized at the local *lof* or patrilineal level yet decentralized at the interregional polity level (cf., Boccara 1999; Dillehay 1976, 1995, 2007). In the archaeological literature, the term polity is intended "…to designate an autonomous socio-political unit", without reference to "any specific scale of organization or degree of complexity" (Renfrew 1986, p. 2) and without analogy to Renfrew's "peer-polity" model. In the Araucanian case, the term does not necessarily refer to a state-level political entity. I apply the concept to an incipient stage of state formation, more specifically to a proto- or near-state level of society that regulated its own affairs, whether corporately, or through elders, chiefs, or more hierarchical power structures. I believe that this definition best fits the changing historical circumstances and political transformations described during the study period here.

The term Andes is used in the title of the book because the study area is in the south-central Andes and because the Araucanian or Mapuche culture has been influenced by and, in turn, has influenced Andean cultures to the north and east since early pre-Hispanic times.

Turbulence, Leadership, and the Composite Polity

Much of the Araucanian history has been shaped by a war that resulted in widespread turbulence and loss. War was associated with periods of intense conflict and uncertainty that in most cases opened the way for social and political innovation, such as the construction of higher political levels, new leadership roles, greater social differentiation, and demographic mixing that characterized the *Estado*. At the same time, turbulence was associated with rupture (*sensu* Appadurai 1999)—the disappearance of certain traditional pathways and possibilities for political and demographic action that previously gave shape to communities but that either was lost to historical memory or to the inability or failure to emulate (cf., Boccara 1999, 2000). For example, although the patrilineal social structure survived the disorder and demographic collapse of the war, enough wealth within the patrilineages (e.g., agricultural lands, animals) was reduced because of population displacement or the death of numerous men in battle that it profoundly shifted prestige and status from the possession and display of material goods to achievements in military prowess, recruitment, and bravery (Leiva 1977, 1984). This was particularly the case in areas close to the northern frontier near the Bio-Bio River where the first major conflicts occurred. At the outset of the war, relatively weak communities in this area offered insufficient protection from the Spanish. The recruitment and incorporation of groups fragmented by the war strengthened some communities to offer a temporary measure of protection and security to their members (Bengoa 2003; Zavala 2008; Dillehay 2007). These mixed populations, on the other hand, often forced the development of new forms of social and economic interaction and of new kinship identities and expressions of social agency (Boccara 1999).

To elaborate briefly, prior to the arrival of the Spanish, social differentiation in Araucanian society was based primarily upon trade and exchange, limited wealth accumulation, and division of labor, with power and status resting on the possession of things as much on the possession of knowledge and skill, especially in regard to religious practices and public gatherings (Bengoa 2003; Boccara 1998; Dillehay 1976; Leiva 1977). I believe that during the early war years, leadership shifted and was centered in **composition**—the bringing together of local (and often distant fragmented) populations with different knowledge and experiences (e.g., warfare, food production, technologies, the supernatural, diverse ecologies)—rather than in **accumulation**. Political power and authority were eventually derived from resistance and resilience and were linked to an assertion of absolute defense of the homeland; the legitimacy of rule was eventually based on patriarchy, religion and public ceremony—thus, it became both **assimilative** and **compositive**. However, composition often led to widespread disruption and reconfiguration of local kinship structures, with some communities staying intact and others breaking up and joining others in more secure military areas. The result was not only population loss in some areas, but the loss of community property and especially community kinship structure because of demographic fragmentation. The power of leaders also was vulnerable in many areas, since it too was fragmentary due in part to a small percentage of the population shifting between *indios enemigos* and *indios amigos,* the latter often adopting Spanish norms and fighting alongside the Spanish against their former enemies (Goicovich 2004; Zavala 2008). Vulnerability also was due to recruiting fragmented groups, which made communities larger and more diverse, with different genealogical histories and allegiances. This, in turn, led to larger armed forces and domestic groups in some areas, which eventually redefined community membership and, in most cases, solidified the leadership role of local and regional leaders, especially as the *Estado* developed at higher levels.

In effect, the formation and maintenance of leadership within the political structure of the *Estado* constituted a process or sequence of contingent political, religious, and demographic events that responded to periods of intense stress and uncertainty (Bengoa 1998; Goicovich 2004; Zavala 2000; cf., Cioffi-Revilla 1998). War with the Spanish both necessitated and *obligated* local leaders to come together to form the single political structure of the four domains making up the *Estado* in order to resist outsiders (Bengoa 2003; Boccara 1999; Leiva 1977; Dillehay 2007). In the latter half of the sixteenth century, the geopolitical boundaries of these domains were formed and the new ideology of power and authority of the *Estado* was developed to legitimate this single yet collective political entity (Boccara 1998; Dillehay 2007; Leiva 1977; Padden 1993; Zavala 2003, 2008).

Foremost among the political events embedded in the early formation of the *Estado* is what political scientists, economists, and sociologists call "collective action" (Lichbach 1996). This was not necessarily a physical event, although it may have been related to or ultimately caused by prior or contemporaneous physical events, such as the Spanish invasion. For political scientists, this type of collective action is generally caused by the emergence of leaders and followers that jointly produce a system of government, whether centralized or noncentralized (Scranton 1994). In turn, both leaders and followers emerge by a variety of processes, such as decision-making calculations (rational choice) or deontic obligations or instinctive responses to social or physical environmental stimuli. In the Araucanian case, war with the Spanish *obligated* local and regional leaders in the four domains of Purén, Arauco, Tucapel, and Mareguano-Catiray to come together as different territorial parts to collectively defend their territory (Bengoa 1998, 2003; Boccara 1998; Leiva 1977; Dillehay 2007). This was the composite polity of the *Estado*.

When I first studied this polity, I called it a confederated organization made up of various patrilineal communities organized at different local and regional levels but never fully centralized to operate at a state-level of society (Dillehay 1995, 1999, 2007; see Padden 1993; Boccara 2000). Although I still concur with this definition, I now believe that the most accurate description of its internal organization is a *composite* polity, one that was confederated, semicentralized, and comprised of multiple complementary parts, each with overlapping yet also distinct specialized roles in service of the war effort against the Spanish.

Composite states or polities have received little archaeological and historical attention. This type of organization was initially defined for the 15–16th Medieval period in Europe by Koenigsberger (Koenigsberger 1975; cf., Elliot 1992; Strayer 1970). As he originally defined it, a *composite* state had a loose dynastic union of disparate parts with independent ties to a central leader or region. Although locally centralized and independent, these parts were collectively but often differently related to the center. This type of organization, however, did not form a true centralized state or political authority. Its independent parts were united and complementary, each treated in the same way and each with its own independent leader. Each part had overlapping and distinct roles in service of the single larger, compounded political system. Thus, it was a partitioning political structure that was heterogeneously mixed, semicentralized to centralized, and often led by the consensus of a group of leaders, albeit one formal leader could also be recognized. I consider this type of organization to be the most identifiable conceptual analogy to the Araucanian *Estado,* which had its military and political center in the Purén and Lumaco Valley. This center was related to and supported logistically and economically by the independent domains of Tucapel, Mareguano-Catiray, and Arauco. Thus, the intent of the *Estado* was to bring together the four contiguous but different regions into a

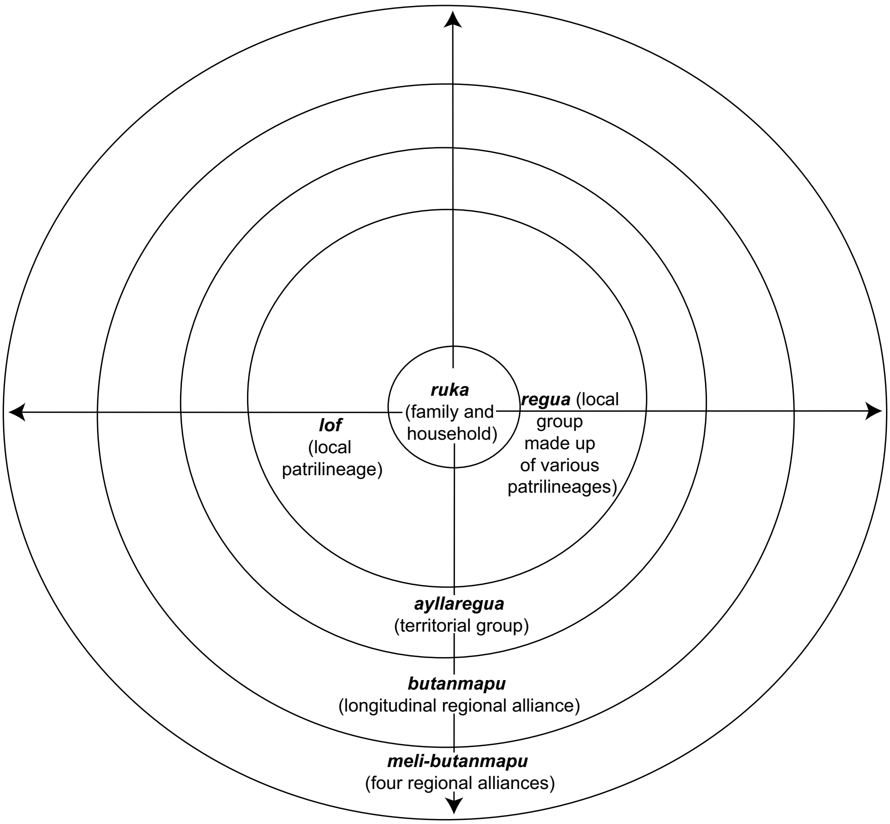

Fig. 1.6 Schematic plan of the teleoscopic patriarchical structure of the *Estado* from the lower *lof* to the higher *meli-butanmapu* levels.

quadripartite teleoscopic structure that represented a continuous extension of small to large part–whole heterarchies. Each part had a specialized role and an internally centralized leadership that formed a uniform political front, collective identity, and unitary direction to the Spanish.

Reference to the teleoscopic nature of the Araucanian polity specifically refers to its historically extended form of social and demographic growth from local multilineage communities (*lof*) to overlapping and united supralocal patrlineal *lofs* or *regua* (multiple *lofs*) sociopolitical units to regional and supraregional groups of *regua* or *ayllaregua* and *butanmapu,* respectively*,* patriarchical units. Its composite nature, on the other hand, specifically describes the compartmentalized geopolitical organization of the *Estado* once its four regional parts came together (see Chapter 3). The process of polity development was thus chronologically and socially teleoscopic and organizationally composite. Although the end result was a single overlapping composite unit, each part was organized in an extended telescope-like structure by local patrilineages forming larger *ayllaregua* and *butanmapu* networks (Fig. 1.6). Webs of social relations, such as marriage and war alliances, tied each local *lof* and *regua* to some of its neighbors in a broader supralocal sociopolitical web. These webs, in turn, were laced together at an even wider level into a system of obligation, custom, and familiarity that cross-cut kinship ties at the *ayllaregua* (multiple *regua*) and *butanmapu* (multiple *ayllaregua*) political levels. The end result was that communities interacted socially and economically with other member communities of the regional system; members of the local systems throughout a region attended celebrations and funerals for others. Marriages tied together kindred from different local systems, and a continuous stream of exchange transactions (e.g., gift giving, barter, alliances) reinforced these interactions. By the late 1550s, marriage had changed from a traditional patrilocal socioeconomic arrangement to a patrilineal military political contract among local and nonlocal war leaders in the *Estado* (Melville 1976).

To explain further, Elliot (1992) has added that the complementary parts of the composite state can be divided into two types: *cohesive* and the *reinforcement* components. Cohesive components are the primary political and organizational forces of the system. They coordinate decision-making and inter-part activities to form a united whole. The cohesive parts were wrapped and joined by reinforcement or support components that supported and maintained the rigidity and survivability of the entire system. The cohesive unit in the Araucanian case was the Purén–Lumaco Valley, which operated as the center of political resistance and militarily unified the other parts of the *Estado*. Reinforcement units generally conferred logistical properties to the structure such that they supported political cohesion and rigidity. Examples of reinforcement units are the domains of Tucapel and Arauco, which provided food, supplies, and warriors to the Purén and Lumaco domain to sustain their centralized military and political role (see Chapter 3). This combination of complementary parts provided a lasting demographic flexibility to the four individual domains making up the *Estado*, especially in response to the turbulence and loss resulting from the war.

The Analytical Approach

We cannot assume that the Araucanian lifestyles of the early historic period are adequately documented by archival sources alone. As archaeologists have become more aware of the complex, intermeshing relations between societies of different scales in the past, we can draw on both archival and oral ethnographic heritage (see Dillehay 2007 for oral narratives related to the Mapuche past), using insights from them to provide information on aspects of the *Estado* and the parts comprising it. How the *Estado* was conceived and organized in its various parts and how it was manifested archaeologically are different and linked in complex recursive relationships. This book examines these relationships primarily through the archaeological record in Purén and Lumaco. Purén is repeatedly mentioned in the archives as "*Purén indomito*" (unconquerable Purén) and as the primary center and the major "cohesive" region of political and military resistance (e.g., Lobera 1580/1960; Olaverría 1594/1852; Valdivia 1555/1955; Rosales 1674/1989; Vivar 1558/1979).

Our prior research in Purén and Lumaco carried out a lengthy archaeological, ethnographic, and ethnohistorical study of the historical, social, and environmental conditions of the region. This research focused on five issues: (1) tracing the historical development of mound-building (*kuel*) from its inception and how social complexity initially developed (Latcham 1924) mentions Mapuche *tumuli* or mounds but these are different from the larger *kuel* ceremonial mounds); (2) examining how the leaders of large patrilineages created new and reorganized traditional institutions by tactically recruiting fragmented lineages and incorporating them into their own groups through ceremonial feasting to expand their base of military and political power; (3) elucidating the symbolic and cultural meaning of monuments and ceremonialism and the role of priestly shamans (*machi*) as mediators between the ancestral and living worlds in past and present times; (4) studying how the identity and power of the Araucanians were expanded by incorporating elements of the political institutions of the Inka and other Andean societies; and (5) investigating how the Araucanian polity, patriotism, and territory were combined to resist outsiders.

From an archaeological perspective, the intent of this book is to build on our prior work (Dillehay 1985, 1992, 2007, 2010; Dillehay and Saavedra 2010) by identifying and explaining the material content, patterning, and meaning of the Purén and Lumaco area. The value of working within a tight historical framework, from the middle 1500s to the early 1700s, is that the archival record provides knowledge of the type and level of society under analysis, a construct not left entirely to archaeological inference. That is, instead of asking how we can know whether an archaeological site was the locale of a patrilineage or of public ceremonies, we can ask whether a historically documented locale left a significant and readable archaeological record that can be linked to that historical record or to local oral traditions (Dillehay 2007). Thus, rather than inferring the patterning and meaning of an undefined and unknown archaeological site, we can focus on identifying the material traces of known patrilineages, demographic movements, and political changes. Thus, the specific task is to use the archaeological data to better inform and critique, rather than replace the historical and ethnographic evidence and vice versa (cf., Gosden 2004; Knappet 2005; Silliman 2005). The same holds for use of the written records, that is, to apply them to a more complete and complementary analysis of the archaeological record.

The archaeology chapters of this volume will describe the interdisciplinary data from excavations at 21 sites in the Purén and Lumaco Valley and discuss settlement patterns in terms of the wider development of the *Estado*. Not only is the archaeological record informative in regard to the infrastructural buildup of the *Estado* from local patrilineages to suprapatriarchical organizations, but also it paradoxically reveals a rather simple or minimal material culture which is unusual for a complex polity-level society. Most complex societies in the Andes (and other parts of the world) are associated with impressive material records, usually including monumental architecture, elite burials with well-made tombs and elaborate grave goods, enhanced art styles and symbols, a wide array of wealth and staple items (e.g., jewelry, textiles), and so forth (Moseley 1992). Although the late protohistoric period was characterized by polychrome ceramics (i.e., El Vergel, see Chapter 9), this was not the case for the Araucanian polity of the sixteenth and early seventeenth centuries. The most archaeologically visible traits during this period are the *kuel* mounds, occasionally slipped or incised utilitarian pottery, and symbolic weapons of stone (e.g., polished *toquicura war* axes), and most of these are rendered in simple, unostentatious styles. It is argued here that it was not until the middle seventeenth century when the Araucanians began to raid more European settlements in central Chile and western Argentina, adopted more European goods, and gave more importance to social status gained from warriorhood and raiding that a more aesthetically enhanced archaeological material culture began to appear (at least in the Purén and Lumaco area), especially silver jewelry, polychrome and glazed ceramics, and wearing apparel (see Zavala 2008). Once European traits were incorporated, these and other goods became more elaborate and often converted to indigenous style codes, especially in areas assimilated to Spanish culture.

Based on the current archaeological record, it appears that the *kuel* mound and ceramic industries were more stylistically elaborate and technologically complex in the protohistoric period (see Chapters 7 and 9) when there was competitive feasting and widespread exchange relations among communities. As described in Chapter 7, more simple, unostentacious mounds, raised agricultural fields, and ceramics appear from the late sixteenth century, at the moment of contact with the Spanish, through approximately the late eighteenth century. This change in the late eighteenth century is hypothesized to be related primarily to the marauding and raiding of Spanish settlements in central Chile and western Argentina, which led to prestige becoming associated more with the display of European or European-influenced clothing, jewelry, and other wares. Of course, these hypothesized changes must have varied from region to region and circumstance to circumstance.

A word of caution is in order. The material simplicity of the Araucanian polity is deceiving in two ways. It does not necessarily reflect a technological or organizational incapacity to produce more elaborate commodities. Rather, I believe that the majority of the indigenous population's labor expenditure and material production (e.g., food, weapons, new settlements, defensive networks) during the study period supported the war effort against the Spanish, resulting in limited leisure time for making more elaborate nonutilitarian, status goods. Nor does simplicity imply that social status and prestige were not symbolically charged among the Araucanians. Prestige became most associated with wartime feats of bravery for men and with fertility, logistical support, and food production for women rather than with elaborate material possessions. Leiva (1977) has stressed the importance of warriorhood, bravery, and chivalry among men of the war period. As Bengoa (2003, p. 386) has stressed, women were the "*cruz roja*" (red cross) or the *refuerzos* (reenforcements) of the men engaged in battle. They provided logistical support and took care of the dead and wounded. Furthermore, despite its general unelaborateness during the Arauco War, the material culture left a deep impact on several cultural traits of future generations. For instance, in religion, earthen mounds and ceremonial fields became common features of worship activities in the Purén and Lumaco Valley and other places.

Also, the social persona of *toqui* warrior leaders, with *toquicura* as a manifestation of male warrior prowess, continued up to the early twentieth century.

The unostentacious material record of the polity prompts us to ask how and why certain meanings of social practice and social order were reflected in minimal or simple object signs (e.g., Pruecel 2010). How was this record mediated by wartime conditions and, in turn, how did it condition the social relations of conflict? How were particular types of interaction and information constituted by specific sets of material conditions produced by the strategies and ideologies of particular groups, such as the *indios enemigos* and *indios amigos*. Also important is how these conditions, as inferred in the archaeological record, agree or disagree with the nonmaterial and material agency of patrilineality and patriarchy expressed in the historical texts of the period under study, and how these two agencies, as inferred from the archaeological and historical records, contribute to a fuller understanding of the past. By attempting to answer these questions and by studying the archaeological expressions of these conditions, we stand to gain a better understanding of the emergence of increased political complexity in the study region. This emergence was a process of fundamental importance not just for Latin American history, archaeology, and political science, but for other areas of human study.

Setting the Historical Scene

It is important to specifically ascertain the political events of the time period under study to better understand the developments described above. Before ca. AD 1550, the Araucanian population was made up of small- to intermediate-level "*cacicazgos*" or chiefdoms engaged in sporadic conflict and long-distance trade relations with groups in central Chile and western Argentina (Dillehay 1976, 1990a, b; Aldunate 1989; Mandrini 1985; Trentini et al. 2010). In the 1550s, the Spanish under Pedro de Valdivia invaded the Araucanians living south of the Bio-Bio River and along the Pacific coast (Figs. 1.1 and 1.2). By 1560, Spanish contact with frontier Araucanians had altered their everyday life, with some groups fragmented by war, others forming alliances with or against the Spanish, and others uncommitted or moving to safer territory. These changes were not taking place everywhere because the Spanish initially came into contact with only a few groups, primarily those living within 50 km of the Bio Bio River and a few places along the coast. Yet, the repercussions of conflict eventually extended throughout a wider territory as leaders, such as those of Purén and Lumaco, united vast areas and recruited warriors from distant lands as local populations were increasingly fragmented and reaggregated (Rosales 1674/1989; Bengoa 2003; Dillehay 2007). Observing in the mid-1600s, Rosales describes the political prowess of one war leader from Purén, Anganamon.

> Until Anganamón went to Imperial, Valdivia, and Osorno [about 400 km farther south] and the other rebellious areas to unite all the Indians in one purpose as a person who held so much power and authority in all the land…. (Rosales 1674/1989, p. 906).

Changes in the countryside during the war era forced many Araucanians to think and act beyond their own local patrilineal kinship network of marriage and ceremonial networks. As noted earlier, the changing population and political conditions exacerbated social cleavages and altered the demographic dynamics in many communities. These conditions also spurred the rapid appearance of new agencies of change such as a stratum of war leaders (*quen-toqui*), a stratum of warriors (*cona*), larger and more frequent public ceremonies (i.e., *coyantuns, nguillatuns, cahuins*), now organized to bring about greater political solidarity, and widespread conscription in a new and growing ethnic consciousness and identity within the society at large (Boccara 1999, 2000; Leiva 1977, 1987; Bengoa 2003; Zavala 2000, 2008; Goicovich 2003). Wartime *mobilization* and the conflict's desunaction also transformed political discourse and how local populations came to understand their specific roles in the wider struggle. The result was the mobilization—militarization—of labor and resources, initially in the *Estado* region, where the Spanish were most active, through the intensification of leaders who organized and recruited populations to the war effort, either for fighting the Spanish, for farming (and herding) for food production, or for logistical tasks (Zapater 1973; Bengoa 2003; Goicovich 2004). Due to incremental demographic and social changes, a complex web of political and social networks constructed and reconstructed social identities and shifting loyalties either with or against the Spanish. Based on these unstable conditions, it is believed that one of the primary reasons the Araucanians never reached an interregional centralized state was because they could never internally consolidate authority due to the unpredictable geopolitics of shifting alliances and loyalties of some communities and their constant coalescing and fracturing (cf., Padden 1973; Zavala and Dillehay 2010; Dillehay and Zavala 2013; Dillehay 2007; Jones 1999). The historian Padden has summarized aspects of this condition.

> The existence of a skilled and effective military force bespeaks the presence of a comparable political organization under whose genius it is formed and directed. In the development of Araucanian political organization the chronicles indicate two major forces at work: the geographical particularism in which the Araucanians traditionally lived and a counterforce provoked by the presence of the enemy and inclining towards Araucanian unity. Throughout the first century of conquest, ancient localism clashed with incipient nationalism. This conflict produced a political ambivalence that in itself contributed heavily to the cause of Araucanian independence. Centralization of politico-military authority was achieved to a point where successful resistance was possible, but did not develop to a state where the Spaniards could defeat and usurp it (Padden 1993, p. 85).

In citing Padden further, he notes that:

> The center of anti-Spanish unity was founded in what the Spanish termed "*el estado.*" [At first] this was a geographic expression signifying the area that Valdivia held in personal *encomienda*. It was these Indians, particularly those of Arauco, Tucapel, and Purén, who planned and carried out the revolt of 1553, and who assumed leadership of the resistance movement. After the first few years of bitter warfare the Spaniards began to imbue the term "*estado*" with political connotations, hence Don Alonso de Ercilla's image of "*el estado indomito*" [the unconquerable state] was much more than a flight of poetic fancy (Padden 1993, p. 85).

(*Ordo* is the basic concept used in the Middle Ages to designate a self-contained social group with a well-defined sociopolitical role. An *ordo* was also known as an estate or *estado*; in medieval Spanish the term *estado* was more frequently used than *ordo* or *orden* to denote this role).

> By 1594, according to Olaverria, the *estado* claimed suzerainty over all of the *allareguas* from the Bio-Bio to the Imperial River, and was held in dread by all of the Indians as far south as Osorno [c.a. 400 km south]. The *estado* was so feared and respected, he said, that Indians in the extreme south would break the peace when the chiefs of the *estado* so desired…. Nevertheless, the chiefs never succeeded in gaining effective suzerainty, even for purposes of war. Authority continued to be local, rather than central, and cooperation was most often found in the realm of diplomacy (Padden 1993, p. 78).

It was initially Purén that attained enough political power and centralization to form a more cohesive organization to resist the Spanish. Purén's power and authority were manifested almost exclusively in its military prowess, large number of warriors, ceremonial centers, fortresses in and around a large *cienega* or wetland, and extensive domestic sites, but not so much in its subsistence strategies and control of local material production, as was the case for Tucapel and, to a lesser extent, Arauco and other reenforcement domains of the polity (see Chapter 3). In 1594, the Spaniard Olaverria revealed the specialized roles of the four domains and noted the Spanish commitment to destroy the crops of Tucapel and Arauco for giving sustenance and support to Purén warriors.

> …. the [populations of] Arauco and Tucapel are fundamental to this war…they feed those in the Nevada cordillera and beyond [Purén]….another two hundred [Spanish soldiers were assigned] to assist in cutting off those populations supplying food to Purén…. (Olaverria 1594/1852, p. 33, translated by author).

In 1598, García also noted the complementary relationships between the different parts of the *Estado,* their acts of resistance, and the specialization of Tucapel in food production and Purén in military defense: "…it was well known that [those of Tucapel] gave aid to those of Purén and that the latter had their fields cultivated in … Tucapel" (Martín García de Loyola 1598, ANCh, MVM, vol, 273, f. 67, translated by author; cf., Alonso de Sotomayor 1602).

The four domains of Purén, Tucapel, Mareguano-Catiray, and Arauco quickly became the major frontier zone. The impact of war eventually created the expansive confederated polity that demanded popular mobilization from all warring communities, as they became increasingly aware of their inclusion in the wider defense project. By the terminal 1500s and early 1600s, total mobilization was part of the nexus of a long-term, pan-Araucanian development across south-central Chile and into the neighboring area of central Argentina, teleoscopically expanding the boundaries of traditional governmentality at the individual patrilineal level to the confederated suprapatrilineal, proto-state formation of the *Estado*. That is, the widening ceremonial and military practices of the war extended the traditional domain of patrilineal leaders into the homes and even the souls of all Araucanians, eventually forming a more nonlocalized, multilineage political organization within the *Estado*—the *ayllaregua*, a territorial unit estimated by Gay (1846, p. 334) to be about 112 square leagues (ca. 2200 km^2) in size and comprised of 24 patrilineal *lof* units. Writing in the late 1500s, Olaverria described the character and motive of the *ayllaregua*:

> All of the land referred to as the *estado* and the Indians in it are divided into five *allareguas*, which is a *unified* group of nine lineages or *levos* whose people are by nature and by their continued armed conduct are so arrogant, fierce and restless and so inclined toward War that they knowingly see it as their element and that they want it and crave it (Olaverría 1594/1852, p. 20).

The war clearly threatened traditional Araucanian society where local custom dominated and the local patrilineage-based community had hegemony over its members. The transition from individual households and patrilineal communities to a more teleoscopic geographically encompassing, multilineal *ayllaregua* system was significant in drawing local populations deeper into the war machine and into the political organization of the *Estado*. These changes also produced new expectations, rights, and duties for the members of communities. The Chilean historian Bengoa describes these changes and the increased military role of populations in the Purén and Lumaco Valley, who, as described above, were supported logistically and economically by neighboring populations of stable agriculturalists perhaps less directly involved in the war.

> Just as there were patrols of conquerors [Spanish] that were ravaging the territory, there began to be groups of Indians that dedicated all their energy to fighting, ambushing, attacking and doing damage to the enemy. It would appear that the first and most important group which gave rise to this new "army of the frontier" was that of Purén, whose [*ayllaregua*] members were known as *Puréninos* and whose fame as warriors is manifested throughout history. They were the ones who discovered the camp of the governor Onez de Loyola, attacked it and killed him. He was the second governor of Chile who fell in Araucania. The general uprising followed and the Spanish were expelled north of the Bio Bio for almost two and a half centuries (Bengoa 2003, p. 309).
>
> In sum, we see an indigenous society spread out along a frontier, defended by groups [such as the *Puréninos*] that are permanently at arms and an interior zone that had managed to return [after the wars in the late 1500s] to a flourishing and relatively tranquil way of life and which supported them. Further, it seems, the armed groups were responsible for different parts of the frontier…. (Bengoa 2003, p. 423).

In the early 1600s, a geographically larger, more specialized yet still noncentralized political organization was formed above the *ayllaregua*. This was the *butanmapu*, which was made up of four large territories collectively referred to as meli-*butanmapu* (Rosales 1674/1989; Silva and Téllez 2001), each comprised of numerous semiautonomous *ayllaregua* (supra-*lof* patrilineages or *regua*) that defended different and more expanded sectors of the territory. Each *butanmapu* covered c.a. 4,500 km^2 and was politically centralized and ruled by a *guen-toqui* leader with a hierarchy of lesser rulers (cf. Boccara 1999; Dillehay 2007; León 1991; Medina 1978). As the historians Padden and Boccara describe:

> With the turn of the [sixteenth] century a more precise political and military division was created by the Araucanians. The region between the Bio-Bio and Tolten rivers was divided into three longitudinal strips called *butanmapos*, each made up of various *allirewes* [*ayllareguas*]: they were the sub-Andean range, the central valley, and the coastal strip. Each *butanmapo* had clearly defined limits and jurisdictions: each had, at least in time of war, a principal chief, or *toque* [with a hierarchy of lesser chiefs representing outlying areas]. It

> was customary for the chiefs to debate plans for war in a parliamentary *junta* in which the three territories were represented. Strategy was agreed upon by common consent….The relationship between the local chiefs and territorial *toques* [*toqui*] is not clear, but it seems likely that military power was held both to qualify and to assure authority. When disagreement occurred between *toques*, war between territories could and did sometimes develop (Padden 1993, p. 79).
>
> Thus, war also can be seen as an institution that structured the relationships between the different social units of the *ayllarehue*. The struggle for the capture of trophies of war… set in motion a true dynamic of gift/counter-gift between the diverse *rehue* of a single *ayllarehue*. A *lebo* or *lof* that had captured an enemy sent him, dead or alive, to another *lebo* in order to obligate them to return the gift. For this reason, the *lebo* which had received a war trophy was obliged to enter the war dynamic to capture an enemy, decapitate him and send the head to the donor *lebo*, thus closing the cycle of debt, at least temporarily (Boccara 2000, p. 457).
>
> We see here that the formation of this new macroregional sociopolitical entity [*futumapu or butanmapu*] was accompanied by the upswelling of a new sentiment of identity which transcended the simple local group formerly constituted by the *rehue*… we offer an example of how colonial institution or colonial power structure (the general assembly [or *parlamento*] could influence both political practice and indigenous awareness…. At a purely formal level, holding regular assembly [*parlamento*] required each group to elect individuals to represent it outside the community. Moreover, each *futamapu* had to elect only one representative, which contributed still further to the concentration of political power and to the dynamic of the delegation of power. The assemblies [*parlamentos*] became a political meeting obligatory for all the caciques of Araucania… the different groups which participated in the general assembly [*parlamento*] were classified and distributed in space in a rigid fashion, thus creating among the Mapuche a vision of their sociopolitical space. Each *futamapu* was assigned its own place and the groups [parcialidades or *ayllaregua*] called unaffiliated were necessarily integrated into this new representation and organization of space. Each one of the indigenous representatives had to find his place and remain within it. The elaboration of a political space ordered by clearly delimited districts was concomitant with the inculcation of cognitive structures and the diffusion of a legal-political norm without which all harmony between the objective order of things and the subjective order of consciousness would have been impossible (Boccara 1999, p. 458–460).

It is clear from archival materials synthesized above that during the early historic period, Araucanian society became hierarchically structured with several status positions, the two highest of which were primarily hereditary and reserved for members of dynastic patrilineages. The *guen-toqui* were the recognized leaders of the warring confederacy against the Spanish. They performed no labor, and their households were supported with tribute collected from members of the reenforcement *lof* communities under their control. Each community was governed by a *lonko*, or chief. *Lonkos* coordinated communal work efforts, acted as judges in disputes between individuals or kin groups, and had some authority in the conduct of war. Also important were *hechiceros* (sorcerers according to the Spanish), *conas* (warriors), and *ulmen* (political and economic leasders) who held more specialized religious, military, and economic roles, respectively.

Collectively, the *lof*, *regua*, *ayllaregua,* and *butanmapu* units reflect emerging locally centralized yet supraregionally uncentralized divisions in the wider political organization of the Araucanian territory. In the late seventeenth century, the Araucanians widened their territory by expanding into Argentina (e.g., León 1991; Jones 1999; Mandrini and Ortelli 2002; Trentini et al. 2010; Villalobos et al.

1982). Although the Araucanians generally identified themselves as a single political, cultural, and ethnic collective within their anticolonial experience, it must be kept in mind that there were constant disagreements within and across communities as to how to confront the Spanish and there was always a minority of communities allied with the Spanish. Nonetheless, the commitment of a large majority of the population to fight the Spanish still created a unified ethnic consciousness (Boccara 1998, 1999).

Lastly, it needs to be noted that the *Estado* was not the only region within the Araucania that resisted the Spanish and began to form a more complex resilient society during the sixteenth and seventeenth centuries, but at the outset, it was the most politically organized and successful (see Chapter 2). Other important regions were Villarrica, Imperial, and Valdivia, for instance. The primacy of the *Estado* over these and other regions engaged with the Spanish was largely due to its domains having had important advantages over others (Dillehay 2003, 2007; Dillehay and Zavala 2013). These included: (1) a frontier position that first encountered the Spanish; (2) a denser and more varied concentration of exploitable subsistence resources and human populations (see Chapter 3); (3) a higher and more advanced protohistoric political system, as evidenced in the Purén and Lumaco Valley; (4) perhaps a more efficient and effective public ceremonial system that solidified local populations; and (5) the cohesive, allied nature of the four domains within the *Estado*. The synergy created by these conditions and the collective action of the *Estado* spurred the creation of higher levels of social and economic differentiation, promoted unprecedented population agglomerations at key geographic nodes, and created new and ever-expanding forms of social organization and technologies of political cohesion that until then had not existed. These five advantage points help us to understand why the ecological, geographical, and above all, organizational framework of the *Estado* had radical political consequences that promoted a mosaic of individually specialized yet complementary institutions and domains. This complementary specialization, in turn, promoted exchange economies and socially induced both cooperation and competition between the four domains (and beyond) and ultimately drove an increase in political, economic, and organizational complexity of the major institutions contributing to the formation of the *Estado*. How the *Estado* polity was imagined, improvised, integrated, and built, and how its formation and composition are represented archaeologically are the primary interests here (Dillehay 1985, 1995, 2007).

Unity and Disunity

As described earlier, through the course of the war, more geographically peripheral populations eventually played a greater role in the resistance movement as male members of northerly and centrally located groups were killed in battle, forcing communities to recruit new areas and warriors as far as 400 km in distance (Rosales 1674/1989, p. 906). The recruitment and movement of people and their coresidency with others was a frequent response to demographic decline among the Araucanians (Bengoa 2003, p. 73). Besides recruitment, other pressures such as conflict and security made it advantageous for some groups to move nearer to larger, more protected areas. There also were communities that did not move and either became friendly with the Spanish or constantly shifted their alliances between the Spanish and the warring Araucanians (Villalobos 1995; Villalobos et al. 1992; Zavala 2008, 2012; Dillehay and Zavala 2013). Moreover, fractures that had once divided some communities along generational and economic lines prior to the Spanish arrival often grew under the war's pressures, influencing some to join the Spanish cause just to oppose old enemies.

Due to these incremental demographic and social changes, the balance between the rights and duties of community members and the boundaries and the very definition of kinship and membership in the patrilineally-based *lofs*, *reguas*, *ayllareguas*, and *butanmapus* must have changed constantly and have been contested throughout the era of the Arauco War (Góngora Marmolejo 1575/1990; Mariño de Lobera 1580/1960; Olaverría 1594/1852; Valdivia 1555/1955; Vivar 1558/1979). At several points, individuals and families probably had to reinvent themselves and to express publicly who they were and how they fitted their persona into given categories of loyalty to a particular *guen-toqui* leader or to the wider Araucanian cause or to the Spanish. As noted earlier, a complex web of political and social networks thus constructed and reconstructed social identities, kin and nonkin relations, and shifting loyalties (see Zavala 2000, 2008). How people placed themselves in a social category (e.g., kin, fictive kin, *kuga*; see Chapter 2) and how other people constructed and placed them in this category, not only created the experience of political change but also molded the social composition of the *Estado* and political discourse while also acting to prevent a more centralized political formation. Based on these unstable conditions, a primary reason the Araucanians never reached a centralized state society was because they could never internally consolidate authority due to the unpredictable geopolitics of shifting alliances and loyalties and of the constant social coalescing and fracturing of communities. Padden has summarized aspects of this condition.

> By 1594, according to Olavarria [Olaverria], the *estado* claimed suzerainty over all of the *allareguas* from the Bio-Bio to the Imperial River, and was held in dread by all of the Indians as far south as Osorno. The *estado* was so feared and respected…that Indians in the extreme south would break the peace [with the Spanish] when the chiefs of the *estado* so desired…. Nevertheless, the chiefs never succeeded in gaining effective suzerainty, even for purposes of war. Authority continued to be local, rather than central, and cooperation was most often found in the realm of diplomacy (Padden 1993, p. 78).

Regardless of these conditions, the Araucanians still united sufficiently to deter and eventually defeat the Spanish Crown. Not discussed by Padden is an important governing principle of Araucanian political unity. This was the obligation and reciprocity established between lineages and their leaders. Obligation and reciprocity were embodied and solidified through patrilocal kinship networks stretched across multiple communities and through public ceremony, which honored ancestors, praised war leaders, and further united people. Perhaps most important was the development of a patriarchal continuum of political obligation between local leaders and followers from the domestic patrilineal *lof* and *regua* levels (traditional localism) to the larger, more public *ayllaregua* and *butanmapu* levels (incipient ethnic patriotism). The teleoscopic thread running from one level to the other was the patriarchical structure of Araucanian society, which eventually not only concerned itself with political, territorial, and military tactics but social and economic ones as well, particularly as the scale and intensity of the war increased. I strongly suspect that much of the organizational structure described here, particularly the teleoscopic extension of grass-roots kinship units into higher geo-political entities, typifies many past Andean polities and states, if not non-Andean ones as well.

To conclude, I do not wish to lose sight of the primary concern of this book, which is the political action of differing patrilineal communities and a recognition of the active role played by a patriarchical material culture in structuring and in being structured by increased political, religious, and economic relations across the *Estado,* particularly in the Purén and Lumaco Valley. Far from operating in abstraction or disconnection from the historical record, the archaeological record of the valley documents both the domestic and public aspects of these relationships and explores different dimensions of the geopolitical landscape of this period.

Organization of the Book

This book is organized in 3 parts with 16 chapters. The first part addresses the broader research issues related to the development of the Araucanian polity and the combined use of archaeological and historical records. Chapter 1 lays out the specific goals of the volume, as well as the historical background for the early historic period and the analytical approach taken. This chapter also reviews the state of research, including a background section on the political setting of the period, outlining the contours of the research, and providing the scholarly context for the data chapters that follow. Chapter 2 describes the theoretical approach taken in the book and defines the data and concepts related to the social, religious, and political organization of the *Estado*. This chapter also provides a review of the most salient literature in history, archaeology, and geography on the topic of polity and state development, including the teleoscopic and composite nature of the state, and its hypothesized development in the Araucanian region during the sixteenth and seventeenth centuries. Chapter 3, written by the Chilean ethnohistorian José Manuel Zavala, summarizes the primary archival record on the valley and describes the political organization defined in it. This sets the baseline for the study of the archaeological record. Chapters 4 and 5 synthesize the archaeological methodology and discuss the primary data for domestic, ceremonial mounds, and fortified sites with respect to the expected material correlates of certain political and social behaviors. The second part focuses on the archival and material culture records of the Araucanian polity in the Purén and Lumaco Valley. Part 2 includes Chapters 6–10.

Chapter 6 presents the paleoecological data of the valley over the past several millennia. Chapters 7–10 focus on the artifactual data from the archaeological excavations, the recovered artifacts, and settlement patterns. Each of these chapters identifies and analyzes the collective actions of communities as archaeological sites and explores the construction and use of material culture in the formation of individual communities to public domains. Part 3 presents the social and political dynamics of the development of the Araucanian polity. Chapter 11 offers an evaluation of the broader meaning of the composite and teleoscopic organization of the polity and, from an archaeological perspective, of its transformative changes over a period of 150 years or so. Five appendices (Chapters 12–16) are included, presenting data on the radiocarbon and TL dates, ancient corn, wood charcoal, phytoliths, and the content and structure of the mound sediments. These data are discussed in the archaeology chapters.

The objective of the present volume is to make a positive, forward-looking statement about the resilience and historical significance of the Araucanian polity and the contemporary Mapuche people. The reader is advised to adopt the philosophical position throughout this book, which primarily stresses the achievements of these people over the past several centuries, rather than focusing on the unostentatious cultural material record of the rather short time period of the sixteenth and seventeenth centuries under study here. Prior to and after this period, the Araucanians of the past and the Mapuche of the present have produced highly elaborate and fine material culture in the form of textiles, jewelry, and other goods, so there is no need to make an apologetic statement here regarding the absence of the kinds of highly elaborate tombs and ritual architecture seen in Andean regions farther to the north.

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Chapter 2
The *Estado* as a Proto-State Polity

Tom D. Dillehay

Scholarly Considerations of Polity/State Formation

Several scholars have recently emphasized the social and strategic importance of ancient states or polities as foci for the emergence and growth of bureaucratic institutions, intra- and interregional interaction, as frameworks for the expansion of long-distance exchange, large-scale public ceremony, corporate labor projects, craft production and so forth, and as filters for the dissemination of new consumptive values and codes of conduct (e.g., Flannery and Marcus 2012; Feinman and Marcus 1998; Liu 2003; Spencer 2010; Wright and Jonson 1975; Yoffee 2005). Other discussions have traced the inception of state development by examining the appropriation of material resources by local elites (e.g., Blanton and Fargher 2008; Feinman and Marcus 1998; Grinin et al. 2004; Liu and Chen 2003; Stanish 2003). And others have studied how large-scale political and economic transformations had their roots in alterations of the social and physical landscapes (e.g., Carnerio 1970; Millaire 2010; Kolata 2004). A multitude of different empirical and conceptual approaches have enhanced understanding of the transition from advanced "chiefly" polities to early states (Feinman and Marcus 1998; Spencer 1987, 2010), and for new exploratory approaches to the rise and meaning of ancient states. There also has been debate regarding the scale of ancient states and the nature of the political relationships through which they were developed and maintained. Some scholars have studied the diversity in political organization rather than focusing on a singular structure (e.g., Blanton et al. 1996; Migdal 2001; Murray 2011; Kolata 2013).

While these foci have produced important results, two key problems persist (e.g., Yoffee 2005): (1) a reliance on societal typologies that can inhibit investigation of political dynamism, especially the practices, institutions, and symbols through which states were formed, maintained, and transformed; and (2) inadequate consideration of factors that limited societal integration, especially how intrasocietal and intersocietal conflicts both shaped and undermined state formation. Functionalist

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and systems-oriented approaches have long dominated the processualist literature and served as the default approach to studies of state formation (Fried 1986; Spencer 2010; Wright 1998: Yoffee 2005). This approach entailed the emergence of the state as an integrative "solution" to problems (e.g., in response to scalar stress, invasion by outsiders, management of information, material, labor, etc.) rather than as an emergent property of domination, hegemony, or other processes of power (Gramsci 1971; Scott 1998, 2001; Kolata 2013).

Ancient states generally have been associated with an image of power as a "thing"—one that was concentrated in the beginnings of a differentiated administrative apparatus and the top echelons of the ruling regime, from which it spread outward across distant lands, and downward into the lives of people (c.f., Spencer 2010; Wright 1998). This perception has examined how power and authority were initially allocated, relegated, shared, delegated, and worked to constitute distinctive, yet complementary administrative spaces and how, conversely, the arrangement of autonomous peoples was organizationally integrated into the state apparatus to generate effective power. That is, the idea of state formation was perceived as the effect of coordinating the multiple practices of intergroup or collective action, organizing different administrative levels and populations, marking and policing boundaries, dividing territories, role-sharing, collecting tribute, organizing large-scale projects, and so forth (cf., Millaire 2010; Moseley 1992; Scott and Bhatt 2001; Spencer 2010). Scholarly attention to these practices has kept the research focused on "how" questions: How different spaces were constituted as authoritative and powerful, how different agents were assembled and identified with specific roles and powers, how different yet complementary domains were constituted as administrable, and how these different entities operated together. Although these foci have been important venues of research, they have not always answered questions of why different polities and peoples failed or succeeded in working together, why certain practices and roles positioned certain territories or peoples as subjects with variable capacities for collective action and outcomes during different stages of polity formation, and why some polities were noncentralized and others centralized. Whether early or late in time, the process of incipient state formation seems to have been elucidated through both long- and short-term patterns of continuity, interaction, and integration and through the material practices through which agency, identity, and leadership and subject roles were constituted (Kenoyer 2008; Liu 2003; Rothman 2001; Scott and Bhatt 2001). Of particular interest for the Araucanian case is how and why specific new territories were incorporated and organizationally integrated by higher forms of authority to solve a collective problem, that was, how to keep the Spanish out of their homeland.

Thinking more specifically in terms of integration and organization, some recent research has viewed pre-state "chiefdoms" (or intermediate-level societies) supporting and organizing themselves through the mobilization of surplus resources within their territory and the management of a political economy (e.g., Kirch 1984; Feinman and Nicholas 2004; cf., Feinman and Marcus 1998), one without specialized administrative duties (i.e., Wright 1977; Herzfeld 1992). In less complex proto-state societies, such as the Araucanians, major political and economic roles were allocated on an ascriptive basis and the division of labor was usually noncentralized, unspecialized, and based on family and patrilineal kin units (Dillehay 1976, 2007). Most early states, on the other hand, were societies with a centralized and internally specialized administrative structure. A centralized authority developed in order to bring relatively autonomous subsystems within the contours of a larger institutionalized administrative system. In this type of arrangement, the central decision-making process was divided into separate functions that were performed by a variety of bureaucratic specialists, usually organized into a hierarchy. Most states thus delegated partial authority to subjects (Spencer 1990), which gave them the potential to intervene into local affairs, finance themselves with a variety of extractive techniques, and to expand their political and economic territory beyond the spatial limits generally associated with chiefdoms (Spencer 2010). From this general perspective, the shift from chiefdom to state societies is partly defined by a shift in administrative principles and regulatory strategies (cf., Scott 1999; Kirch 1984; Yoffee 2005), which includes the delegation of authority to the lower tiers of the administration.

By extension, it is inferred that the success of many ancient states was partly linked to the onset of bureaucratic governance, specialized roles among its composite subsystems, and the relegation of authority to achieve specific tasks (e.g., Topic 2003). Such an administrative system could not form without leaders' and followers' solving a collective-action problem, such as choices made in the emergence of political complexity and threats from outside forces (cf., Lichbach 1996; Cioffi-Revilla and Starr 1995; Starr 1978; Von der Muhll 2003). Among these and other circumstances, increased complexity, stress, and external threats could bring together multiple polities under the same umbrella to unite for or against a particular cause (Renfrew 1986; Yoffee 1995). These different units also could share the same ideological and cultural framework, with symbols that signify their common identity, as was the case among the four domains forming the composite Araucanian *Estado* (Zavala 2000; Rosales [1674] 1989; Bengoa 2003; Dillehay 2007).

In sum, several different perspectives of state development are available in the literature and focus on a multitude of different variables and interpretative scenarios. The primary focus in this study is the Purén domain and its integrative political role within the *Estado*. Set within the scholarly context discussed above and within the available historical and archaeological evidence, the emphasis here is more on the political cohesiveness and obligation, social reciprocity, cultural materiality, and administrative structure of the Purén domain and the Araucanian polity and less on political economy, territorial expansion, land use, and political symbolism.

The Matter of State in the Andes

Explaining early state formation has proven to be a difficult and contentious task for scholars working in the Andes. Until recently, most models of the Andean state formation have generally classified state-level polities as representative of one of two types: centralized or decentralized. Centralized, territorial, or macro-state models describe geographically large, stable, and tightly integrated political units (Trigger 2007; cf., Haas et al. 1987; Moseley 1992; D'Altroy 2003; Isbell and McEwan 1991; Netherley 1993; Kolata 2004). While differing in details, a central tenet of these models is that rulers usurped the responsibilities of subordinated groups, usually through military conquest or coercive hegemonic processes. To manage newly integrated states, rulers developed specialized administrative bureaucracies that represented a qualitative departure from earlier forms of chiefdom-level political organization (Stanish 2004; Topic 2003). In the Andes, the Moche, Wari, Tiwanaku, Chimu, and Inca societies have been cited as examples of centralized states. In contrast, decentralized models, describing peer polities, segmentary states, and city-states, generally propose that early states were territorially small yet politically centralized (cf., Haas 1982; Moseley 1992; Shady 2001). A pseudo-segmentary state model has been applied implicitly in various areas of the Andes (e.g., Moche; Castillo and Uceda 2008). This model generally proposes that rulers were an additional layer in a redundant political and economic hierarchy partitioned yet unified through politically charged ritual practices, kinship, and land-use practices. City-state models emphasize spatial relationships among a network of small urban centers and rural hinterlands linked through a primary city, rather than focusing on a specific expansive form of political organization (see Moseley and Cordy-Collins 1990; Kolata 1999, 2013; Bauer 2004).

Other studies have sought to reconcile traditional models of state formation by theorizing cycling between different forms of political organization (Dillehay and Kolata 2004; Conlee et al. 2004: Janusek 2004). Similarly for Mesoamerica, Marcus' (1998) "dynamic model" asserts that episodes of large-scale political integration and episodes of political disintegration were "different stages in the dynamic cycles of the same state" (Marcus 1998). She argues that political cycles followed a standard pattern such that the earliest states in a region were geographically large, with hinterland areas tightly integrated into a regional bureaucracy and controlled by rulers of a political seat. Although not yet explicitly applied to the Andes, this model is valuable for its recognition of political instability and its diachronic perspective (e.g., Stanish 2001, 2003, 2004).

Another approach is the "dual-processual" model of Blanton and colleagues (Blanton et al. 1996), which includes network and corporate strategies. This model focuses on the means of obtaining and retaining leadership authority rather than on the scale and type of integration. In the network leadership strategy, personal or group access to valued goods and esoteric knowledge from external sources enabled the development of local political authority and economic prominence. Inequality and authority were legitimized through an exclusionary ideology emphasizing kinship ties. States with political authority based on network leadership were often decentralized; they tended to be small scale and unstable because faction leaders constantly competed for adherents. In contrast, corporate leadership strategies focused on the control of local resources and infrastructure while limiting expressions of hierarchy. This leadership emphasized collective affiliation through shared ritual, centralized management of staple food production and distribution, and promulgation of a moral code emphasizing social inclusion. States with political authority based on a corporate strategy were often centralized; they tended to be larger in scale because leaders overcame the factionalism inherent in the network strategy. Aspects of this model have been applied to different areas of the Andes (see Dillehay 2007).

A weakness of these models is that they employ a dichotomizing vocabulary that lends itself more to classification than to analysis of the dynamic practices, institutions, and symbols through which polities were formed, maintained, and transformed. The emphasis on classification often leaves little interpretive space for political agency and behavioral practices that do not fall near one or another of the models' predefined poles. A binary vocabulary also encourages researchers to categorize a particular archaeological case as centralized/corporate or decentralized/network without considering other data that might provide a more nuanced examination of past political, economic, and social organizations. These models also encourage researchers to treat polities as homogeneous historical "moments" rather than dynamic social phenomena that may have changed considerably from inception to collapse (*sensu* Marcus 1998). Even the cycling models focus on changes from one type of political organization to another rather than fully considering transformations in the practices, institutions, and symbols through which polities developed. In addition, there is little consideration of what political behavior might look like in the interstices between centralized/corporate and decentralized/network and how these novel forms might have developed. Furthermore, the ways that various forms of political organization were structured by and how they structured individual and community lifeways are often overlooked, contributing to a lopsided view that emphasizes the centrality of political institutions. This is often done at the expense of examining how social acts, social institutions, and the internal units making up the polity can contribute to the constitution of particular forms of political organization. Although these models have their limitations, they have been useful in forwarding our understanding of Andean states. Nonetheless, we still need to rethink some of the fundamental assumptions about the fate of the different groups forming states and realize that the hybridity and syncretism they produced led to new social landscapes within them. Not yet fully conceived are the kinds of repercussions these new landscapes had for polity integration, centralization, assimilation, and control. These are concerns most relevant to the social and demographic mixing historically described for the different Araucanian groups not only fragmented by turbulence and loss due to the war with the Spanish but also reconstituted with more stable groups to form the *Estado*.

As a south-central Andean society and culture (Dillehay 2007), the Araucanian *Estado* or polity is a good comparative case for several of the issues and models discussed above because it does not fully conform to the expectations of any of them. The nuances of political integration and potential limits to it in the changing Araucanian landscape of the late sixteenth to early seventeenth centuries are evident from Spanish written records concerning large-scale public events, where local and regional affiliations were constantly developed and changed (see Chapter 3). Evidence pertaining to ways in which common folk in hinterland communities acted semi-independently of, or in opposition to, local and nonlocal political leaders also are documented (Bengoa 2003; Dillehay 2007; Zavala 2008). The regional diversity recorded in community structures, ceremonial actions, social valuables, commensal feasting, and long-distance contacts (Zavala and Dillehay 2010; Dillehay and Zavala 2013) suggests both strong and weak integration and a degree of independence by some populations, as noted earlier for the shifting alliances of *indios amigos* and *indios enemigos*. In contrast, there also was emulation of certain architectural mound styles and public ceremonial sites in some areas, which suggests social or ritual identities with leading politico-religious nodes (cf., Janusek 2008), particularly those in the Purén and Lumaco Valley (Dillehay 2007). Practices such as the construction of *rehuekuel* ceremonial spaces, and the rituals carried out in these spaces, created shared experiences uniting large groups of diverse populations with each other and with the leaders and/or sponsors of these actions. These ritual and other public acts were inclusionary, generating notions that particular individual war leaders and patrilineages were exceptional, powerful, legitimate, and authoritative, further demarcating the unique status and identity of areas like the four domains of the *Estado*, while also heightening social hierarchies and producing a variety of social and demographic repercussions and archaeological material expressions.

Political Authority and Legitimacy

A commonality among models of ancient states is that political authority is the tool through which rulers led; it can be defined as "the power to direct others, and the recognition of the legitimacy of these commands" (Smith 2003, p. 108). Legitimacy is the ability of a group (usually elites) to synchronize its interests with the interests of the common people in order to persuade subjects to follow them (e.g., Smith 2003, p. 108; Goldstone and Haldon 2009). That is, both commoners and elites are able to exact power in varying degrees in order to influence how society and politics were created and changed. In these definitions, anyone can have agency within the political sphere. These points are important to the Araucanian case because they focus on the political agency of both nonelites and elites and consider the changing strategies designed by a society at large to achieve its political goals.

Political authority for Araucanian leaders rested, in a large part, on patrilineal dynasties that had varying control over the political, economic, ideological, and social dimensions of their different *lof* and *regua* communities (Bengoa 2003; Dillehay 1992a, b, c; Faron 1962; Zavala 2008). The degree of political centralization of these communities is the problematic part. As discussed in Chapter 1, political organization of the *Estado* was comprised of locally centralized patrilineages that were constantly changing their organization in order to maintain authority. These fluctuations sometimes involved the banding together of different communities (either through coercion or cooperation) to create higher levels of regional organization that had specific geopolitical nodes such as the *ayllaregua* of Purén, Tucapel, Angol, and Arauco or the interregional organization of the *butanmapu* (Zavala 2008; Zavala and Dillehay 2010). These nodes served as the catalysts of the increasingly expanded political administration that had its roots and authority in the leadership structure of local patrilineages and in the administrative organization of large-scale public religious ceremonies (e.g., *coyantuns*, *cahuins*, *borracheras*, and *nguillatuns*).

To take this connection between ceremony and political administration a step further, in his study of the "symbolic roots of western bureaucracy," the anthropologist Herzfeld suggests that the development from ritual to secular administration of control was a trait of both ancient and modern societies. His idea is that both public ritual and administrative control were founded on a set of shared beliefs, identities, and ideals between leaders and followers that solidified their social arrangements, molded political change into their daily routines and enduring institutions, and created impersonal roles and functions between them. He argued that all forms of administrative behavior are directly analogous to people's shared identity with participation in collective ritual:

> Both [ritual and administration] are founded on the principle of identity: the elect as an exclusive community, whose members' individual sins cannot undermine the ultimate perfection of the ideal they all share. Both posit a direct identification between the community of believers and the unity of that ideal…We may view the continual reaffirmation of transcendent identity as an effect of some bureaucratic labour. The labour itself is highly ritualistic: forms, symbols, texts, sanctions, obeisance…. (Herzfeld 1992, pp. 20, 47).

We can apply elements of this observation by exploring how particular patriarchical administrative procedures of the Araucanians arose through the extension of traditional ritual control over public ceremony to administering the war, recruiting new alliances at public events, organizing community labor and increased food surplus, and sustaining the linkage between powerful ancestors in the world of the living who legitimized the beliefs and practices of their descendents. In the long run, the administrative side of Araucanian polity formation was the translation of ritual authority at local gatherings into durable forms of institutional, political, and economic power. This eventually centered upon the establishment of dominance over increasingly larger scales of intercommunity labor and participation in larger gatherings, both of which were focused on defense of the ethnic territory (see Zavala 2008; Dillehay 2007).

Organizing a more aggregated and purposive labor effort among communities for public projects was a major enterprise of the new administration. Many of the technologies upon which new modes of warfare and organizational structures of agrarian production were based—such as defensive networks, intensive irrigation agriculture, and the expanded construction of raised agricultural fields in wetlands—imposed a new and more complex division of labor upon the workforce (Dillehay 2010). Prior to the arrival of the Spanish, it was probable that most public labor projects related to the preparation and administration of public ceremonies (Rosales [1674] 1989; Dillehay 2007). This experience provided the institutional foundation for administering even larger projects such as the collective action of warfare, mass food production, and the infrastructure of this production system (i.e., canals, raised agricultural fields, road networks). These circumstances must have created an unprecedented social and cognitive distance between the production of utilitarian commodities (e.g., pottery, clothing, and ordinary household tools) and their deployment in wider and more diverse interactions among nonlocal leaders of the *regua* and *ayllaregua* and different groups of commonfolk labor forces. As developed in later chapters, it seems that this distance also likely created the need for more standardization and simplicity of utilitarian goods in order to accommodate more rapid and widespread socioeconomic integration among different leaders and commoners. In this regard, like any state or polity, the Araucanian society was becoming more internally differentiated and hierarchically organized, the integrity of which was identified, celebrated, and reinforced in larger public rituals, more labor projects, and commensal politics. It was within this growing complexity that I believe many forms of administration, including the enhancement, if not creation, of ritual specialists (i.e., shamans, priests, ceremonial stewards), evolved for more intergroup cohesiveness and public gatherings. These events required more labor and preparation of food and drink than before, because they lasted for several days and were attended by larger numbers of people, especially warriors who would display the items they had taken from Spaniards killed and recount tales of success in battle. (It was during these occasions that warriors gained great prestige among their peers and the population at large (Leiva 1977; Alvarado 1996).) The size of some of these ceremonies and their social implications are revealed by quotes from two chroniclers, Quiroga and Rosales, both writing in the 1600s:

> They celebrate in designated places, pleasant and cool…because some lineages invite others and seven or eight thousand souls come together (Quiroga [1690] 1979, p. 22).
> And the head *toquis* or the highest-ranking caciques ordinarily summon everyone in the land to these feasts. And during some of these they have, in addition to their dances, their entertainments in which they represent different figure and in others men and women exchange clothing. They also hold other feasts called *Guicha-boqui* in which they set up a tree in the center of the circle of poles with four [ropes] hanging from it adorned with different colored wool yarn which are held so that all the relatives of the one offering the feast may dance who, since he is the lord of the land, calls forth all the nobility who live therein…. And in the top of the tree which is always a cinnamon tree at all the feasts the place the son of the highest-ranking *cacique* or *toqui* who sponsors the feast…and he is adorned with lances and stones as all the nobility tell it…. Referring to the high-ranking personages from their lineage who have died in past years and giving their blessing to the living who are present…. The most solemn feast is the one convoked by the *boquibuyes*, who are the priests of the Devil, may they leave their prison and abandon their habit. For this [feast] they not only summon their relatives to bring them *chicha* and meat but also [they call on] their allies from far away who are not obligated to this service and require from them *sheep of the land* [llama] which are the most greatly esteemed. And although at other drinking feasts, they only kill one or another because of the esteem they have for them. But at this drinking feast they kill all [the animals] the *Cullas,* as they call these friends, and bring them there. And there is a great feast and dance, which lasts ten or twelve days (Rosales [1674] 1989, pp. 141–142).

In summary, public feasting and ceremony in sacred places were extremely important to the war effort because it brought together different groups to reiterate their commitment to the defense of their lands, to continue to link the living and the ancestral dead, and to reenforce and legitimize the power and authority of *toqui* war leaders and their ancestral lineages (Dillehay 2007). The coordinated administration of different communities to engage in and to support the war grew from the deeply rooted experience of identifying with and organizing such events.

Ancestral and Ritual Authority

From the initial stages of development of the Araucanian polity, linkages between the living and the dead had both private and public aspects, involving ritual techniques such as the dedication of ancestor images (Faron 1962; Foerster 1993) as well as the increased construction of functioning and highly visible ceremonial mounds at various points within the landscapes of the ancestral dead (e.g., *kuel, rehuekuel*; Dillehay 1985, 1992a, b, c, 2007). The elaboration of these sacred landscapes represents a structural shift in ritual behavior that accompanied the early polity. Mounds existed prior to the arrival of the Spanish but were smaller, fewer in number, and associated with geographically-limited intermediate-level societies. As discussed in Chapter 7, mound building seems to have increased significantly in the sixteenth century certainly in large part as a response to war and the need for the commensal feasting to establish and maintain alliances, recruit warriors, and gain community support. This change had to have been centered upon the adoption of a more enhanced public system of ritual practices and labor efforts, and, especially from an archaeological perspective, a more widespread and intensified shift from underground to aboveground mound burial of important leaders who became ancestors revered in public ceremony. Aboveground burial would have extended the spiritual and physical needs of the living by bringing important dead, especially *toqui* war leaders, more visibly into the time and space of the living. This expanded system of aboveground burial and display is also considered to be a form of memorial funerary display, based upon the placement of the corpse and its tomb and offerings before the visible ceremonial world of the living (Dillehay 1985). This new practice was to keep the ancestors in the world of the living as recipients of ritual offerings and care from the living (Dillehay 2007). This practice was subsequently extended to all living and ancestral parts of society through public ceremony at mounds and remained a cornerstone of political power down to the present-day time in areas of the Purén and Lumaco Valley. The resulting, open-ended relationship between the living and the dead and the social construction of memorial landscapes of ancestors provided the Araucanians with an enhanced ritually based ideological framework for extracting labor for public projects on an unprecedented scale. Other extractive frameworks were the architectural elements of ritual nodes at the mound complexes (*rehuekuel*), agricultural systems, road networks, and defensive locales, all having become parts of an equally more enhanced administrative system designed to employ warrior labor for fighting and both male and female labor for additional food production (see Bengoa 2003).

To the Araucanians, ancestral rites and burial expressions also were (and still are) important to group perpetuity and intergenerational solidarity (see Faron 1962 on ancestors). Although not well understood, aboveground public funerary rites at *kuel* mounds were probably first formulated in the twelfth to fourteenth centuries, as evidenced by archaeology (Dillehay 2007), when more fluid social relations probably existed between local communities and their territorial neighbors in terms of marriage exchange. A common aim of these strategies must have been to redefine exchange interactions with and, at times, stronger relations between kin and non-kin groups, conceived in cosmological terms and centered upon the persona of the patrilineal leader(s) and upon patrilocality. During the early contact period, the new spaces created by these interactions were increasingly filled by an ideology of the "other" (Boccara 1999, 2000; Zavala 2008), which can be seen taking shape in the display of trophy heads of Spanish captives by warriors and of restricted artifact types, such as ceremonial vessels, textiles and other objects, and in the increased construction of ceremonial nodes in the form of the *rehuekuel* mound complexes. The legitimation of power at these nodes must have progressed in step with a monopoly by some leaders over local and regional recruitment, labor, and exchange, which furnished leaders with techniques of domination ranging from new methods of warfare (eventual use of the horse and metal weapons) to new modes of consumption and meaning, including the display of trophy heads and other foreign objects during public ritual to redefine patterns of warriorhood and to gain social prestige (Leiva 1977; Alvarado 1996).

It was within these newly structured and larger ceremonial settings, which are mentioned repeatedly by all chroniclers (see Chapter 3), that local community labor must have shifted to food surplus and building infrastructure for defense, a condition, which, I submit, led to a decrease in the elaborateness of the material culture for purpose of establishing intergroup familiarity and thus cohesiveness. That is, the material culture of the Araucanians became more homogenized and minimalized stylistically, and certain classes of artifacts (i.e., ceramics, *kuel*, ceremonial fields) and other symbols were decontextualized and recontextualized for the purpose of standardization and familiarity to different communities now participating in more widely dispersed public acts. The standardized ritual *kuel* and ceremonial fields thus provided familiarity and legibility across a wide variety of domestic and public locales which meant easier administrative control. The logic of this framework seems inescapable, but flowing beneath its surface are assumptions about warriorhood, personhood, and kinship and their potential as a wider symbolic framework for the long-term political organization of the polity during the Arauco War. As I have discussed before and as presented by shamans in present-day healing rituals at *kuel* ceremonial fields, *kuel* took the form of culturally constructed and reproduced "kinsmen" capable of transcending both life and death, the boundaries of which were presented as coterminous with those of the habitable world of the living kin (Dillehay 2007). The *kuel*, the spirit body of a deity or an ancestral ruler, provided a material core, a sacred place, from which emanated further mechanisms and structures of control over people, households, land, goods, and the dead.

Simply put, public ceremony came to dominate the society during the war years. Leaders employed its context to recruit followers, labor for public projects, strengthen their power and authority, and threaten those leaders and communities pondering whether to join the Spanish cause. The preparation of these ceremonies and their size were impressive, often requiring weeks or months of planning for thousands of attendees. These events were interwoven with requirements for followers to contribute to leader-sponsored labor projects, which also is the case today (e.g., Stuchlik 1976; Faron 1962). Once again, observing in the 1600s, Quiroga states that:

> They celebrate in designated places…because some lineages invite others and seven or eight thousand souls come together…they hold a great gathering in which they call all the caciques of one and another lineages and when they are in a great multitude.... (Quiroga [1686] 1979, pp. 22–29).

Also in the 1600s, Núñez de Pineda y Bascuñán ([1673] 2003, p. 101: cf., Rosales [1674] 1989) reports that some feasts were attended by as many as 20,000 people.

Ritual and ceremony not only permeated the Araucanian society but also were replicated and linked at different scales from the top to the bottom across the Araucania. Community leaders used the sacred mound complexes and other places (*nguillatun* fields) in a variety of ways and produced spatial ties with the landscape in order to create subjects and obtain political authority and legitimacy (*sensu* Smith 2003, p. 182). They were able to accomplish this in their linking of religion and important ancestors to specific places, in the layout of domestic and defensive sites, and in the construction of *kuel* and *rehuekuel* monuments. Commoners too used landscape and ceremony for their own agendas. During public acts, followers expressed their allegiance to leaders or expressed their resistance through noncooperation. They also gave the landscape meaning through acts such as the labor they put into the construction of these monuments, which reaffirmed their ties to others and to the ancestors, strengthened their beliefs and created their own meanings, identities, memories, and political statements. Power, legitimacy, and authority, in this sense, were the leader's ability to engage others—people and not so much material resources—in various actions and to tactically control the settings within which social relations were negotiated. In this regard, leader's and commoner's agency was relational and tactical (Wolf 1999)—reflecting connections among various factions and between people of those factions and public display in feasts and political events—and it was, most fundamentally, the capacity to bring about action in the political and religious landscapes they controlled. As in the case with the other arenas of power, both Araucanian commoners and leaders had access to political agency and to the power contained within a historically familiar or legible landscape and used it in a variety of ways to enact their own plans.

In summary, a central issue that existed during the early development of the polity and continues to exists in the parts of the Purén and Lumaco Valley today is that administrative bureaucracy for public goals derived overwhelmingly from and were linked to ritualized settings, whose chain of ceremonial activities was set in motion by defense of the homeland, the death of rulers and important warriors, and ancestor worship. These were activities also related to economic labor in which political value was generated through the construction of ceremonial places, *kuel* complexes, their display and maintenance upon landscapes of the ancestral dead, and the offering of a minimal amount of unelaborated material goods. The archaeology of the valley stands as testimony to an administrative ritual logic emerging in the service of an expanding polity, and developing in the context of a warring society where the taking of human life and the displaying of the dead before the living laid close to the center of the political culture.

Standardization and Incorporation

James Scott (1999; Scott and Bhatt 2001) has focused on premodern state mechanisms of incorporating new groups and the use of standardized social practices and forms to establish political control. He believes that as states expanded, they attempted to familiarize themselves with the communities they were incorporating in order to make control more feasible (cf., Yoffee 2005). Scott argues that the "premodern state was partially blind; it knew precious little about its subjects, their wealth, their landholdings and yields, their location, their very identity" (Scott 1999, p. 2). As a result, states would take actions in order to simplify the complexities of host or foreign cultures and implement their own state agendas by regularizing or standardizing mechanisms intended to make administration more convenient. Although Scott's ideas mainly pertain to the interaction between more advanced states and different ethnic and culture groups, its basic premise of incorporating new and different peoples by standardizing certain practices and identities can be applied when analyzing the Araucanian polity and most ancient states. Although newly incorporated groups among the Araucanians were generally of the same cultural and linguistic stock, the legibility of and familiarity with Araucanian kinship structure and local religious norms from the *lof* to the *butanmapu* level had to have been familiar in order to receive different groups from distant areas, some coming from hundreds of kilometers away.

As discussed earlier, one hypothesis of this study is that a pre-Hispanic system of individualized wealth, prestige, and symbols primarily based upon material possession was diminished by the war effort and replaced with more standardized icons and utilitarian goods. This also would have facilitated the recruitment and incorporation of new community members from distant lands to work as laborers or as warriors. In other words, a more simplified symbolic culture would have eased the movement of people in and out of different communities across wide geographic spaces by presenting a recognizable and legible social structure, ritual narrative, and symbolism (*sensu* Scott 1999; see Dillehay 2007), much in the same way that the *mapundungun* language did in uniting different ethnic groups across the south-central and western Argentine pampa during the early colonial period (Zavala 2008: Chapter 1).

Although there was a general artifact and iconographic style across the Araucania prior to the arrival of the Spanish, as expressed in the form of several polychrome ceramic wares such as El Vergel, Valdivia, and Tirua (e.g., Latcham 1928; Menghin 1960; Dillehay 1985; Adan et al. 2003; see Chapter 9), there also was regional variation. Some groups had polychrome vessels and mounds and other groups did not. But by the late 1500s in the Purén and Lumaco Valley, the ceramics were materially standardized, as were most of the vessel and mound forms (Dillehay 2010). We can equate this standardization with stylistic simplicity and familiarity, which must have facilitated more rapid and presumably effective incorporation of new groups and administration during the Arauco War. Attempts at simplification also included standardization of religious icons (e.g., mounds) and agricultural techniques (terraces, raised agricultural fields), as well as ceramic styles (e.g., simple incised, polished, and slipped wares; see Chapters 7–9). The Araucanians also utilized specific and topographically similar places of known power within their landscape to legitimize and standardize the public religio-political gatherings. The choice of where to construct these places was related to the cultural knowledge and legibility of local patrilineal communities. These places were always located on high hills above wetlands and with vistas to other sacred places across the valley (see Dillehay 2007).

These types of standardization were not unique to the Araucanians. For example, Yoffee notes that the earliest Mesopotamian states made the different societies incorporated within them legible through a standardized system of writing and public law codes (Yoffee 2005). Mesopotamian leaders also standardized the calendar system and the weight system. Yoffee hypothesizes that these reforms constituted both a cultural and an economic standardization resulting in an apparent increase in legibility and thus ease of control for early state leaders (Yoffee 2005, p. 101). Similarly, the Inka instituted a cultural reform through their usurpation of sacred places on the landscape and emphasis on the sun god while simultaneously standardizing economic record keeping through *khipu* knots and food storage structures or *kolkas*. While the Inka also mapped onto preexisting local structures, the Spanish attempted to transform indigenous religions wholesale in the form of Spanish norms. However, because of the initial lack of legibility between Andean and Spanish cultures, Spanish colonists needed more information about the different communities they were incorporating. As a result, the first Spanish churches and other state structures were often built atop places which were previously considered sacred to indigenous inhabitants (Wernke 2007) to usurp local history not only by replacing it with Spanish authority but also by gathering information about local practices in order to change them. Early conversion efforts by the Spanish were often founded upon places which had an explicit association with ancestors and oracles. Given the lack of knowledge the Spanish had about local communities, the tendency to initially construct settlements on top of sites which *already* had administrative or ideological importance is not surprising. Mapping onto areas of preexisting power was a simple way for the Spanish to legitimize their rule and make it more familiar.

Social Reciprocity and Political Obligation

Other cultural dimensions that facilitated recruitment and incorporation of outsider groups were reciprocity and obligation. While reciprocity was more domestic, private, and social among *lof* members and kin groups, obligation was more public and political, especially among war leaders. The institution of reciprocity is important in all societies, and, in the contemporary Mapuche society, reciprocal relationships (*mingaco*) are an elaborate and permeate part of traditional community life (Faron 1962;

Titiev 1951). It is an arrangement for the transfer of labor or goods between individuals or communities. Today, labor reciprocity includes agricultural work, house construction, canal cleaning, terrace building, and other services; as such, reciprocity still structures the traditional community lifeway. Reciprocity also familiarizes people from neighboring and distant communities with each other's practices and daily lives.

At the highest level of the early historic period Araucanian society, reciprocity entailed the circulation of the spiritual power among deities, ancestors, spirits, objects, landforms, people, plants, and animals (Bacigalupo 2004, 2010). The role of public ritual was and still is to facilitate contact and interaction among deities, ancestors, sacred places, and the living on the earth (*mapu*) and to maintain a cosmic equilibrium among these entities. The idea is that nature and the supernatural world of the deities, ancestors, and animated spirits had to be constantly nourished by making offerings from the living to the supernatural and by the offering of good will, fertility, and life-giving substance (e.g., rain, good weather, productivity) from the supernatural to the living. This mutual interdependence sets up a reciprocity between the corporeal and the living worlds that is maintained through public ritual (Faron 1964, p. 100; Gundermann 1985, p. 182).

This interdependence is confined to kin and nonkin relations within the Mapuche society today and less so with the "other" (*huinca*), referring to Chileans in the present and to Spaniards in the past. During the Arauco War, the reciprocal exchange between patrilineages spurred an interest in the consumption of the "other" or exotic—in this case goods, emblems, and Spanish captives and trophy heads. As observed by Boccara, these reciprocal practices helped to distinguish the self- and other-identities:

> …[the war] played an important role in the elaboration of a self-identity and the creation of a sense of "self" and "other." Indeed, the Reche [Arauco] War was a war of seizing the difference, of creating the "self" in a cannibal movement of opening toward the "other." Everything that was done in the conduct and representation of the war led to the assimilation of characteristics of the enemy; thus during combat the warriors did everything possible to capture an object which symbolized the other. On their return from the campaign, the warriors and *ülmen* dressed like Spaniards in a significant movement of identification with their opponents. However, it is surely in the ritual treatment of the body of the captive that this desire to consume the other can be most clearly seen although not all the captives were "good to eat." The body used in the rituals of cannibalism was that of a famous and courageous enemy. In this case the captive was beheaded and his head used as a trophy vessel for the war rituals. Flutes were made from the leg bones and a sort of war cap was made from the jaws and the skin of the face (Boccara 2000, p. 438).

Armed conflict and the display of trophy heads also provided warriors with the opportunity to gain the highest social status by proving their worth in battle and by incorporating the Spanish "other" into the increased identity of and political obligation among allied groups, again as argued by Boccara:

> Thus, war also can be seen as an institution that structured the relationships between the different social units of the *ayllarehue*. The struggle for the capture of trophies of war…set in motion a true dynamic of gift/counter-gift between the diverse *rehue* [patrilineages] of a single *ayllarehue.* A *lebo* that had captured an enemy sent him, dead or alive, to another *lebo* in order to *obligate* [my emphasis] them to return the gift. For this reason, the *lebo,*

> which had received a war trophy was obliged to enter the war dynamic to capture an enemy, decapitate him and send the head to the donor *lebo*, thus closing the cycle of debt, at least temporarily (Boccara 2000, p. 457).

Boccara views the geopolitical dynamics of the war and the recruitment of groups as institutions created and ordered by obligations of debt payment. Just as people were socially obligated to reciprocate on the family and lineage level, they were also politically obligated to act for or on behalf of another individual or a group. Obligation was thus both a social and political mode of interaction. It also was a political action, one that positioned subjects and created the category of subject, which, in this case, was the patrilineage that was gifted the trophy head.

Obligation thus falls more into the domain of administration and politics than does reciprocity, although the two are inseparable at times. Increased political obligation at the private and public scales entailed greater division of interlineage labor and a division of knowledge in that specialized kinds of physical labor required not only specialized skills and knowledge but also greater political division and unification on the local and regional levels. That is, the craft of leading politically and spiritually involved the division and subdivision of single groups of *lof* communities into multiple categories of reciprocity and obligation from the family to the *lof* to the *ayllaregua* levels of authority.

To provide a more specific example of political obligation, upon the death of their husbands in war, one group of Araucanian widows expected retribution by allocating a series of entitlements that collectively constituted certain rights as a form of social security. In the following passages, Rosales describes the responsibility of *toqui* war leaders to their subjects. He also reveals the power of ritual leaders, in this case a *hechichero* (ritual leader), to make leaders accountable for their mistakes in times of war and to compensate the losses of people:

> The generals from Purén and Lumaco were greatly affected by the capture and death of these thirty *Caciques* and the tears of their wives, children, and relations were inconsolable and they complained of those who had rendered such a bad decision, and they brought the case before their *toquis generales* [high war chiefs]. They asked that they [those responsible] be made to pay for the deaths according to their custom and, although there were several opinions about this, with the prisoners opposed saying that these things happen in war, and that deaths in war should not be compensated since all were obliged to risk their lives to defend the homeland and freedom. Despite this [argument] the cause of the plaintiffs prevailed, because they said they had not died fighting; that if they had died in that fashion, it would have been a glorious death and they would have been above the clouds transformed into thunder and lightning like the rest of those who died in war; but they had died because of a bad decision, and because of a badly laid scheme, and thus they ordered that the deaths be compensated and that the sentence be carried out; which is not bad government. Because just as it is good to reward a success, it is good that an error be paid for, and as a good plan and a victory are compensated, so a bad plan and a loss should be punished…. (Rosales [1674] 1989, p. 827).
>
> While the soldiers are at War, the sorcerers consult the devil about the success of their [warriors] blowing tobacco [smoke] toward the lands of the enemy and making their invocations. When there is a bad outcome, they blame the highest-ranking *Toqui* who called up the soldiers for the war and who must pay for the deaths with *chicha* and sheep of the land llamas] and make another good fortune…. (Rosales [1674] 1989, p. 135).

Set within this context, both reciprocity and obligation became standardized forms of intergroup social and political action, respectively. Political actions and alliances between groups were built by way of obligations. Obligations, insofar as they structured social and political relations, also were typically materialized. That is, social and political relations were objectified in material relations and in material things, those being the sacred spaces of the ceremonial fields, the *kuel* mounds, the standardized drinking and other vessels used in ritual, the *toquicura* war axe as an emblem of authority, and so forth. Obligation is what gave power to those objects, which, in turn, structured the political and social actions of people and ultimately patriarchy.

Coalescing the Private and Public: The Ascent of Patriarchicalism

I have argued that the political structure was a result of the growth of local *lof* and *regua* patrilineages into confederated *ayllareguas* and *butanmapus* political units, which were structured around an ever-increasing involvement of new communities in the war. As implied by Boccara (2000), on a regional level, the political organization of the Araucanians was the replication of local-level, patrilineage-based politics at higher levels of incorporation. The patrilineage (*lof*) was at the core of both the economy and politics and especially the movement toward an ethnic identity of patriotism and patriarchicalism. During this period, *lofs* were often large domestic settlements, with as many as 1,000–1,500 people (Bibar [1558] 1966, p. 155) and 470 houses (Mariño de Lobero [1594] 1960, p. 526). As discussed in Chapter 7, we have documented a few large domestic sites in the Purén and Lumaco Valley that range in size between 50 and 125 ha, which, if fully occupied at any point in time, could easily have accommodated this many people and houses (Dillehay 2007, 2010; Dillehay and Saavedra 2010). Local Mapuche informants in the valley today state that these same localities were the residential places of large *lof* and *regua* families*,* places where their own ancestors lived.

When the contemporary Mapuche speak of the family, they usually have in mind three senses of the term, referring first to all those who live under the same roof in the same nuclear household—under the acknowledged authority of its male head. Second, family has a temporal inflection that evokes one's patrilineage, genealogy, and ancestry, specifically the diachronic dimension of "blood" relations but by extension those aspects of status and power whose synchronic coalescence might be assumed by virtue of one's patrilineage. The sense of a patrilineal community (*lof*, *regua*) coexisted with that of extended households during the time period under study (Bengoa 2003; Goicovich 2003; Zavala 2008) and still does among the Mapuche in the study area today. Third, the Mapuche term "*regua*" (*rewe*, *rehue*) also was used to refer to the wider circle of distant kin both within and outside the family and *lof* (Zavala 2008, pp. 62, 68–72: cf., Faron 1961a, 1961b, p. 11; Latcham 1924, pp. 595–596), as well as fictive kin recruited or adopted by a community as a result of conflict, fragmentation, and other processes. The application of political categories to the understanding of the domestic family in early historic times must have been a familiar one that had the effect not only of linking the *ayllaregua* and *butanmapu* levels of organization with the *lof* families but also of linking these different cognitive meanings of the "family" to changing levels and degrees of patrilineality.

The domestic level of *lof* families was not only a social but also simultaneously an epistemological practice to the Araucanians. And the sociopolitical utility of the familial was probably confirmed by the epistemological utility of the familiar, that being the patriarchical leader who served as lineage leader. But to recognize this double feature of the patriarchalist analogy—to see that it involved a notion of the domestic epistemological level as well as at the higher sociopolitical levels of patrilineality had to involve the explicit acknowledgment of the teleoscopic coalescence that also underlaid it. Again, the integrative engine for these connections was the linkage of political obligation and social reciprocity among leaders, kinsmen, and ritual kinship groups (whether fictive or real), and a sense of patriotism in the collective defense of the homeland.

In addition to strong leadership, reciprocity, obligation, and patriotism, other binding elements were the structure of religion and ritual kinship in public ceremony and the development of a warrior status. This binding starts with religion, the cosmological world of a pantheon of deities and ancestors, and male figures (Faron 1968, p. 65; Gundermann 1985, p. 171). The Mapuche pantheon has a patriarchical emphasis. At the top is *Gnenchen*, the male god of the Mapuche. There exists a more abstract male creator, *Wenemapun*, and a more specific creator of people, *Elchen*. Another important male deity is *Pillan*, a thunder/volcano god. In addition, the Mapuche consider sun, moon, meteorological phenomena, ancestors (especially those of leaders) to be foretold spirit entities with power. Male gods also have female counterparts as wives (Faron 1968, p. 65).

Whether related cognatically or not, all Mapuche participating in traditional public ceremony are ritual kinsmen. In both the past and present, all forms of ritualized kinship and friendship in the Mapuche world derive not just from birth but from the mutual feelings of individuals, guaranteed by the magical power of ancestral blood or the sacrosanctity of public ritual. As recognized by Faron (1962), ritual kinship today commonly forms a series of dyadic or triadic intercommunity ties, not just an extended social structure but also as an extended exchange network in general (cf., Foerster 1993, p. 1285). Ritual kinship thus does not depend so much upon a network of formal rights and duties as it does upon a reciprocal claim to favor and benevolence; it makes requests (not demands) and gifts (not payments) even where custom may define what these should be, and it is reinforced by supernatural sanctions only. The quality of the relationship thus differs from that of real kin relations. Indeed, where ritual kinship is superimposed upon real kinship it endows the relationship between the two persons with a sacredness that it did not previously possess; for this reason blood brothers are sometimes said to be *peine*, which are "closer than real brothers." Like friendship, ritual kinship also depends upon a balance of reciprocal social and economic favors between commonfolk and political obligations between leaders. Its function is to provide through the attachment of personal feelings a basis for trust and obligation between individuals, which may or may not be in the service of political or economic ends.

Furthermore, ritual kinship is a residual category that includes a number of very different institutions, which have in common only the fact that they are likened to cognatic kinship by the people themselves and especially by public ritual. But this favored Araucanian polity development because it broke down strict kin structures for incorporating new, nearly fictive members migrating from politically fragmented areas. A loosely structured *kuga* network of kinsmen beyond the local *regua* level accommodated these kinds of relationships (Zavala 2008), which allowed for greater political and ethnic unification across a vast territory.

I suspect that due to fragmentation and movement resulting from warfare that the standard kinship terms in this period were far looser in their application, incorporating a broader but variable range of reference depending on specific contexts of use. For this reason, it is important here to distinguish between the terms *regua* and *kuga*. *Regua* was used to refer to the wider circle of kin both within and outside the household, as well as fictive kin recruited or adopted by a community as a result of conflict and fragmentation (Zavala 2008). *Kuga* refers to surnames but also to a geographical and genealogical source of common origin and kinship affiliation. Although people came from the same ancestral affiliation, they could have been separated due to migration, warfare, or other reasons. It also can imply that people are related because they come from the same animal or natural element, which has a totemic-like meaning, although they may not derive from the same familial line. In this latter case, it would be something akin to fictive kinship, though again, they may believe they are related through a common origin. (There is also *tugün* that means territorial connectivity such as those populations residing around a lake edge, in a playa along a seashore, or on the north side of a river.)

It was clearly the threat of continued warfare and the defense of their territory that spurred a greater sense of kinship, unity, and purpose among the Araucanians and also developed pan-regional ideas of a patriarchical ethnic nationalism. Leiva (1977) comments that:

> The Araucanians of that time appear to us as a case of the development of a culture beginning with a national spirit: the resistance to domination and self-sufficiency. Moreover, we see that there arose among the Araucanians an increasingly intense and previously unknown national interest. Thus we have proof of the tenacity of the linkage of cultural ties with the land, of what Kroeber calls "the capacity of a culture to absorb and resist at the same time," which, over many years, for all that cultural borrowings diffuse into the interior, became its own. In the end, the Araucanians succeeded in finding the dynamic principle to organize their society: warfare (Leiva 1977, p. 160).

Although Leiva's sense of the changing political and ethnic conditions of the Araucanians is correct, his reference to the Araucanian's political sentimentality may be more accurately portrayed as patriotism rather than nationalism. In following the historian John Lukacs' distinction between the two concepts, he notes that "Nationalism is not identical to patriotism…Nationalism is largely aggressive, patriotism largely defensive; nationalism is largely democratic and present-minded, patriotism largely tradionalist and historically conscious. I say largely, because these categories are not leak-proof; they sometimes overlap" (Lukacs 2012, p. 56). Having to defend their homeland and lifestyle during the early historic period, the Araucanians were clearly being patriotic rather than nationalistic.

Warriorhood

Not only was patriotism important to the unification of warring and fragmented groups, but also running throughout the teleoscopic structure of the society was an entity that became a modus operandi for male members of patrilineages. This was warriorhood and the way it organized public ceremonies and ritual games, competitiveness, and alliance building around the social recognition given to brave deeds and glory in battle. Leiva and Boccara emphasize the importance of Araucanian warriors, or *konas*, during the Spanish wars, and how they became a meaningful and influential force in reshaping a more cohesive and organized force of resistance and unification.

> I believe, on the other hand, that the psychological and cultural support for the incorporation of military borrowing among the Araucanians derives from the role that the society assigned to the warriors and the fact that renowned deeds were the principal mechanism for acquiring prestige…. Perhaps the best word to describe these Araucanian warriors—the *konas*—would be "champion." The competition to excel offers a model for understanding all their behavior and in it the predominant interest of Araucanian society—to be renowned…military action is not taken as an end in itself, but is used within the society. In brief, warfare does not have its own interests, but rather expresses those of all Araucanians, whether or not they participate in it; this is its greatest strength…. Thus, it is not surprising that these "champions," the warriors, quickly went into action at the appearance of the Spanish conquistadores who threatened to wipe them out and eliminate them as a social category. And at the same time, the society supported them unconditionally since the warrior expressed the aspirations of everyone. (Leiva 1977, pp. 162–63)…the image of the ideal warrior could be seen in all the facets of *reche* social life: in the spirit of the games (*palin* or *chueca* was a true preparation for war), in the education of youths in Spartan fashion, and in the prestige of the warriors who distinguished themselves in war by seeking individual combat (Boccara 1999, pp. 435–436).

The newly created warrior stratum also accrued a growing economic importance that set up new spheres of power and agency by invoking and reinventing discourses on male warriorhood (cf., Alvarado 1996), which was founded upon principles of bravery and gave more authority to the patriarchical upswell. It was through warriors that leaders redefined the nobility that surrounded them. As seen in the quotes above, chivalry in warfare became an integral principle of Araucanian politics, society, and morality. Chivalry took shape around the middle to late sixteenth century and the ritualistic ceremonial model that framed it was oriented toward the creation of controls for political warfare. It encompassed the framework of moral and political categories that underpinned interpersonal networks as well as relationships between institutions throughout the culture from the family level to the *butanmapu* level. Throughout the wars, the warrior stratum was in a permanent state of creation. The most cogent argument for the social and political worth of this stratum was what it represented: The production of warriorhood was a process that transformed violence into institutionally regulated violence and set a structure that buttressed the civic values of a once semi-peaceful society. The rise of the warriors also entailed the separation not only of specialized warfare practices but also of specialized workplaces—the battlefields and the ritual fields (see Padden 1993).

Warfare and the idea of warriorhood also collaterally increased the power and prestige of shamans and ritual priests. In the past, *hechireros* (or *machi*) divined the locations of the Spanish and predicted the outcomes of battle by performing magic against them (see also Rosales [1674] 1989, pp. 155–161). *Machi* also invoked the sun, moon, and the planets during military divination to gain power to cure the wounded and to defeat intruders (Ercilla y Zuñiga [1569] 1982, pp. 45, 147; Ona [1596] 1975, pp. 15, 21; cited in Bacigalupo 2004a). In the same way that priests and shamans did in the past, *machi* today still employ political ritual to defend local communities and view themselves as "warriors" struggling for the Mapuche causes (see Dillehay 1985b; Citarella 1995, pp. 222–226). To quote Bacigalupo,

> Today, Mapuche spiritual warfare against enemy spirits is no longer a political tool but has become an essential component in the ritual healing of bodies and communities. *Machi* kill evil *wekufe* spirits using spiritual warfare during exorcisms performed at all healing (*machitun [dajatun]*), initation (*Ngeikurrewen*), and collective fertility (*nguillatun*) rituals (Bacigalupo 1998).
>
> *Machi* warfare ideologies have also remained part of *chueca,* or ritual war games in which *machi* give *pulluam* (spiritual power gained from ancestral spirits) and herbal remedies to players to grant them the strength, valor, and power needed to win…. (Bacigalupo 2004a, p. 499).
>
> Female *machi* use political functions as ritual orators in collective *nguillatun* rituals to bring fertility and abundance to the communities. They also have begun performing a contemporary version of colonial *machi weye's* spiritual *warfare*. They become "warrior *machi*" and draw on ancestral warriors to combat forestry companies who have taken their land, and they draw on their knowledge to rally for cultural rights and political autonomy from the state. In healing rituals they kill *wekuefe* [*weupufe*] spirits that threaten the bodies of their patients or their communities (Bacigalupo 2004a, pp. 520–521).

Ultimately, the construction of the Araucanian *Estado* was the creation of a patriarchical social and political category. Regarding its form as well as its place within society, warriorhood was crucial and has continued to be crucial since its creation. The ritual of warrior investiture presented a specific problem that was *sui generis*, since the invisible politico-religious transformation of the subject also created a new social stratum. Chivalric investiture impacted not only the individual who was warriorfied, but also the whole patriarchical order to which he belonged. The creation of a warrior's chivalry through public ritual, through this interior and exterior transformation of the chivalric subject, was also the creation of a subjectivity, an identity that has—throughout Mapuche history and into the present—a political and moral mission of key manifestations in civic, moral, and political relations (Bacigalupo 2002, 2010).

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Chapter 3
The Spanish-Araucanian World of the Purén and Lumaco Valley in the Sixteenth and Seventeenth Centuries

José Manuel Zavala C.

Introduction

This chapter presents a synthesis based on the study and analysis of documents from archives in Santiago de Chile and Seville, Spain, which refer to the Purén and Lumaco Valley during the sixteenth and the early seventeenth centuries. A regional perspective of the entire Nahuelbuta Cordillera area is presented, since the sources indicate that the sociocultural dynamics of this period cannot be understood in any other fashion. The valley was only a part, although a very important one, of a larger, complex indigenous system called the *Estado* (Ercilla y Zuñiga 2003). I begin by describing the physical environment that frames the late pre-Hispanic and early Hispanic human activities in the region. I then turn to the principal elements that sustained the Spanish presence. Finally, I describe the indigenous occupation and organization of this region and end with an analysis of the role played by the people of the valley, both within it and in the process of resistance to the conquerors. I should note here that only the most important elements that allow us to make a general interpretation of the situation under study are considered. A more specific analysis of Araucanian sociopolitical organization, especially at the beginning of the seventeenth century, is presented elsewhere (Zavala and Dillehay 2010).

The Regional Nahuelbuta Cordillera System: Definition and General Characteristics

I define the Nahuelbuta Cordillera system as the geographic area which is made up of the Nahuelbuta Cordillera and the interior and surrounding valleys that depart from it to the east and to the west. In this latter region, these valleys extend to or become the lowland coastal plains that lie along the Pacific littoral (Fig. 3.1). I refer to

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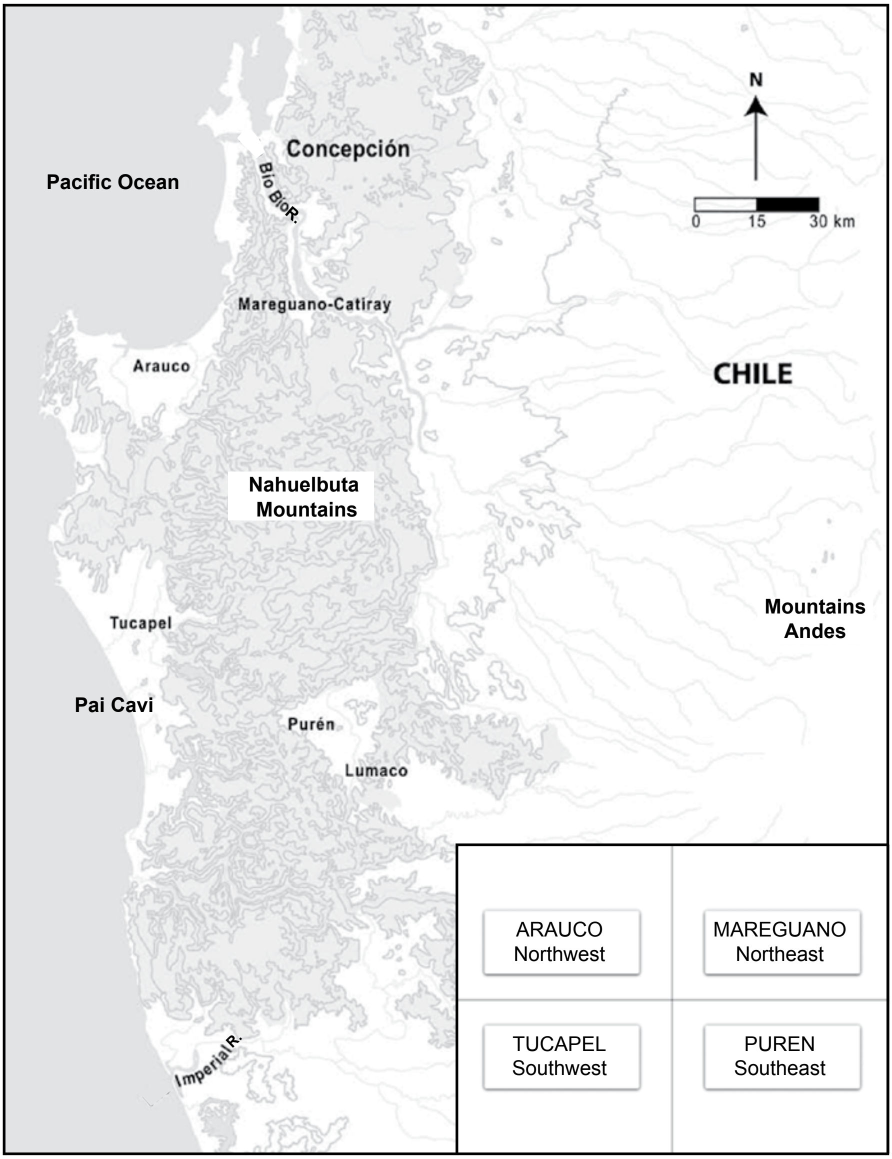

Fig. 3.1 Location map of the study area and the *Estado* in the Nahuelbuta mountain region.

the Nahuelbuta Cordillera system because this area has particular geomorphological and ecological characteristics that have affected human settlement and the socio-cultural dynamic, not only in its interior but also in a broader region in which the Nahuelbuta Cordillera system has occupied a central place.

This system should be understood as a complex of different but complementary spaces, that is, it should not be associated only with the high, mountainous lands characteristic of a mountain range but also with the whole complex of localities and microniches which, given their geomorphologic and ecological characteristics, make possible their linked and complementary use by humans. From an ethnohistoric perspective, the principal environments that appear relevant for human settlement and use of the Nahuelbuta system are:

- Highlands: slopes, tablelands, and mountaintops with forest and undergrowth, steep rocky formations that can become fortified refuges; and ravines and narrow passes that make passage difficult.
- Lowlands: fertile valleys, some extensive with a low-lying floor susceptible to flooding, with wetlands, marshes, ponds, and lakes (e.g., Purén); and others narrower and steep sided.
- Coastal zone: fertile, cultivable plains affording access to marine resources and marine navigation.
- The surrounding maritime–river system: a hydrological system which encloses the Nahuelbuta Cordillera on the northeast (Bío-Bío River) and to the south (Imperial River), which with the Pacific Ocean on the west makes a good network of maritime and river transport; moreover, the presence of two habitable islands off the coast (Santa María and Mocha) increase the possibilities which the littoral offers for human habitation and navigation.

This territorial complex is what the Spanish called the "*Estado*" ("state") or "*Estados*" of Arauco,[1] with the Arauco Valley always shown as the center or axis of Spanish intervention. The use of the term *estado* in Spanish documents applies, at times, to the complex of the cordilleran system,[2] which I have described, and at other times to each one of the principal valleys, especially to Arauco and Tucapel (see Chapter 1).

The Nahuelbuta Cordillera System and the First Spanish Contacts in the Sixteenth Century

Sixteenth-century Spanish documents allow us to identify the large valleys of the Nahuelbuta Cordillera system in which a large portion of the population was settled and where the Spanish established nuclei of settlement and/or attempts to control. These main valleys, although they may appear to be associated with other subsidiary valleys and territories, stand out in the sixteenth-century historical documentation as much because of their strategic role in the establishment of Spanish centers

[1] According to the 1732 edition of the dictionary of the Real Academia, one of the meanings of the term "*estado*" refers to the "Country and realm of a King, Republic or Lord of vassals" (Diccionario de la Lengua Castellana … compuesto por la Real Academia Española. Vol. 3, pp. 623. Madrid. Real Academia Española).

[2] There are two fundamental problems with regard to the terms *estado* and *estados*: The first has to do with the use of the singular or plural to refer to these territories, since sometimes reference is made to "the state" and other times to "the states". The second has to do with whether the name Arauco is limited to only one of these territories or includes all of them.

of population as for the development of indigenous resistance. Fundamentally, from south to north, I am speaking of Arauco and Tucapel on the western slopes and of Mareguano[3] and Purén on the eastern side.

According to colonial sources, the fact that part of this territory was called the "*Estado*" was brought about by a particular condition which the conqueror, Pedro de Valdivia, imposed on the greater part of the area (see Chapter 1). Indeed, it is a fact that Valdivia "reserved" for himself a vast territory on the coast of Arauco (Letter to the King of [1554], MVM, Vol. 267, f. 168), establishing there "his personal encomienda" (Olaverría 1594, p. 20), and putting a substantial number of the male population to work in the Quilacoya[4] gold mines, according to Rosales (Vicuña Mackena 1932, p. 49). A letter, which can be dated to immediately after the death of Valdivia in 1554, indicates that the personal domain of the Spanish leader had a population of 50,000 Indians and was 12 leagues long. It states:

> The Governor don Pedro de Valdivia, may he be with God, left La Concepción five or six days before Christmas to [go] to his indians in what he called his state [*Estado*] in which they say he had fifty thousand indians up the coast in [territory] that is twelve leagues long …. (Letter to the King [1554], MVM, Vol. 267, f. 168).

As a result, the fact that in many Spanish documents the term *estado* is reserved exclusively for the "province" of Arauco also would seem to refer to this personal condition, which the leader of the conquistadors imposed on its population, since the use of the term *estado* also can be understood in the linguistic context of the period as a term which emphasized the seignorial dominion that was imposed on a given territory. In 1564, an official directed a complaint to the King against doña Marina, Valdivia's widow, because she was holding the encomienda of her deceased husband. This complaint supports this particular explanation. It reads:

> I wrote to Your Majesty [*V M*] that, because there was warfare, doña Marina, wife of governor Valdivia holds the state [*el estado*] of Arauco and don felipe holds the distributions [*repartimientos*[5]], which he was given by don garcia de mendoça and this is because in the one in the other a goodly town can be made with those together and that in it serve those of Arauco and Tucapel and division is made of [land? lapsus. *tie* [...]] can sustain them, giving them modest holdings so that there may be more permanent residents [*vecinos*], and Your Royal Majesty should make a grant to doña marina for the great and good service of her husband and if this were done, it would move much forward and I have always been of this opinión [on this matter] (Letter to the King, Santiago, September 8, 1564, f. [1]. AGI, Chapter 30).

[3] In many documents, Mareguano is indicated as associated with Catiray and must have been replaced in the documents of the seventeenth century by the latter name. Millapoa also appears associated in many documents with the Mareguano-Catiray area.

[4] Quilacoya survives in the present day as a name and corresponds to a river and sector of the *comuna* of Hualqui located on the north bank of the Bío-Bío River near Talcamavida, almost opposite Santa Juana. That is, it corresponds exactly to the location indicated in the historical documents (Zavala, field notes, 2007).

[5] A *repartimiento* is an *encomienda*, that is, a certain number of a local population working for an *encomendero* in the name of the Spanish Crown, which the Crown uses as labor for the empire. In return, the Crown gives protection and supports evangelization. In practice, it is a form of work service for the Crown.

The first contacts between the Spanish and the inhabitants of the eastern slopes of the Nahuelbuta Cordillera may have been at the beginning of January of 1550, when Pedro de Valdivia crossed the Bío-Bío in the interior and traveled toward the coast along its banks for 2 days until he met with resistance (Barros Arana 1999, p. 295).

More certain is the first encounter between the Spanish and the inhabitants of the coastal region of Nahuelbuta in the spring of 1550, when Valdivia sent Alderete with 60 men by land, traveling along the coast to the south, and Pastene by sea, with two ships, in the same direction. These expeditions reached the bay of Arauco by land and the islands of Santa María and Mocha by sea (Barros Arana 1999, p. 302).

More permanent contact began in February 1551 when Valdivia undertook a new expedition with 70 men along the coast and established a first Spanish enclave on the banks of the Cautín, founding the city of La Imperial and distributing the population of the hinterland in a *repartimiento* [a colonial forced labor system imposed upon the indigenous population by the Spanish] to the Spaniards who settled there. During that year, 1551, Valdivia distributed all the population of the coast between the Bío-Bío and the Cautín rivers among his "*conquistadores,*" making the distribution by *levo*[6] (*lof*), "*por Lebos*" (Barros Arana 1999, p. 306).

The speed of the Spanish settlement to the south of the Itata River is surprising. It is important for an understanding of the demographic, economic, and sociocultural characteristics of the región. Following is the chronology of the campaigns:

1. The first campaign, January–February 1550, was placed on the north bank of the Bío-Bío, opposite the Bay of Talcahuano. Valdivia left Santiago with a little more than 200 men and an undetermined number of Indian auxiliaries in January of 1550. On 23 February, he set up his camp in Penco, opposite the Bay of Talcahuano, and established an enclave with the name of the city of Concepción; they were sustained during the winter of 1550 by the meat and corn obtained from the local population.
2. The second campaign, February–April 1551, was installed on the north bank of the Imperial River some 35 km from the coast. In February 1551, Valdivia with 70 men left Concepción going south along the coast. He crossed the southern spurs of the Nahuelbuta Cordillera and arrived at the confluence of the Cautín and Las Damas rivers, about 35 km from the sea, founding there the city of La Imperial[7] and leaving a detachment under the command of Villagrán (Barros Arana 1999, p. 306).

[6] A *levo* or *lof* is an autonomous political territory, based on a named principal patrilineage which has a principal leader and a structured power system.

[7] The city of La Imperial (1551) can also be included in the Spanish settlements established around the cordillera of Nahuelbuta, since, although it is true that its principal function was undoubtedly the control of the populations and appropriation of the products of the Cautin–Imperial River valley, it is also certain that its geographic location faced the southern foothills of the Nahuelbuta Cordillera and that it is there where the Spanish exploited gold mines. It is worth noting in this regard that until only a few years ago there were placer mines in the sector of Santa Celia, a locality in the southern area of the cordillera, near the former location of old Imperial, now present-day Carahue.

3. The third campaign, October 1551–May 1552, was settled on the banks of the Calle-Calle River and opposite Lake Villarrica. In October 1551, Valdivia left Concepción with 200 Spaniards, supported by Indian auxiliaries that Villagrán had brought from Peru (Barros Arana 1999, p. 312). He passed through La Imperial, crossed the Toltén River, and entered the Mariquina Valley; he continued then to the Calle-Calle River and went down to the coast. He founded the city of Valdivia and left 70 permanent settlers there. Meanwhile, Alderete, who led a second exploratory column, went up the Toltén River and reached Lake Villarica, where he founded Villarrica and left 40 permanent settlers.

Thus, we see that between January of 1550 and May of 1552, over three summers (because during the winter no campaigns were waged), the Spanish presence was manifested to the south of the Itata River, with the city of Concepción as the link in the center and the rear guard of the Spanish advance.

To guarantee the Spanish presence from the Bío-Bío River southward, it was fundamental to ensure the control of the valleys of the Nahuelbuta Cordillera, its coastal plain, and its eastern sector that gave access to the intermediate depression or central valley. This was necessary, not only to ensure the population of a demographic and economic subsistence base but also in order to maintain the lines of communication between the Spanish settlements and to foster the exploitation of gold. Thus, in 1552, forts or fortified houses were built at Arauco, Tucapel, and Purén in the valleys of Nahuelbuta. The city of los Confines de Angol was built in the eastern sector in 1553 (Guarda 1990, p. 189, 197).

The Spanish Presence in the Nahuelbuta Cordillera of the Sixteenth Century: Gold and the Distribution and Control of the Population

It seems that the main objective of distributing the indigenous population and establishing Spanish settlements within this territory was to have access to the labor and food resources necessary to support the mining of gold deposits discovered near Concepción and La Imperial. Gold exploitation began in 1553, once the "*ciudades*" [towns] of La Imperial, Valdivia, and Villarrica and the forts at Tucapel, on the west flank of Nahuelbuta, at Purén, on the eastern slopes, and Arauco, on the Gulf of Arauco, as well as the "city" of los Confines de Angol on the eastern flank of the cordillera had been founded. Gold mining appears to have been the precipitating cause of the conflicts with the indigenous population that cost Pedro de Valdivia his life according to an account that describes the death of Pedro de Valdivia in January 1554:

> In truth the highlands are very rich in gold and very often a pan would yield from half a peso to a peso of gold and if the disaster [death of Valdivia] had not happened [with] this delay, they would have dispatched more than three hundred thousand gold peso[s] on the ships which sailed to the strait [of Magallanes] …. (Letter to the King 1554, MVM, Vol. 267, f. 169).

Everything indicates that the way in which the Spanish system of colonization was set up in the region during its first stage was linked, in large part, to the exploitation of gold deposits. This is what Garcia Hurtado de Mendoza reported to the Council of the Indies (Consejo de Indias) in 1559, emphasizing the importance which the mining of this metal had, particularly for Concepción. He states:

> The city of la Concibicion [Concepción] that I settled a year and a half ago is growing more rapidly than all the others because of the good mines and port it has and from what it exports apart from its own [produce] and for the provisioning of ships it will be a notable town and last year of the seven cities there are in this territory [gobernación] five sent out gold and this period all will do so in greater quantity because they have planted fields to this end and the indians are more settled on the land everything is in hand so that with the settlements they now have, spaniards and indigenous will have content and peace and your Magesty will be well served and relieved with [by] it…. (Garcia Hurtado de Mendoza al Consejo de Indias, Arauco, 30 de Agosto de 1559, f. [1], AGI, Chapter 18).

A document dating from before 1580 and after 1558 indicates that in addition to Santiago and La Serena, gold was produced in the cities of La Imperial, Villa Rica, Valdivia, Osorno, and Castro, from the "running streams" from December 1 until the end of March ("*Relación de la orden ...*", BNCh, Ms.BA, T. 10, f. 297).

We know that at least during the first decade of the Spanish presence in the region (1550–1560), the Quilacoya gold mines were the principal gold-producing centers near Concepción (5 leagues inland from Concepción, between present-day San Rosendo and Concepción), to which the population of Nahuelbuta was sent. The Quilacoya mines were located on the north bank of the Bío-Bío River, facing Mareguano.

With regard to the labor system in the mines, Garcia Hurtado de Mendoza states that in 1559 he had established provisionally that only a sixth of the "married Indians" between 18 and 40 years of age were to be used to work in the mines, fields, and construction by the *encomenderos*, receiving in return one sixth of [the product] of their labor for clothing and food. He states,

> … in this land they have nothing to give in tribute but only their personal service for the mines and fields and buildings for the meantime I imposed a rate and order as to how they had to make use of their indians and I ordered that they could not put into the mines or their fields or other use more than the sixth part of the married indians between eighteen and forty years of age and of the gold they received they had to pay the sixth part to them for their work free of all costs for food and clothing and the purchase of sheep so they can clothe themselves since there are none in this land for this purpose nor for food and with this the indigenous are very pleased and with their sixth [part] they will be furnished with flocks and clothing with which they can be well supplied and maintained and in time they will become wealthy in the one and the other and as for the other [matter] although I am not satisfied that it is the means by which Your Magesty's conscience may be entirely satisfied and relieved, because they are levied by fixed rate and not by what the indians should give each in each corregidor's district because it was not known then nor even now is it known how many [indians] there are because they have not been visited nor can they be visited until all [the indians] come forward and all cease to be frightened and build their houses and all is in order which with the care I have [taken] that they survive and are well treated and can expect to be rich …. (García Hurtado de Mendoza al Consejo de Indias, Arauco, 30 de Agosto de 1559, f. [3], AGI, Chapter 18).

In conclusion, with regard to the reasons that explain the origin of the Spanish presence around the Nahuelbuta Cordillera and the Spanish efforts to attempt to control the population of its fertile valleys, the expectations generated by the gold mines discovered in the area are without doubt in first place.

The Four Sixteenth-Century Provinces or "*Estado*" and their *Levos*

We have already indicated that what emerges from the Spanish documents is that the territory around the Nahuelbuta Cordillera, as well as the cordillera itself, was one of the principal sites of Spanish intervention as well as of sixteenth-century Hispano-Araucanian conflicts: the so-called Arauco War.

The documents agree that there were certain principal territories within this cordilleran system. These were broad, ferile valleys that constituted—to the Spanish eye—provinces or "states" whose domination was strategic for establishing control of southern Chile.

Independently of the term referring to this group of territories, there is no doubt that we are dealing with a system of alliances between large political and territorial units, clearly distinguishable spatially.[8] What is most extraordinary, when different relatively early sources are compared, is that these agree that there were four principal provinces or states, which led this system: Arauco, Tucapel, Purén, and Mareguano/Catiray. Thus, Rodrigo de Quiroga wrote to the King in 1576:

> Should Your Magesty order me to exile some of the most fractious Indians to the provinces of Peru, when I enter the states of Mareguano, Purén and Tucapel, which are the ones that wage the most war in this Kingdom, I will undertake to have in my hands by peaceful means or by war most of the war-like indians as directly as I may, a good part of which should be exiled from their territory and established in fertile valleys and lands in [the jurisdiction] of either of this city of Santiago or of La Serena, which I will carry out as punishment for their crimes …. (Letter from Rodrigo de Quiroga to the King, Santiago, 12 de febrero de 1576, f.[4v.], AGI, Chapter 18).

During the same period, Juan Ruiz de Gamboa also spoke of the need to make war on these provinces to ensure the exploitation of the gold from La Imperial. He states,

> La Imperial is the beginning of the principal war and waging this [war] the Governor had the permanent settlers [*vecinos*] build a fort and place it high above the mines which are indeed very productive and in many locations and from there the captain went forth to make war on the provinces of purén, tucapel, arauco, mareguano…so that from the effort we are gaining benefits and they come with their crews to mine gold from all the cities of the south, as well as this one[.] there is another good result in this which is that in staying at these mines they turn their backs on the warlike indians in the cities of the south (Juan Ruiz de Gamboa a Vuestra Excelencia [1579], f. [5]. AGI, Chapter 31).

[8] In general terms, our analysis coincides with that of Goicovich (2002, pp. 78–85), when this author describes the "Arauco state" or "unconquerable state" as a system of territorial alliances over a much larger zone than the so-called province of Arauco. Nevertheless, we believe that Goicovich is mistaken in calling this grouping the "first *vutanmapu*" and in introducing the concept of the *wichanregua* in speaking of the territorial groups; both terms, so far as we know, do not appear in the sixteenth-century literature and, on the contrary, there is a term in the sixteenth-century source-specific terminology that refers to the Mapuche sociopolitical groups (province, *levo*). To use concepts which are not contemporary with the early sources can lead to a failure to recognize the pre-Hispanic heritage in the native sociopolitical structures and the subsequent processes of indigenous transformation or adaptation that these may have experienced.

Thirteen years later, Alonso de Sotomayor also refers to the four territories that are the "motor" of the war:

> … I travelled through Purén, Tucapel, Arauco, and Mareguano, which are the principal [*lebos*] and keys of the war from La Imperial to biobio and I passed through all the [región] that is at war on the coast and in the plains of these areas without [guarazaba] happening to me nor encountering anyone because the councils which they are accustomed to hold had not met nor did I give them time for this …. (Alonso de Sotomayor, 4 de Enero de 1589. ANCh, AMV, vol. 1, f. 82v.).

If we try to establish geographically where each one of these provinces or states was located, we can identify these locations (Fig. 3.1): Purén, Tucapel, Arauco, and Mareguano.

Recognizing the importance of the quadripartition of space and its relation to the cardinal directions in the Araucanian sociopolitical system and cosmovision at present and in the past suggests significant cultural continuity (Zavala 2000, pp. 235–242). Moreover, each one of these large provinces or "states" was, in turn, a kind of federation or alliance of smaller territorial units grouped around one of their number, apparently this smaller unit which was somewhat preeminent because it gave its name to the province. The earliest references call these smaller units *levos, lebos* or *lofs.* It was on the basis of the *levos* structure that the Spanish initially distributed the local population and organized their rule over it, as the conquistador Pedro de Valdivia, referring to the area to the north of the Imperial River, stated when he founded the city of La Imperial:

> Then I distributed all the caciques which are on this side of the river without distributing any of those on the other side by their levos each one with its name, which is like a surname and it is where the indians acknowledge their allegiance to their superiors …. (P. Valdivia to the King, Concepción, Sept 26, 1551, f. [2]. AGI, Chapter 18).

It is clear from Valdivia's statement that the *levo* corresponds to a permanent political unit and is identifiable by a patrilineal "surname" according to the author, that is, a sign originating in a principle of descent ("their *levos* each one with its name which is like a surname") and the *levo* had a system of authority ("and it is where the indians acknowledge their allegiance to their superiors"). From this derives the importance for the Spanish of a patrilineal sociopolitical organization that can be identified and put into service in the *encomienda* system.

Very likely, a large part of the population of the Nahuelbuta Cordillera system was "distributed" early on among the Spanish conquistadores on the basis of the division into *levos* and was maintained within the framework of the preexisting authority regime. Otherwise, there would be no explanation for the speed, breadth, and intensity of the settlement model and the exploitation of gold in the first years of the Spanish presence. Only the existence of a level of local sociopolitical organization sufficiently solid and generalized must have encouraged the conquerors to carry out the enterprise of colonization.

In 1559, Governor Garcia Hurtado de Mendoza referred to the feeling of control and stability that he felt when he observed the Indians "return" to a sedentary, farming way of life in the valleys, and he gives a panoramic description of the situation in the following terms:

> The indians are already settled and have given service and say they want to serve well and many have come down from the mountains and forests where they retreated and stayed during the fighting to the plains and flat lands in which they formerly lived and have built their houses and made their fields like persons who desire to live and have repose.
> In other [letters] and in this one I have reported to your lordship I established the city of La Concibcion [Concepción] and Cañete among the rebellious indians of these provinces and because some were distant from them and there were many large rivers and mountains to cross they served with great labor and risk and not as well as those who were closer and for this [reason] and so the land would be settled and become more worthwhile and the indians have fewer opportunities to rebel [having] having among them many Spanish towns that I have established in the name of His Majesty among these indians in the plains which are called de Engol which is very fertile and rich land another city called LosYnfantes and distributed [from] to it the surrounding indians who were aggreived by coming to the said cities and [distributed] others from the said city of La Ymperial which are much closer to the said city of Los Ynfantes which greatly benefitted the said indians and is a great benefit for the peace of the land and the town will be good because it benefits these provinces (Letter of García de Mendoza to the Council of the Indies, Arauco, August 30, 1559, fs. [1] and [2]. AGI, Chapter 18).

Another early reference to the distribution of the Indian population among the Spanish refers to the province or state of Tucapel. It is a 1563 report from Francisco de Ulloa which presents a list of "recovered distributions" [*repartimientos*] in Tucapel and in which it is indicated that the *repartimiento* of *Paicavi* was given to Ruiz de Gamboa, of *Ongolmo* to Lagos, and of *Licura* to Diego Carranza and to Francisco Osorio, together with six other "*repartimientos*" which are identified only by names of their former *encomenderos*. Clearly, the names of the *repartimientos* listed correspond to the names of patrilienal *levos* (AGI, Chapter 11, unpaged document).

Moreover, there is testimony from the escribano of the cabildo of the city of Cañete. Juan Muñoz de Avila reported in October 1567 that when Martin Ruiz de Gamboa became governor in September of that year, all the "land and coast of Tucapel was at war from the levo of Quiapo to Tirua" (Testimony de Juan Muñoz de Avila, Octubre 1567, AGI, Chapter 30, fs. 1–2) and that after defeating the enemies that had fortified themselves in Lincoya, Ruiz de Gamboa "brought all the land in peace with no repartimiento or *levo* at war" (Testimony de Juan Muñoz de Avila, Octubre 1567, AGI, Chapter 30, fs. 1–2). The escribano then wrote a list of the *levos* at war in Tucapel that offered peace, indicating that he had seen the *mitas*[9] come to the town to serve its permanent settlers. The list of *levos* is the following:

> The uplands of the levo of Pedro Gonçales, dean
> The levo of Molculle that belongs to Ortien Ximenez de Bertendona
> The levo of Chamavida and leolemu that belongs to Antonio Diaz
> The levo of Lincoya that belongs to Antonio Martin y Juan Laso
> The levo of Pangue that belongs to Rodrigo de Quiroga y Fuensalida
> The levo of Billoco that belongs to Juan Laso
> The levo of Paicavi that belongs to Lope de Ayala
> The levo of Pilmaiquen that belongs to Juan Nieto and Lope Ruiz Muñoz
> The levo of Tucapel that belongs to Juan Albarez de Çepeda

[9] *Mita* was an Andean labor work system adopted by the Spanish in which each indigenous community gave the Spanish Crown a determined number of workers during the year which was part of their tribute to the encomeinda or repartimiento.

> The levo of Cara.cupil [*sic*] that belongs to Agustin de Aumada
> The levo of Tome that belongs to Lope Ruiz Muñoz
> The levo of Ylicura that belongs to Villegas y Garnica
> The levo of Ongolmo that belongs to Rodrigo de Quiroga
> The levo of Rangalue that belongs to Fuensalida
> The levo of Lleoleo that belongs to Christobal Muñoz
> The levo of Bideregua that belongs to Alonso de Miranda
> The levo of Claroa that belongs to Grabiel [Gabriel] Gutierrez
> (Letter from Juan Muñoz de Ávila to the King, October 30, 1567, fs. [1–2], AGI, Chapter 30).

Thus, we see that in the province of Tucapel there were at least 17 smaller territorial units, called *levos* or *lofs* which were "at war," although they had been distributed among the Spaniards and carried the name of the indigenous leader of each*;* we can also see that one of the *levos* has the name of the province, Tucapel, which at times can cause confusion, since with the same name reference made to a *levo* and to the province or *estado* to which it belongs.

It is possible to affirm, on the basis of the information given above, that a large part of the population of the valleys of Nahuelbuta was juridically and theoretically assigned to Spanish *encomenderos* by *levos* during the first few years of conquest, in spite of the fact that this relation of servitude never took place because of the indigenous opposition and resistance. The battles to exercise rights over the local population and the lawsuits over their distribution are manifested in a letter sent by the Viceroy (and ex-governor of Chile), Garcia de Mendoza to the King between 1585 and 1588, which states:

> After the provinces of Arauco have risen in war, the soldiers and men of war go there with very great difficulty because of the great intensity experienced in that war and more importantly because of the small benefit they receive from it.
> The reason for this is that *all the indians, both those at war and those in peace, are distributed* [author's emphasis], and in quieting and pacifying a repartimieno of indians, the person who had them in as an encomienda before the rebelled, is the one who benefits and this is what the soldier who goes from here says that how is he to fight to restore another to his house and that he may have sustenance …. (García de Mendoza to the King, unpaged document [1585/1589]. AGI. Chapter 18).

The discouragement of the soldiers, who could not count among their incentives the appropriation of the local people since they had been legally distributed and already had an *encomendero*, can be appreciated.

The Province of Purén from the Sixteenth Century to the Beginning of the Seventeenth Century

In describing the intergroup dynamic of the Nahuelbuta Cordilleran system, the Spanish accounts mention four great provinces: Arauco, Tucapel, Mareguano-Catiray,[10] and Purén. Without doubt, Purén occupied an exceptional position, both for its geographic location in a protected area in the central part of the eastern flank of the cordillera and for the size and richness of its valley whose floodplain had wetlands and interior islands which played a strategic role in the Mapuche military campaigns.

Moreover, the valley was crossed by a main road [*camino real*], which united Concepción and La Imperial. This road undoubtedly skirted the Nahuelbuta Cordillera on the east, passing through Angol (Fig. 3.1). However, this road could have been connected with the coastal road through the Contulmo Pass, thereby joining Concepción, Arauco, Cañete[10], Purén, and La Imperial. In its route through the Purén Valley, the road undoubtedly followed the Purén–Lumaco River.

These roadways surely existed before the arrival of the Spanish, since there is no instance where the documents indicate road-building work and the great "speed" with which the Spanish exploration and conquest were carried out can only be explained by the prior existence of a well-maintained road system.

The Spanish were in the Purén Valley early on, but they had difficulty in consolidating their presence and it was generally reduced during the sixteenth century to the presence of a fortified house, with relatively long interruptions. The historical accounts indicate that the first fort was built in 1553 (Barros Arana 1999, p. 324; Guarda 1990, p. 189), but was of short duration as it was destroyed that same year (Guarda 1990, p. 189). A second Spanish fort was built by Governor Alonso de Sotomayor in 1585 (Barros Arana 1999, p. 38), but surely the Spanish presence, although precarious, had been reestablished much earlier, since in 1580, Captain Juan de Nodar referred to "the fortified house of Purén" and proposed that "another fort [be built] to ensure order like the other forts built there, so that it would consolidate Spanish domination south of the Bío-Bío" (report from Capitán Juan de Nodar, July, 1580. AGI, Chapter 31, unpaged document).

The sources indicate that a third Spanish enclosure was built in Purén in 1597 when Governor Martín García Oñez de Loyola ordered that the fort of San Salvador de Coya be manned (Letter of Martín García de García Óñez de Loyola to the King, 24/03/1597, ANCh, MVM, vol. 274, f. 44). Apparently, the order was given without much foresight, since in 1598, the Spanish official was planning actions of reprisal against the *lebo* of Purén (letter of Martín García de García Óñez de Loyola to the King, 17/01/1598, ANCh, MVM, vol. 273, f. 61). Governor García gives the following information about the location of this last fort, referring to the plans of the people of Purén to attack it.

> … [they] all gathered earth and redirected the wáter of the Lumaco River which is half a league from the fort and flooded it as they infallibly do [which evidently was a common practice by the indigenous population] if the information of the spies that I always have with me had not enlightened me …. (Letter of Martín García de Óñez de Loyola to the King, 17/01/1598, ANCh, MVM, vol. 273, f. 63).

It appears that the fort was located near the river, which is now called Lumaco, at a distance of half a league. It can be supposed that the fort was located on the floor of the middle part of the valley where the river begins to be called the Lumaco, since it was possible to flood it. Goicovich, who has studied the material in the Medina manuscript, indicates that indeed, the fort was flooded through the skill of the

[10] Cañete was located in the "province" or "state" of Tucapel.

inhabitants of Purén and for this reason was moved to the Curaupe sector, 2 leagues distant from its first location. It remained there for another 5 months (Goicovich 2006, p. 103).

In the majority of the documents, the particularly warlike character of the inhabitants of the "province" of Purén is emphasized. This appears generally associated with ceremonial practices or lifeways that bring to mind a society where there was a cultural system built around warfare.

During the sixteenth and the beginning of the seventeenth centuries, many of these characteristics appear to have been shared with the other nearby provinces, and especially with Tucapel, but the Spanish observers emphasize them in particular among the inhabitants of Purén.

An example of this is given in a relatively early account by Francisco de Bilbao (around 1577), which narrates events that happened during the governorship of Francisco de Villagra (1561–1563) when the populations of indigenous groups from Tucapel and Purén met for war. It states:

> … they then carried out the solemn ritual which they are accustomed to use, that is, they kill a llama and remove the heart and all the caciques and principal men, in the name of all the rest, annoint the [arrows] with the blood of the said llama as a sign that they would comply with what is agreed and would keep it secret and that they would be perpetual enemies of the Spanish and that they would follow this order as long as they lived and then they throw the head of the dead llama in the middle of a plain and then those leaders take up their arms, which are lances, and a shell trumpet is blown making a very great roar and they lance that head until they put out both eyes and then they believed the words are true. A priest climbs a tall tree trunk with all the leaders around him, and in the name of all, tells the community what has been agreed, and all reply that it is very well spoken and agreed, and so each leader offers drink to his people with his own hand as a sign that, as that drink remains in their bodies, so must they keep the secret (Francisco de Bilbao to His Majesty, n.d. [c. 1577], ANCh, MVM, vol. 267, f. 161–162).

This passage depicts the ritual that we see described later in many colonial documents that show the highly ritualized decision-making mechanisms used by the Araucanians. It is worth noting that the reference to an "Indian priest" who climbs a "very high tree trunk" is similar to the *rewe*[11] pole and the *machi*'s [shaman] use of it today in public ceremonies. The "Indian priest" has "the gift of the Word: of an "authorized" word, and in his or her address calls upon those present to undertake the action proposed by his word; the "agreement" is sealed with the act of "drinking" what each "leader" must "bring to his people" by "his own hand." This type of activity, in which mechanisms of political decision, in particular relating to warfare, and ritual are mixed, is described in all periods of Mapuche history.

The same document indicates the importance of the participation of the inhabitants of Purén in the event described earlier.

> … [the inhabitants] of the Valley of Purén killed their encomendero don Pedro de Avendaño, a famous captain, and his friends who were staying with him in that valley and by express order of captain [Pedro de Avendaño] they were with their friends and off-guard

[11] *Rewe* is the axis mundi or altar used by a *machi* shaman during public ceremonies to pray to the deities and sacred ancestors in the upper world.

> and the indians of his encomienda and those that could not abide [Spain] killed the indians from outside who were following them in place of their masters [the Spanish] and in this manner they declared war in such wise that until this very day it continues although occasionally they have offered peace and once again they returned [to warfare] in the same fashion which I have described above …. (Francisco de Bilbao to His Majesty, n. d. [c. 1577], ANCh, MVM, vol. 267, f. 162–163).

Referring to the same period, which can be placed between 1561 and 1563, Baltasar Perez de la Mota, on recounting his military merits, indicates that he participated in the expedition of reprisal that Bernal del Mercado made against Purén. He states:

> … After which I went with captain lorenço Vernal on the expedition which he led against a large number of Indians which were in the fort of Purén doing a lot of harm and calling on other Indians who were at peace to rebel as they were doing and to end this harm the said expedition was made in which I served at very great risk because there were many people and there were many battles and skirmishes with them and having returned from the said expedition to the said city of ongol the said indians at war attacked and having stolen the livestock of the Spanish, I went forth with other soldiers to take it back and for this they had a great battle with us where I was wounded and I was near death because I stood forth in the [battle] until we took back the livestock as we did (Baltasar Perez de la Mota, [ca.1590]. AGI, Chapter 31).

After several decades, control of the Purén Valley and the group of principal valleys of Nahuelbuta continued being a concern for the Spanish. The report written in 1593 by Mariscal Martín Ruiz de Gamboa speaks of this concern and clearly recognizes the need for a coordinated attack to control the most strategic valleys of Nahuelbuta. In this document, Ruiz de Gamboa argues in favor of the simultaneous settlement of Tucapel, Purén, and Millapoa (report from Martín Ruiz de Gamboa, Santiago. 06/20/1593, ANCh, vol. 274, f. 48–49). This military officer gives us an idea of the military capacity of the inhabitants of Tucapel, Purén, and Millapoa-Catiray[12], when he estimates that the future Spanish settlements in each one of these valleys should have 350 fighting men in Tucapel, another 350 in Purén, and 300 in Millapoa (Ibid. f. 52). According to Ruiz de Gamboa, these numbers of soldiers were indispensable for exercising permanent control over these valleys and for making the punitive expeditions to seize food and lay waste upon which the Spanish offensive strategy was based.

For a description of the inhabitants of the Purén Valley and the other valleys of the Nahuelbuta Cordillera in the last decade of the sixteenth century, it is necessary to refer to the 1594 text of Miguel de Olaverría, who writes:

> … experience has shown that in Purén in the sight of many Spaniards that only six indians from that province attacked 300 indians from the towns of Imperial, Rica, Valdivia and Osorno and forced them to flee, killing some of them; over these indians of the said towns and over others nearby the [indians] of the estado have such superiority, authority and domination that each time they wish to make them break the peace and stop serving the Spanish as experience has shown now surrounding them by force of arms and by payments and interest which they give them by which it is evident that all the indians of Chile who are not from the estado or neighbors to it are cowards and of little importance …. (Miguel de Olaverría 1852, p. 22).

[12] As we indicated in an earlier note, the territory covered by Mareguano appears associated with Catiray in many documents, and in others, also with Millapoa.

This author makes a clear distinction between the inhabitants of the *Estado*, in particular those of Purén, and the groups from further south with regard to their capacity for warfare. In a document that is dated a little later, from 1598, Governor Martín García Óñez de Loyola notes the relationship between the different provinces of Nahuelbuta in the acts of resistance. In particular, García refers to a kind of complementarity between responsibilities of food production and those of military action, which permitted the inhabitants of Purén to specialize in warfare when he states that "… it was well known that [those of Tucapel] gave aid to those of Purén and that the latter cultivated their fields in the *estado* of Tucapel …." (Letter of Martín García Óñez de Loyola to the King, 01/171/1598, ANCh, MVM, vol. 273, f. 67).

Moreover, the description by Fray Diego de Ocaña written in 1600 deserves consideration because of the rich detail it provides about the relation between the inhabitants of Purén and the wetland of this valley. It is similar to other early descriptions (see Dillehay 2007):

> [the marsh of Purén] is the greatest defense they have in this Kingdom because it is a large lake, very deep, and with many islands within it on which the indians live and reach by canoe, because the fields they cultivate are around the lake and the livestock, sheep, pigs, and some goats, which these indians have, are pastured on land around the lake and these animals are so used to embarking and disembarking from the canoes each night and in the morning they enter the canoes and the indians have no labor but taking them and bringing them back and if someone should wonder how it is that this lake has not been conquered, the reason is that for a quarter of a league around it are swamps and very deep mud and large beds of reeds, once the Spanish attempted to enter by these mudflats [and] arrived at the islands, [but] the indians escaped in their canoes to another place and entered the mountain thickets [and] returned to the lake and for this reason they could not be pursued and they could not be defeated. There is another thing about this lake, as there are many indians and the islands are few, not all can fit on them and through necessity, in shallows of this lake where there are groves of myrtle, they have constructed platforms where they build their houses and those who cannot live on the islands reside here and for this reason these indians are so warlike because they have this fortress in this lake which it would appear nature had put there for their defense …. (Fray Diego de Ocoña 1995, pp. 38–39).

The warlike character of the inhabitants of the valleys of Nahuelbuta and, particularly, those of Purén from the beginning of the Spanish conquest does not diminish; rather to the contrary, it seems to have become stronger with time. The ecology and the geographic location of these valleys, especially those of Purén, undoubtedly contributed to making them favorable places to organize resistance to the conquerors and zones of refuge capable of sheltering and feeding a considerable population. In 1602, the provinces of Purén, Arauco, and Tucapel were still considered "the heart of the war" by the Spanish, and the inhabitants of Purén were described as being more warlike than those of Tucapel and Arauco. In a report about the war in Chile, the ex-governor Alonso de Sotomayor proposed a way to end it:

> … once these three provinces of Purén, Arauco and Tucapel are pacified, there can be sure expectations that shortly whole kingdom will be [peaceful] and the reason for this is well known because they have always been at the heart of that war and those who most supported it and where the fire was rekindled that again consumed that land which so pleased the indians that they wish to claim the glory of their past victories and, in particular, those of Purén who are the most feared and respected [more] that those of Tucapel and Arauco [who] acknowledge themselves as their inferiors …. (Alonso de Sotomayor, 1602, ANCh, MVM, vol. 272, f. 157).

For Sotomayor, the conquest of Purén should be preceded by the conquest of Arauco and Tucapel; as the former was the preeminent valley that offered the greatest difficulties to domination, he considered that it should be prevented from counting on the aid of the two western provinces. He states:

> … to hasten and defeat that province of Purén more rapidly, one should not begin with it because that would be very difficult and exacting, and the reasons for this I believe are well understood by the practical men in that land and thus I began with those of Arauco and Tucapel, so by removing the aid and encouragement which these [provinces] give it [Purén] since alone it will not be able to maintain itself and moreover having the populations of Ongol at their back, which can be brought around to this end and purpose so that they [those of Purén] cannot retreat there nor avoid falling into our hands …. (Alonso de Sotomayor, 1602, ANCh, MVM, vol. 272, f. 158).

Purén continued to be a major problem for the Spanish in 1604, but in contrast to Sotomayor, the Governor Alonso de Ribera wanted to attack the center of the Purén resistence and subsequently attack the provinces of Catiray and Arauco. Operating on this idea, Rivera began his campaign in February 1604 and entered the valley of Purén; the description of the events of this campaign offers information about conditions in the valley during this period.

> … I travelled through Purén where much damage was done to the enemy, burning a great quantity of foodstuff and houses and some livestock was seized and entry was made in the island of Pallamacho, marshes where there are some small islands where they also burned houses and seized some livestock, also the island of Pallamacho was entered where the Spanish had never entered, there was fighting when the entrances were discovered and I went myself to carry this out in person with seven or eight friendly indians and six Spaniards in this fashion and since entry could not be made without more preparation [supplies] than we had with us I withdrew the men and ordered that all the friendly indians be loaded with faggots and I ordered Captain juan agustin with the musketeers to take up a position where he could attack the enemy that was defending and ordered Captain don Alonso de Rivera with his company of foot and 20 reformed captains [civilians fighting as soldiers] to enter again and with this after throwing down the faggots under the musketeers, we entered the said island, the enemy fled to the marsh and no more than three were killed and none could be captured because of the great care they took to save themselves and because the marsh and the thicket gave them such an advantage.
> They removed from some *malocas* [surprise attacks] which had been built in Purén, 26 Christians [captured Spaniards or Christian indians] of those lost in Villarrica, Imperial, and Valdivia some of them came because the enemy was engaged in putting their children and women in a safe place others came out in exchange for some indian men and women who had been seized, in this expedition the enemy suffered great damage to crops and livestock because more than 600 homesteads were burned in which there was a great quantity of food and vessels of those which they use and of the tools they use to cultivate the land which is not the least harm they receive and in with regard to persons there was little harm because six or seven were killed because these [indians] flee when it suits them and are so favored by the terrain and although we did everything we could more could not be done more than what I have said than on this expedition they killed a horseman and another drowned while swimming.
> The Purén expedition was very important because it is the province with the highest reputation in all this Kingdom and which threatens the rest and for this reason I decided to go to attack them in their land trusting in God that within days we would have the victory we won so that the rest, those at peace and at war, in which their eyes were put out and so that the forces of your magesty have no safe place some would settle down and the others would accept the service of your magesty and although the said expedition has served for

> all [this] until now, no indians have come to sue for peace because they are so obstinate in enmity against the christians that even though they regularly receive damage and go like wild beasts into the mountains with their children and women they love this better than to enter into friendly relations …. (Alonso de Rivera, 1604, ANCh, MVM, vol. 286, f. 29–30).

Information about the system of settlement and defense on the valley floor can be extracted from the above passages. The population appears to be numerous, since the document relates that more than 600 homesteads had been burned, that is, there were at least some 600 family units there; foodstuffs and tools for cultivation were plentiful and they encountered a significant number, at least 26, of Spanish captives living in the area. The picture painted by the text is of a densely populated area, with intensive farming and stock raising. The document also emphasizes the strategic importance of the province of Purén because of the fundamental role it played in the conflicts.

Despite the significant destruction of Ribera's campaign in 1604, it was not sufficient to defeat the population of the valley, since in the summer of 1606, the Governor, Alonso García Ramón, undertook a new expedition to the valley. During this campaign, García Ramón reconnoitered and entered the wetland, finding "horses, livestock, women, and children" hidden there. The Governor indicates in his description that the "Indians" challenged him, some from an island and others from a hill "outside the marsh," "calling out to him," and "blowing their trumpets." This Spanish expedition, like the one 2 years earlier, destroyed the crops (Relación puntual y verdadera de la guerra que el gobernador Alonso Garcia Ramon hizo este verano de 1606 a los Indios enemigos del Reyno de Chile … 1606, ANCh, MVM, vol. 280, f. 124–129).

These successive military expeditions indicate not only the importance in warfare, which the valley of Purén had acquired at the beginning of the seventeenth century, but also the extraordinary capacity for demographic and economic recovery of this territory, since in spite of the destruction of the crops and the scattering of the population, it quickly returned to become once again the target of Spanish incursions.

Conclusions

There is no doubt about the considerable importance of the Purén and Lumaco Valley in the indigenous system of occupation of the fertile valleys of the Nahuelbuta Cordillera. These valleys were densely populated at the time of the arrival of the Spanish in the middle of the sixteenth century and enjoyed a flourishing economy and made up a sociopolitical system that integrated the littoral, the coastal plains, and the interior valleys by means of political and symbolic mechanisms that granted the highlands a preponderant role.

The Spanish presence, despite its destructive force and, perhaps, because of it, strengthened this cordilleran system, bringing about an increase in communication and population movements across the cordillera, making it a privileged space for retreat and organization of resistance.

The Purén and Lumaco Valley, because of its geographic location and its ecological characteristics (see Chapter 6) was doubtless a key element in this system. However, the geographic and ecological aspects by themselves are not sufficient. The importance of the sociocultural systems already present in the region of which the *kuel* complexes are an example must be considered (Dillehay 1985, 2007).

Lastly, it is important to emphasize two aspects of the Spanish presence that, although obvious, are not less important: the gold mines and the horse. The gold mines were the motor driving the Spanish presence and the strategies of dominating and moving the local populations. They justified the Spanish insistence on creating and maintaining settlements in spite of the native resistance. The horse was the best unintended gift that the Spanish gave the Mapuche. The horse played a fundamental role in the increase in communications and movement around and across the Nahuelbuta Cordillera.

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Part II
The Setting and Evidence

Chapter 4
Data, Methods, and Background

Tom D. Dillehay

Introduction

Identification of the historical and social processes, taking place during the time period under study, has largely been the domain of historians studying the written records. Not yet widely examined are the archaeological or cultural material expressions of these processes for south-central Chile. Primary and secondary historical sources were selected for this study (see Chapter 3), based on the anticipation of what those sources might contribute toward understanding the material culture and actions of Araucanian communities in the Purén and Lumaco Valley. Also used are composite analyses by contemporary historians (e.g., Padden 1993; Bengoa 2003; Boccara 1998, 2000; Goicovich 2003, 2008; Zavala 2008; Zavala and Dillehay 2010). Although a portion of the data gathered for this book is drawn from historical sources, the archaeological record of the period constitutes the primary database. Numerous studies have pointed out the advantages and disadvantages of each discipline. I will not fully consider these here, because I have discussed them previously (Dillehay 2007).

In brief, archaeology has its limitations in terms of imprecise chronology, site identity, cultural processes, and authenticity of the types of relations among groups. In this regard, archaeological interpretation can be vague and, at times, over extrapolated from the database. It also can be claimed that archaeologists often indulge in extravagant use of model building, which can also be criticized for being too hypothetical. However, models help to place the research within the framework of global debates within anthropology and archaeology concerning various subjects. By means of this approach, we hope to demonstrate the relevance of the Araucanian case to the interests of specialists in other parts of the globe.

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On the other hand, there are problems with data in the archival records. For instance, I have found that the descriptions of Araucanian settlement patterns, habitation structures, population estimates, and other events, processes, and patterns stated in the archives by chroniclers or inferred from these sources by historians can sometimes be imprecise and confusing. In the case of house structures and settlement patterns (cf. Castro and Adan 2001), for instance, they often sound so different from one another that I am tempted to question the observational abilities of some early Spanish eyewitnesses. Houses are variously described as small to large and settlements as dispersed to aggregated (see Chapter 5). Furthermore, it can be observed that some chroniclers have read and copied the observations of those before them, thus placing doubts on some later sources. It is thus difficult to know whether any of the variability mentioned in the archives reflects change over time, differences between regions and ethnic groups, variability within single communities that are undergoing rapid change, or simply observer error.

In turning to another issue, recent research in other parts of the Americas has raised serious questions concerning the function of disease as a prime mover of culture change. There are considerable methodological and epistemological problems of calculating the demographic collapse brought about by the introduction of European diseases (Henige 2005; Baker and Kealhofer 1996; Milner 2005). In the Araucanian case, chroniclers report the loss of 30 % of the population in some areas (Bengoa 2003, p. 30). From an archaeological viewpoint, the devastation of local populations cannot be readily supported because large numbers of people were required to sustain local sociopolitical hierarchies, public projects, and the war effort itself. What is clear is that much additional archaeological and bioarchaeological data on local populations declines are needed to more fully evaluate claims concerning the effect of depopulation in the protohistorical and early historical periods, not simply the counted extrapolation of numbers from the Spanish sources.

At least three issues remain to be overcome in the combined use of these records: First, how to deal with the issue of chronology? Second, how to establish social identity in the past? Third, how to avoid the more epistemological problem of premature integration of archaeological and historical results and thus the conversion of discipline-based speculations into spurious interdisciplinary reconstructions of the past?

When discussing sites, archeologists often treat them as contemporary if they belong to the same "phase" or "period," divisions of time that almost certainly span decades, and often several centuries, making it difficult to address the specific time frames provided in the written records. Historians also have long struggled with chronology. Several dating methods are available to historians but none of them are particularly satisfactory, with the exception of tie-ins with specific dates mentioned in documentary sources. Where there are references in an oral tradition to an event whose occurrence also is recorded in a documentary source or, of course, vice versa, then dating is generally feasible. One other means of dating traditions may be available to historians; this is the use of archaeological dating methods on sites identified in oral or written traditions.

If the dating of events and processes recounted in oral traditions remains a challenge to both historians and archaeologists, establishing social identities and correlating such identities with archaeological constructs is equally problematic. Perhaps to a greater extent than any other aspect of the past, identities are subject to distortion and redefinition in the recounting of past traditions. Recourse to the authority of the written record may be a powerful tool in convincing oneself and others of your own and their identity. For instance, many so-called ethnic names were either products of colonialism or had a history that extended back only barely into the precolonial past. In archaeology, a one-to-one association of ceramic types or styles with ethnic or social groups has not proven to be accurate.

As for avoiding premature interpretations, the most feasible approach until both more archaeology and ethnohistory studies are carried out in the area is to proceed with caution, of course. When there is solid evidence whereby we can employ the direct historical approach to the ethnographic, ethnohistorical, and archaeological records (Dillehay 2007), then the detailed empirical linkages between them need to be explicitly laid out.

To conclude these points, the practitioners of both disciplines are imbued with particular worldviews and paradigmatic orientations that could be labeled as subjective biases. Such biases are bound to exist. Indeed, how could one possibly pursue research in any meaningful way without them? How else could one establish research priorities? Adherence to a particular paradigm or model does not necessarily lead to the use of extravagant extrapolation by either archaeologists or historians.

Despite the limitations inherent to both disciplines, it is crucial to unite the two in order to achieve a more complete understanding of the Araucanian past. The divergent lines of archaeology and historical archives can converge to provide multiple kinds of evidence about the Araucanian society during the sixteenth and seventeenth centuries. Thus, the attempt here is to take a documentary approach to the research problems, one whereby the "central aim is for our historical imagination to be guided by both our anthropological perspective and our attention to materiality" (Wilkie 2000, p. 15). The method is to recognize that each of these records offers insights into different "scales of temporal and social resolution" (Wilkie 2000, p. 20) about the nature of the war, the interaction between the Araucanians and the Spanish, and the level and content of their sociocultural organization. Regardless of these different scales, they inform differently on the research problems. The question is how do we merge these different lines of evidence that show different scales of resolution?

Triangulation

In merging them, I employ a triangulation approach to these records. Triangulation is a process of "metaphorization," and notably of movement between researcher and subject positions in the research process. This approach includes movement across three perspectives: the researcher as a follower of nomothetic lines; the researcher as the taker of an ideographic overview; and the researcher as the finder of a particular angle (e.g., Miller 1997; Ghauri and Gronhaug 2002). Each of these perspectives is given to associated possibilities and impossibilities. I also consider the implications of this analysis in terms of methodological issues of perspective, data capture, and reflexivity.

Triangulation is typically described through the terms capture and constraint—of fixing, positioning, and confining. For example, Paul (1996, p. 138) draws on systems theory to suggest that mixed-method triangulation is one way of "capturing" reality, arguing that "analysis of complex organizational systems demands requisite variety in data collection methodologies in order to mirror the complexity which they attempt to describe" and that "leveraging is possible because the strengths of one method often lie in an area of weakness of another method" (Paul 1996, p. 142; cf. Scandura and Williams 2000). Similarly, Jick (1984, p. 365) argues that triangulation "can be something other than scaling, reliability and convergent validation. It can also capture a more complete, holistic, and contextual portrayal of the unit(s) under study." I use a tri-part methodological approach to analyze the development of Araucanian polity formation, namely historical documents, individual community or archaeological sites, and finally, the artifact and feature assemblages excavated in sites as they were conceived and constructed as a system. By triangulating between these three levels of information, I am able to reconstruct, to the extent that both records allow, the contours of debate about what the early historic Araucanian society of Purén and Lumaco looked like. Each of these focal points of fieldwork can also be interpreted as interrelated expressions of agency (i.e., individual site, artifacts, communities, and so on).

In this analysis, the actions of individual leaders and communities mentioned in the early historic texts are particularly meaningful in terms of their specific social and archival context. I argue that most of the historical record can be interrogated to unfold the tapestry of meaning that involved member communities of the society from the gentlefolk (*huenchu*) in local *lofs*, to patrilineal leaders of *regua*, to larger *ayllaregu* and *butanmapu* political units. These communities were situated in relationship to one another by their position in society, and the resultant patterning of their interactions can be viewed as constituting that society. In this way, the methods employed act as a guide not only for understanding cultural patterns but also agency, identity, and political subjectivity and obligation.

I have also chosen to look at historical sources that elucidate the role of the individual site types and locations that had the greatest impact on the operation and survival of the Araucanians. Based on cultural materiality alone, the large *kuel* mounds and *rehuekuel* complexes had to have been at the center of the warring society in the Purén and Lumaco Valley. I will not fully reiterate their ethnographic and historical meaning here because that was addressed in earlier publications (Dillehay 1985, 1995, 2007). Instead, I am primarily interested in how the institutions of religion and ceremony, political structure, kinship structure, and demographic organization enabled or constrained collective actions through the material record. The same is true of the analysis of domestic sites and community locations. I am most interested in the material agency produced through the interaction between individuals (e.g., leaders, sites as communities, warriors, and the groups of Spaniards), objects (artifacts and mounds), and the enabling and constraining conditions of the institutions themselves, rather than a disembodied approach to either institution alone.

Although theoretical and analytical goals vary, we have to decide what parts of this Araucanian history are told by the archival documents and by the material culture, without embellishing, excluding, or glassing over alternative choices. For instance, the routine and ritual practices of the Araucanians reproduce broader religious and political concepts linked to wider processes of landscape enculturation, forming what Bourdieu would term the embodied *habitus*. (*Habitus* here is considered to be sets of learned behaviors that can be expressed, consciously or unconsciously, in material ways (Bourdieu 1977).) This wider enculturation included the construction and maintenance of sacred sites, such as the *kuel* and *rehuekuel*, and constituted the singling out of natural places in the landscape for special views and gatherings and subsequent transformation through the creation and deposition of material culture. The conceptual treatment of material culture is linked to ideas that objects and places, as a result of their physical form, may have been perceived as being animate, that is charged with life forces, and consequently demanding special attention. In addition, the *kuel* have particular symbolic value in the relationships of communication and exchange, which united different groups across social boundaries and political domains (see Dillehay 2007).

Domains and Styles

Social boundaries and political domains demarcate local systems and regions, which are frequently exhibited as boundaries in the material culture of mound and ceramic styles. Mound complexes in the valley generally conform to the social boundaries inferred from the archives, but they do not correspond with the spatial distribution of ceramic styles (see Dillehay 2007; Chapter 7). With greater reliance on warfare and with increased population density and mixing, social and economic ties proliferated greatly during the late sixteenth and early seventeenth centuries; these ties led to new developments of regional networks that were signaled stylistically (see Chapter 2; Dillehay 2007, 2010). In this regard, stylistic designs played an active role in the integration of different social groups (*sensu*, Wobst 1977, p. 327). As Hodder (1990, p. 4) has noted, style is historically structured and given meaning within a culture. Style can reinforce, emphasize, or even mask aspects of information, and it can be heavily invested with multiple levels of symbolic coding.

Moreover, as Weissner (1990) has pointed out, style also can represent both the interest of individual groups and of the society at large and can be linked to social power and status at both levels. It is also the means by which people "negotiate and communicate personal and social identity vis a vis others" (Weissner 1989, p. 59). As a marker of social identity, style can become symbolic of a group, in that it functions as a signal of membership in a particular group (cf. Wobst 1999; Hodder 1982, 1989). Different styles generally are associated with the distinct identities of different groups, thus creating boundaries among them. However, if the intent of a society is to break down and non-differentiate the boundaries between groups, then style can become more homogeneous. Style can thus promote differentiation or cohesiveness among groups by representing or eliminating the boundaries between them, respectively.

Cohesiveness is an emphasis on similarity so as to create a sense of community among members of a group. It lends coherence to an otherwise internally differentiated population. Through cohesiveness, people foster a sense of social coherence and local identity among themselves, which can also potentially mask the real conditions of their existence from themselves and give a sense of coherence to what is still internally differentiated groups, which was the case with the sixteenth- and seventeenth-century Araucanian populations.

This perspective of style allows us to consider Araucanian social integration of different groups through the structured material expressions of design legibility in mound, ceramic, spatial, and other contexts. We know of the political and social integration evidenced in the historic record, which we can employ to reveal the forms of integration that existed in the material culture. If ceramic and mound styles played a major part in the cohesiveness of different groups, dramatic changes in those designs should occur at the time of the Arauco War, which we have documented (see Chapters 7, 9 and 16). For instance, we have found that the designs on the ceramics of this period became simplified and more homogeneous, apparently making their social meaning more legible to coexisting local and nonlocal groups (Dillehay and Saavedra 2010). The use of material culture in the act of integration is consistent not only across pottery types but also in mound stratigraphy, which conforms to an overall style of familiarity and legibility.

Lastly, some scholars might place the impetus to simplify the indigenous ceramics with the acquisition of higher quality Spanish pottery. But this was not the case. The absence or rarity of Spanish goods in archaeological sites suggests that the material qualities of European goods did not make them irresistible to the Araucanians, fostering an abandonment of indigenous production and a dependency upon European trade goods and thus a demise or simplicity in ceramic technology (Dillehay 2007; Dillehay and Saavedra 2010; Sauer 2012; Dillehay and Zavala 2013). Furthermore, there were no European mound styles to replace the *kuel*.

Prior Historical Perspectives

Archaeologists and historians have long acknowledged how contact with European cultures affected Araucanian society (cf. Dillehay 2007; Barros Arana 2000; Jones 1999; Zapater 1973; Bengoa 2003; Bocarra 2002; Goicovich 2006; Villalobos et al. 1982; Zavala 2008). However, two opposed interpretations of these effects have permeated scholarly research. An earlier generation of scholars slightly downplayed the disruption of the Araucanian culture by European contact (e.g., Guevara 1913; Cooper 1946; Faron 1962; Dillehay 1976; Leon Solis 1985; Zapater 1973), while a later generation slightly overstated these same impacts (e.g., Boccara 1999, 2000;

Villalobos et al. 1982). These differences in interpretation appear to be based more on the theoretical approaches and a priori assumptions of individual researchers than on discernable differences in the presently known archaeological and historical records.

To briefly elaborate, initial contacts between the Araucanians and Europeans set in motion a process of acute cultural transformation for indigenous peoples. These contacts were followed by displacement of local populations, reorganization of existing political economies, introduction of new material goods and technologies, and the emergence of political confederacies and new identities and agencies. Although these events were profound and widespread, scholars interested in documenting the nature of post-contact Araucanian culture changes are faced with several daunting research challenges. One of the principal impediments is a paucity of historic documents relating to the period immediately after initial Araucanian–European contact. For most indigenous peoples of south-central Chile, almost two centuries passed between their first interactions with Europeans in the mid-sixteenth century and the production of more detailed historical documents in the late eighteenth century (a temporal span often referred to as the real protohistoric period). A few accounts date from the opening moments of contact (e.g., Bibar (1555/1966); Ercilla y Zuñiga (1569/1982); Mariño de Lobera (1594/1960); Olaverria (1594/1852); Oña (1596/1975); Valdivia (1555/1960)), others from almost 50–100 years later, and there is little in the way of historical documents to connect these disparate depictions of Araucanian cultures.

Observing these documents from the theoretical perspective of contact, acculturation, and later enculturation, earlier scholars generally viewed Araucanian culture by studying protohistoric and early historic culture change which was limited to charting the decline of indigenous practices and the rise of European-introduced customs in certain areas (e.g., Cooper 1946; Titiev 1951; Faron 1962). Araucanian cultures of the sixteenth and seventeenth centuries were often seen as perfect and unbroken analogs of their late pre-Hispanic (LPH) ancestors. Based partly on the nineteenth century notion that native cultures were static prior to European contact, this view hinted a lack of creative intellect among the Araucanians and tended to deny them an active, causal role in the process of their culture changes.

A contrasting view to that of the acculturationists is found in the work of scholars who view the early historic period as an era of cultural rise and the birth of today's Mapuche ethnicity (e.g., Boccara 1999; Saavedra 2002). This emergence is thought to have been so profound as to make comparisons between the protohistoric and historic Araucanian cultures nearly impossible. Scholars who take this position propose instead that we treat protohistoric and historic Araucanians as distinct (and disparate) ethnic cultures. As Boccara and Saavedra contend, modern Mapuche cultural is a phenomenon of contact and derived from only a small fraction of peoples and cultural variability of the early sixteenth century. Thus, from the perspective of these scholars, the historic Araucanians (and thus the Mapuche) are seen as fundamentally different and culturally distinct from their precontact predecessors. From this perspective, stark divisions between precontact and post-contact cultures make the diachronic analysis of early historic culture change difficult.

A few scholars have recognized that the Araucanians/Mapuche have to be studied in both their historical and their ethnic context. For example, contextualized historical approaches by Faron (1964), Jones (1999), Sáavedra (2002), and Bengoa (2003), among others, have revealed important regional cultural diversities and changes over time. Unique historical conditions changed not only regional subsistence practices and social organization of local and regional populations but the nature and scale of their regional interactions as well. Many scholars believe that such regional processes often collapsed as the Mapuche became involved with the Spanish and Chileans (cf. Boccara 2000; Silva and Téllez 2001). However, those dimensions of regional processes that did not collapse have largely been glossed over by ethnographers in their desire to separate out the presumed disruptive effects of colonial contact from the "true" precontact indigenous baseline (see Goicovich 2003, 2006; Zavala 2008). This tendency reflects, in part, a legitimate desire by some ethnographers to filter out extraneous and potentially misleading evidence deriving from circumstances of contact and sporadic warfare, and it reflects the inherent nature of ethnographic practice. That is, both ethnographers and historians have tended to overgeneralize Mapuche culture from local case studies and the early written records. This is unfortunate because it has led to a systematic neglect of the wider regional interactions and cultural diversities of local populations and often has hermetically sealed the Mapuche from wider comparisons with other Andean societies. It also has led to the perspective that the Mapuche never developed any social complexity beyond advanced hunters-gatherers and horticulturalists. Elsewhere, I had rejected the frequent historian's idea that the Araucanians demonstrated sociopolitical complexity only after contact with the Spanish in the mid-sixteenth century (Dillehay 2005, 2007). The presence of the pre-Hispanic *kuel* mounds throughout the Araucanian region is compelling evidence alone to indicate the reverse.

The preoccupation of most ethnographers and historians with a hermetically sealed Mapuche culture is an anachronism. For them, this condition is an illusion, an arbitrary construction of the disembodied "other" partially divorced from history and context. The result is an ignoring of indigenous history and thus of treating the Mapuche as bounded, isolated, and more pristine people than they really are. Cultural diversity or variation is seen as a property of endogenous social relations and time depth in the study area, and it is as mistaken to ignore such origins and diversity as it is to accept uncritically the argument concerning the origin, nature, and degree of local development. An example of this kind of excess bias is in the works of the Chilean ethnographer Foerster (1993, 2004). Despite its deserved influence, his work does not faithfully reflect the historical conditions of the Araucanians in south-central Chile. Foerster's analysis is flawed by empirical generalization and by its neglect of a critical historical factor. In his accounts, the Mapuche are isolated from the larger historical context in which they occupy a major position, including long-term contact with other Andean cultures to the north and east.

Dramatic changes most certainly occurred during the early historic period, but these changes (like those for other non-Western cultures contacted by Europeans) did not completely sever Araucanian peoples from their precontact cultural predecessors

(Dillehay and Rothammer 2013). On the other hand, views of essential continuity of the Araucanian culture by some scholars also have been exposed as unrealistic, and essentially ethnocentric. As Trigger (1985, p. 111) has argued, "gratuitous revisionism is no less misleading than the discredited assumption of cultural immutability that it seeks to replace." In the end, both approaches inhibit our understanding of indigenous social and political change and partly disenfranchise the Mapuche from their own history. Much of the incohesion in both approaches stems from the "cherry-picking" use of the written documents by historians and ethnographers, who often select certain passages and scenarios to support their interpretative agenda and who uncritically accept the written word of a few key chroniclers. The complexities of textual analysis and unwillingness to question textual authority have plagued the use of historical documents in Mapuche historic research.

Historical Araucanian Archaeology

Archaeological data are the most detailed set of source material used in this study. There have been two types of archaeology employed in south-central Chile: prehistoric and historic. The separation of the two archaeologies has tended to compromise the study of socioeconomic adaptations and long-term technological change. Within the past three decades, however, archaeologists also have made significant contributions to "substantive issues" in Araucanian archaeology, most notably with regard to culture history and specifically to chronology, classification of material culture, adoption of agriculture, and the rise of social complexity (cf. Adan et al. 2005; Aldunate del Solar 1985; Dillehay 1985, 1995, 2007; Navarro Rojas 2003, 2008; Sanchez and Quiroz 2005; Quiroz 2010). Yet most interpretation has been driven by diffusionism, migration, and historical particularism. In recent years, archaeologists have been rethinking the culture historical approach in Araucanian archaeology in a framework free from the earlier constraints of these foci. Instead of focusing on particular sites and historical events, a new culture history is concerned with indigenous dynamics, identity, power, and agency, cross-cultural interaction, and political process (see Sauer 2012; Dillehay 2007; Beron 2003, 2009; Trentini et al. 2010). This is the approach taken here, one informed by comparative data and theory from historical anthropology and archaeology that places agency and power relations at the forefront of analyses (Lightfoot 1995) and examines political dynamics, social reproduction, and cultural transformation.

In many ways, this latter approach is most difficult to employ because the archaeological record of the Araucanian region is still fragmentary and put together from bits and pieces of data and different historical episodes. Yet, archaeologists working in the region have become more comfortable dealing with fragmented material data as intentional episodes. For example, foundation walls have been good data for showing architectural process or the construction of space, while ceramics discarded in a builders' trench or post-hole help date the structure (Ocampo et al. 2003, 2005). Their archaeological provenience is often secure but their social or economic provenance can be entirely ambiguous. Archaeology in the Araucanian region has not yet developed to the level of dealing with these kinds of ambiguous contexts. Rearticulating these contexts for the purpose of this study thus requires more detailed analysis of both archaeological and historical data. In this study, it is the discarded everyday objects, prosaic and ambiguous as they may be, and their associated spatial relations in sites that offer the best potential for demonstrating community and intercommunity action when compared, contrasted, and combined with the historical record.

Several years of archaeological surveys, controlled surface collection surveys, and excavations at several pre-Hispanic and Hispanic sites have been completed by our research projects in the study area since 1978 (Dillehay 1985, 2007; Dillehay 2010; Dillehay and Saavedra 2010). Data from these surveys and excavations are combined with the primary and secondary historical sources to present a material biography of the *Estado* as seen from a limited number of places but primarily the Purén and Lumaco Valley. Excavated artifacts and subsurface features from several sites are presented in this study as the accumulated detritus of agency. The techniques used to gather and analyze the data, including shovel test and plow zone sampling, stratigraphic excavation, and artifact distribution analyses, are standard procedures in the field of prehistoric and historical archaeology. This study thus relies heavily on the analysis of artifacts, features, and sites (see Chapters 7–10 and 12–16) to describe and analyze the material record of the *Estado* (see Chapter 5 for a more detailed account of the archaeological field and laboratory methods).

More specifically, the archaeological data provide three key pieces of information. First, the artifacts recovered provide a composite image of the types of material culture used and ultimately discarded at different types of sites in the Purén and Lumaco area. Objects like tobacco pipes and ceramic vessels were used and reused innumerable times before being broken and entering the archaeological record. And artifacts recovered from sites are interpreted within these contexts of use. Second, artifact distributions show where the core activity areas were located in the valley. These artifact distributions do not necessarily represent the exact location of activities, but they do represent individual and collective action on the landscape. Finally, artifacts provide the means for dating individual sites in the valley.

Artifacts recovered from archaeological excavation are also compared with historical data to suggest the activities that took place at each of the sites. Many common activities at sites were enacted through material culture including eating, drinking, smoking, self-presentation, armed conflict, and the performance of cultural rituals and beliefs. These activities occurred within sites, at *kuel* mounds, defensive sites, households, and other settings. The public context of actions at ceremonial sites also is another important factor to consider when interpreting the meaning of an otherwise ambiguous archaeological record. For example, ceramic bottles functioned as vehicles for exchanging *chicha* (corn beer) at ceremonies. People in domestic sites, also suggesting household level ritual, used these vessels. It is also possible that the artifacts recovered from domestic sites simply represent household refuse, but it is also likely that artifact assemblages from these sites represent combined household and ritual refuse.

Household data also can be used to understand more complex activities such as social practices, and as processes through which social life and kinship structures were constituted and transformed. As indicated in the historical records, patriarchical kinship and gender relations played important roles in structuring community space, especially public ritual space and reconstituting fragmented groups. As noted before, maintaining a sense of patriarchy and patriotism, as well as fictive kinship, was an essential part of the early historic Araucanian life. *Ruca* houses made of wooden poles and thatch were a form of household (see Chapter 7), and as such served as micro-inversions of the domestic tasks undertaken in the wider community. Ritual tasks and space were also strongly shaped by daily practices. Through the use of established material expressions of the spiritual importance of family life, communities reinforced their bonds to one another. A sense of patriotism was also built through shared consumption of these practices on the individual household and large-scale public ritual levels of participation.

Rituals and Mound Complexes

Inevitably, the most difficult part of this book is linking the documentary and archaeological evidence to demonstrate the case for the teleoscopic growth of the patriarchical polity. Patriarchy is not a concept amenable to archaeological study. While similarities and differences between sites is expressed by material artifacts and is therefore easier to infer, the organizational strategies behind them are much more difficult to identify and conjecture. Although patrilineality and patriarchy may not be directly accessible in the archaeological record, the social processes that were involved in the creation of these organizations are. In this study, I attempt to isolate the teleoscopic levels of patriarchical organization by which the Araucanian polity formed, although some levels prove more amenable to archaeological analysis than others. To a certain extent, separating a *lof* level (the community site and sometimes a *kuel*) from a *regua* level (groups of related sites and *rehuekuel* complexes) and an *ayllaregua* (groups of local to regional *regua* and groups of *rehuekuel*) from a *butanmapu* (regional groups of *ayllaregua*) to the even larger *meli-butanmapu* of four territorial units is an artificial process. From an archaeological perspective, it is easier to identify the lower, more materially visible and spatially identifiable levels from the household and *lof* to the *regua* and *ayllaregua*. These are represented by community and settlement patterns. For instance, a cluster of houses and domestic sites likely correspond with *lofs*; a group of these clusters with *regua*; a single mound with a *lof* or perhaps a *regua*; a large mound complex with a *rehuekuel*; and several *rehuekuel* across one or more valleys with an *ayllaregua* (see Chapters 7 and 10). However, all of these levels depend upon the phenomenon of patrilineality as a prerequisite for establishing linkages. Claiming a patriarchical organizational strategy logically depends upon at least a minimum knowledge of social (i.e., patrilineal) context obtainable from other classes of data, which in this case is primarily the archival and oral records for the study area.

The documentary and oral records are clear about the level and type of social and political organization I conceptually refer to as a patriarchical polity during the early historic period, as shown in the previously discussed quotes from chroniclers and historians (see Chapter 3). However, it is problematic to materially prove patrilineality and patriarchy in the archaeological record, especially in the absence of human skeletal material, genetic analysis, and clear household data to inform us of gender issues and kinship structures. Nonetheless, the entire archaeological record of the period under study is a material referent that belongs to and is a product of patrilineality and patriarchy. Furthermore, by taking the triangulation approach to the topic, employing archaeology, ethnohistory, and the ethnography of oral tradition (see Dillehay 2007), as well as a teleoscopic one from family households that represent the patrilocal home to the multi-patrilineal *kuel* and *nguillatun* ceremonial fields that reflect patriarchy and patriotism, the argument is made that despite clear indicators of this type of organization, the archaeological record was produced by patriarchy.

Other archaeological data also will be presented in this regard, but it may seem that not all of them have direct relevance to the particular research agenda of this book. For instance, the faunal and floral information demonstrate subsistence economy and lifestyles during this period. Although not all data reflect directly on the formation of relationships between people and things within the specific context of patriarchies, they do reflect the active role of material culture in the political, economic, and social life of the times and serve as metaphors of consumption that shaped and reinforced the ontological structures of the family, the *lof* and *regua* patrilineage, and the *ayllaregua* and *butanmapu*. This material culture as a metaphor can thus be seen as reenforcing Araucanian ideology and religion, shaping and supporting patrilineal family structures, and acting in a real sense as participant items within the culture and society.

In summary, archaeological and historical data are inherently fragmentary, but together they offer a promising, if still incomplete, composite picture of the early Araucanian historical period. Weaving these sources together through a careful triangulation approach and interpretation of context, rather than simply stacking them on top of one another as supplementary data, provides a partial solution to this problem of incompleteness.

Research Setting and Plan

The forested south-central region of Chile is comprised of two mountain ranges, the Andes to the east and the coastal range to the west, which form the central valley. The archaeological research focused on the Purén and Lumaco Valley, located on the west side of the central valley in the coastal range. The late historic to contemporary environment is a temperate forest with extensive wetlands and small, circumscribed, and fertile river valleys (see Chapter 6). Over the past four decades, we have amassed a large quantity of archaeological, ethnohistorical, and ethnographic data on this and other areas in the Araucania. Although not a formal aspect of this book, the ethnographic data have been useful for understanding the material and spatial relationships between ceremonial landscapes, leadership, exchange systems, ethnic identity, and their material expressions in historic and contemporary times (Dillehay 1985, 1990a, b, c, 1992, 1999, 2003, 2007). Some of this information continues to guide the research methodology and data interpretation. Discussed below are the specific objectives and approaches of archaeology, the primary discipline of study here. Approaches to the ethnohistory and ethnography are discussed in Dillehay (2007).

Archaeological Field and Laboratory Methods

Because the archaeological project aimed to examine intra- and inter-site patterns related to proto-Araucanian and historic Araucanian polity development, to Araucanian and Spanish frontier interaction, and to refine the chronology for the study area, the methods necessitated a strategy that was capable of exposing these patterns as well as the stratigraphic sequence of the individual excavated sites. To obtain these data, we created geographic information system (GIS) topographic maps of the most important sites, primarily the large *kuel* complexes, conducted geophysical survey at selected *kuel* and domestic sites, carried out systematic surface collection, placed numerous cores and shovel tests at different intervals, and excavated test units, trenches, and varying block sizes in 21 different sites in 1995 and between 2001 and 2007. The profiles of several cut drainages were also cleaned and examined. The excavations generated data on regional domestic economy and paleoenvironments through analysis of archaeobotanical, faunal, floral, pollen, and phytolith samples, all of which are reported in the following chapters and appendices by specialists. The particular methods for each phase of fieldwork are presented below.

Surface Collections

Surface densities of artifacts declined considerably in various areas of the valley due to thickly bedded vegetation, which prohibited the detection of sherds and other artifacts at many sites. Therefore, the varying site sizes described in Dillehay and Saavedra (2010) represent the estimated limits of our systematic site survey, with intervening areas added on the basis of architecture (e.g., fortresses, *kuel*, walls), surface collections, and landowner reports of materials in plots. With the exception of a few fortresses and hilltop *rehuekuel* complexes, nearly all sites are within 400 m of year-round water sources, though water availability may have differed in the past. The valley floor of the Purén and Lumaco River is saturated with water during the winter months of heavy rainfall, to the extent that a large *cienega* is formed across most of the valley floor (see Chapter 6). Mountain runoff forms small permanent streams and permanent spring flows directly out of the spur of some hills. Modern-day forestation and deforestation have created a condition of limited archaeological visibility.

Architecture visible above the ground surface included earthen mounds, moats, stone foundation walls of historic structures and *casas fortificadas* (fortified houses), and heavily altered natural landforms, such as low hilltops that served as *nichi* platforms for *rehuekuel* complexes (Dillehay 2007). Modern-day construction and landform modifications are present at some sites, but this generally presents no major problem of archaeological visibility because most of the valley above the floodplain has not been economically developed except for scattered recent forestation and modern-day Mapuche residences.

The four phases of our surface strategy included topographic mapping, systematic surface survey, systematic shovel testing, and occasionally geophysical survey. Not discussed here are the site survey strategies across the valley, which began systematically in 1995 and more frequently between 2001 and 2007, although opportunistic survey started in 1978 and still occurs today when Dillehay is informed of a new site or the modification of a previously recorded one in the valley. The previous survey methods and results are discussed in Dillehay (2007) and Dillehay and Saavedra (2010). I estimate that we have surveyed about 85% of the total valley to date.

Topographic Mapping

The topographic mapping provided site maps for the major *kuel* complexes and a few large domestic sites. Because a variety of architectural forms characterized many sites, generating topographic maps over which artifact trends could be compared was important. In addition, changes in how different areas were used over time can signify changes to a site's community and functional organization. Changes to a site's spatial and organizational structure could also reflect the influx of new occupants or foreign influences, the compromise of local autonomy, and the assertion of a Spanish presence (Dillehay 2007). If outside influences were not imposed on sites, then that could have indicated a more benign Spanish presence and a local Araucanian strategy that perhaps emphasized negotiation, although, given the history of long-term warfare in the region, this latter option is a remote possibility (cf. Sauer 2012). Changes to site structures could also result from resistance efforts if barricades, moats, or other defensive structures, were constructed. The mapping portion of the project also had the potential to identify a few late historic stone monuments, as well as residential, defensive, and ceremonial structures.

Topographic mapping employed a total station, a stadia rod, and handheld global positioning system (GPS) units. The results of topographic mapping are displayed in figures in Chapter 7. These topographically mapped areas measured between approximately 1–10 ha, using contour intervals 0.50 m (or less in the area of stone and earthen architecture) and a scale of 1:100.

Surface Collection Strategy

The planned surface collection strategy at sites took into account regional comparability of results, as well as the detection of large and small features indicative of public activity, cemeteries, mounds, and activity areas such as surface middens. Each shovel test measured ~30 cm on a side and tests were roughly placed at 25 m intervals north–south and east–west. So, while our horizontal coverage of units themselves was reduced, the intensity and verticality of our collection strategy were augmented.

One of the primary goals of the research was to identify community responses to expansion or reduction of site size during the transition from the late pre-Historic Period (LPH) to the early Hispanic (EH) periods (see discussion below), to the extent that diagnostic ceramic and radiocarbon dated permitted a chronological sequencing of locales. We were particularly interested in how local leaders at sites might have brokered local and nonlocal interests during the LPH and EH periods by placing new external groups within specific areas of domestic sites. The use of systematic collection and close interval spacing allowed us to detect a variety of small features at different scales across sites, such as modest-sized ceramic scatters and ceremonial structures; it also provided a fine-grained picture of inter- and intra-site patterning in materials that related to various site activities; materials included ceramics and imports, local status symbols (toquicura axes), and serving vessels that would have been especially useful to local leaders if they enacted strategies that emphasized alliance and solidarity.

Geophysical Testing through Electromagnetic Induction Survey

We conducted geophysical survey at five sites (see Chapter 7), using a Geonics EM38 Electromagnetic Induction meter. The areas generally consisted of 14 survey grids (1 m wide) across sites, determined by the presence of known ceramic indicators and any modified landform features. These artifacts and architectural features were encountered during topographic mapping and shovel testing. The EM38 Electromagnetic Induction meter records measurements of soil conductivity. This instrument also has a mode (in-phase) that recorded measurements of magnetic susceptibility; this latter reading mode was used at sites. Magnetic susceptibility is a measure of a material's ability to become magnetized in the presence of an external magnetizing field (Telford et al. 1990). Organically enriched soils, burned locations, metal, and concentrations of iron minerals are typical examples of detectable materials (Clark 1996). Anomalies are identified in magnetic susceptibility data when they possess higher or lower magnetic susceptibility than the background environment (Kearey et al. 2002). The highest susceptibility signals were produced at sites with stone architectural features made of iron mineral-bearing basalt.

We collected the magnetic susceptibility data at sites PU-36, PU-120, PU-122, PU-155, and LU-69 along transects spaced 1 m apart, with one reading per meter along each line, for 400 readings per 20 m^2. The reading frequency was reduced to one per meter in order to cover as much ground as possible given the time available. Because the data collection density was reduced, the signals yielded less refined results. The images generated from the readings are therefore not as fine grained as they might have been at intervals of 25 cm; nevertheless, they reveal clear anomalies at a few sites (see Chapter 7). In the processed images, areas of high magnetic susceptibility are indicated using darker shades of grey and black. Locations depicted in white have lower than average susceptibility. Each image is shown with the same contrast range (0–100 ppt), allowing for absolute value comparison across images.

Following the geophysical survey, we ground-tested the results through additional shovel testing as well as excavation in three sites (PU-36, PU-120, and PU-155). Geophysical survey provided our first clue that subsurface features, probably hearths, and postholes associated with architectural structures, were located on sites. They also supported artifact data that suggest structures were once located on top of modified landforms or ceremonial fields (PU-36). Geophysical survey in some sites identified anomalies, but ground testing through shovel testing did not always identify the sources of the anomalies.

Excavation Strategy

Before our work in the valley, no sites had been recorded previously and thus the subject of a systematic stratigraphic excavation program. While our work at sites did acquire charcoal for dates from relatively intact stratigraphic levels, the subsurface sampling that yielded the chronological data were limited to the cleaning of excavated use surfaces, house floors and features and of pit, trench, and block profiles and to opportunistic sampling from mostly disturbed deposits. To provide a more robust sample from sites, we conducted excavations in various locations within each site, where the local Mapuche communities permitted us to work, and how much subsurface testing the work permit from the Consejo de Monumentos Nacionales allowed, the governing body of archaeological sites in Chile. Most excavation units were standard units (measuring 2 × 2 m, 1 × 2 m, 1 × 4–12 m, 1 × 15 m, and 5 × 8 m), and several exploratory trenches were placed on architectural mounds to examine their construction and occupation history. Toward this end, we also cleaned wall profiles of several road cuts in mounds (i.e., *Rapahukuel* B) in centrally located mound complexes with the hope that complementary evidence related to construction episodes would be recovered. Besides proximity to architectural features, artifact concentrations and concentration diversity guided unit placement. The particular locales where excavation units were placed are described in more detail in the site descriptions in Chapter 7. The initial excavation strategy employed arbitrary 15–20-cm levels and noted cultural strata as well. Once the cultural strata were defined by exploratory pits, we then excavated by natural or cultural levels in sites, when possible. From each 1-m grid square and arbitrary or natural levels, we reserved soil samples, which measured 20 × 20 cm, for the recovery of micro- and macroremains of floral and faunal materials and for studying phytoliths, starch grains, and pollen.

The principle areas of sites that were tested with stratigraphic excavations include: (1) mounds and other earth works; (2) artifact clusters; (3) off-mound areas;

and (4) cross-trenches canals and moats. Excavations were not placed in small sites or in cemeteries because of the lighter scatters of cultural materials, the agreement with the Mapuche landowners not to excavate cemeteries where their ancestors were buried, and/or because an area was heavily traversed by people and animals. The locations of test units, trenches, blocks, and the profiled pits are indicated on figures for each excavated site (see Chapter 7). Clusters refer to areas of sites that yielded high densities of surface artifacts.

The goals associated with the excavation of test units, trenches, and blocks were different. Test units were intended to acquire a stratified sample of materials from different areas of sites so that temporal and spatial trends could be examined and compared. Trenches explored the construction history of specific features; these were placed at the center of architectural features, such as mounds, and transverse to canals and moats. While goals associated with the two types of units were also revealed during excavations, these revealed the different structural types present at sites. Following the discussion of excavated deposits and associated architectural features, we present the results of radiocarbon analyses conducted on charcoal recovered from excavations.

In summary, field methods employed at sites included topographic mapping, systematic surface collection through shallow shovel tests, geophysical survey, stratigraphic excavation, and pit profile examination. Surface data were collected systematically and at a scale large enough to recover patterning at the inter- and intra-site scale. Excavations provided some additional horizontal data from a variety of site contexts, but their primary purpose was for the refinement of the chronological sequence and for the establishment of site function and cultural affinity. Descriptions of the laboratory methods used in the analysis of burned earthen, ceramic, and lithic artifacts precede discussions of their results in various chapters and appendices.

Chronological Scheme for Radiocarbon and Thermoluminescence Dates and Ceramic Types

Several questions underlying the prior research in the valley were addressed, with the primary goal of shedding new light on pottery classification, chronology, and distribution patterns during the early pre-Hispanic (EPH) and late pre-Hispanic (LPH) periods (~AD 400–1550) to early Hispanic (EH) period (~AD 1550–1700; cf. Dillehay and Saavedra 2010). Also documented during site survey and excavation was an earlier preceramic or Archaic period (~ 6,000 BC- AD 400?). Araucanian pottery has not, traditionally, been studied as a whole. Instead, excavated ceramic assemblages have been divided into different decorative or chronological groups and published separately in various articles, such as those for the early Pitrén negative resist wares and the later El Vergel and Valdivia polychrome styles, monochrome or plainware pottery (cf. Adán and Mera 1997; Aldunate 1989; Dillehay 1981; Menghin 1962; Ocampo et al. 2004), and historic and contemporary ceramics (Garcia 2006, 2008, 2010).

Previously defined and radiocarbon-dated ceramic types, Pitrén, El Vergel, Valdivia, and Spanish-glazed wares, were the primary basis for the ceramic chronology employed in the study areas. In the Malleco Province where the Purén and Lumaco Valley is located, the archaeology is poorly understood. Earlier work in the wider Araucania region by Bullock (1955), Berdichewsky and Calvo (1973), Navarro and Adán (1999), Quiroz and Sánchez (2005), Sánchez (1997), among others have identified El Vergel and other pre-Hispanic wares, but they have not been published extensively. Recently, Quiroz (2010) presented numerous thermoluminescence (TL)-dated contexts at several sites along the coast south of the Bío Bío River and on the Isla Mocha and the Isla Santa María. The Quiroz chronology places the Pitrén style between about AD 400 and 1100 and the El Vergel style between AD 600 and 1500 but mainly between AD 1000 and 1500. Although El Vergel might be too early in his sequence and his TL dates require confirmation from stratified radiocarbon-dated contexts, there is general agreement between his sequence and the one presented in this study. Farther south, other studies have described and dated Pitrén and other wares (e.g., Adán and Mera 1997; Adán and Alvarado 1999; Berdichewsky and Calvo 1973; Gordon 1984, 1992; cf. Gaeta and Sánchez 1995; Donoso 2010; Correa 2010; Berón 2010; Sáavedra and Sanzana 1989). The style of ceramics in these studies are closely related to those in our study area and thus seem to be reliable cultural markers.

While long-term manufacture of Pitrén wares has been acknowledged, in the Purén and Lumaco Valley their presence apparently decreased dramatically during the LPH period, especially in contrast to the later El Vergel style. Furthermore, while many of the Purén and Lumaco sites assigned to the LPH on the basis of surface-collected ceramics undoubtedly had subsequent EH occupations, and vice versa, the use of both the Pitrén and El Vergel styles as precise temporal diagnostics is problematic for several reasons. First, because they are poorly dated styles, it is difficult to estimate their short- or long-term use at sites. Second, they perhaps inflate the number and extent of LPH occupations, because slipped El Vergel sherds, for instance, were also recovered from ^{14}C-dated EH deposits at several excavated sites in the study area, which also occasionally contained sherds with Spanish attributes (e.g., glazed wares, glass, inlaid porcelain crosses on the necks of jars). Third, they also inflate the number of LPH occupations because they were often the only diagnostic type found at sites. In other words, the necessary reliance placed on the Pitrén and El Vergel styles as a cultural and temporal marker compounded the problem of site assignments, because we did not have the benefit of a larger sample of radiocarbon-dated rims and bases of non-diagnostic wares. The presence of additional dated wares would have allowed more temporally and culturally specific assignments. Exceptions are the Valdivia, Spanish, and later Chilean wares (i.e., mixed European styles), which often influenced the decorative and manufacturing styles of some Purén and Lumaco ceramics (e.g., clay type, temper, slips, smudging, texturing, smoothing, polishing). This, sometimes, resulted in hybrid styles. Either pure or hybrid styles are highly diagnostic, but rare, and have been employed to date EH sites fairly accurately. There are also a few sherds that seemingly had decorative attributes of both the El Vergel and Valdivia styles, which overlap chronologically during at least the AD 1500–1600 period (cf. Bahamondes 2010). If a larger sample

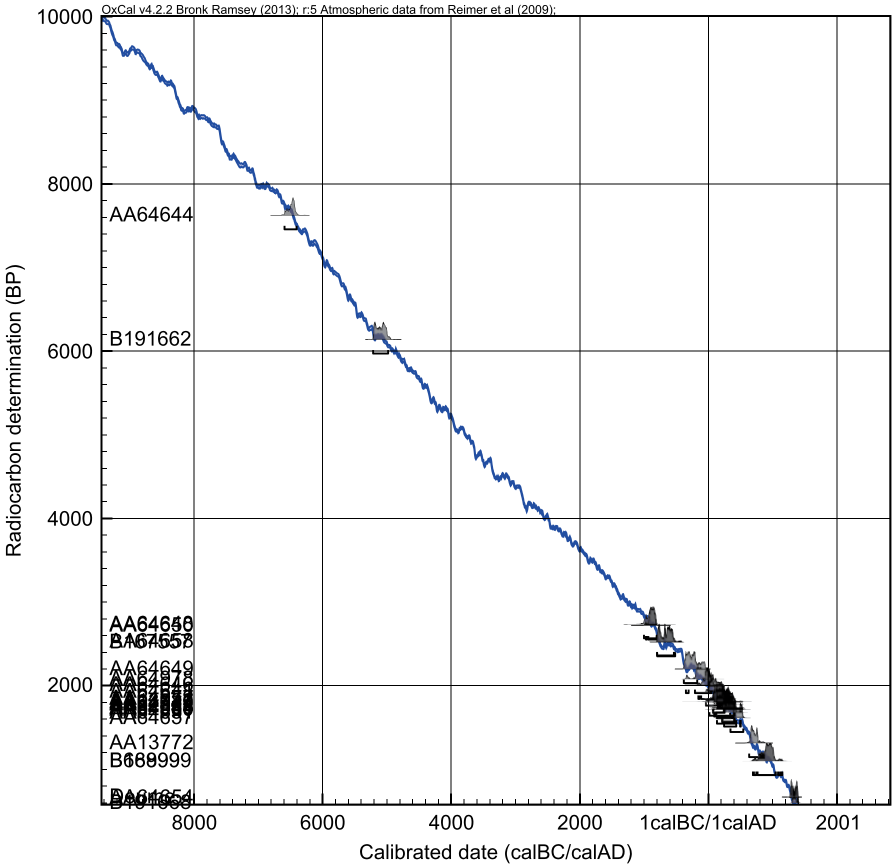

Fig. 4.1 Plot of the two-sigma calibrated and radiocarbon-dated age ranges for all ^{14}C assays and TL ages from excavated sites in the study area, especially site PU-165.

of Valdivia sherds had been recovered from the Purén-Lumaco project, it might indicate that the two styles shared certain territories during the Spanish contact period, if not earlier.

Based on these considerations, the EPH, LPH, and EH periods are defined primarily on the basis of radiocarbon and TL dates obtained from several sites (see Dillehay 2007), but primarily the type site PU-165 where extensive excavations were conducted and the largest and longest sequenced preceramic and ceramic assemblages were recovered (Fig. 12.1; see Chapter 12). Future subdivision of these periods may be warranted, along with the adjustment of the boundaries between them as more dated are recovered and dated. However, the Pitrén, El Vergel, Valdivia, and EH ceramics from most sites in the valley are generally similar to and date about the same time as those recovered from other areas in south-central Chile (e.g., Padre Las Casas, Huimpil, Calafquen, Valdivia) (Fig. 4.1).

Each period is discussed briefly below in terms of absolute dates and sites.

Archaic Period (~6000 BC–AD 400)

Five sites have produced ^{14}C and TL dates in pre-mound areas that date to the Archaic period. These are PU-165, LU-23 or *Gundermankuel*, LU-69 or *TrenTrenkuel*, PU-220 or *Maicoyakuel*, and PU-166 or *Kuifilkuel*. Two TL dates (UCTL 1552, 1553) and nine ^{14}C dates (Beta 167557, 191662; AA 64644, 64658, 64648, 64649, 64656, 64978, 64680) were assayed in the BC or Archaic era. The contexts of these dates are not well defined because they were recovered from small burned areas usually associated with lithic debris below mounds or in the deeper levels of domestic sites. More horizontal excavation at these and other sites is required before we can better define the Archaic component in the valley.

Early Pre-Hispanic Period (EPH, ~AD 400–1000)

Excavations at six sites, two *kuel* (*TrenTrenkuel*, *Maicoyakuel*) and four domestic sites (PU-11, 13, 23, and 165), have generated 17 ^{14}C (AA 64938, 64642, 64645, 64647, 64648, 64651, 64652, 64653, 64655, 64657, 64979, 64980, 13772, 13780; B167556, 167899, 168999) and two TL (UCTL 1554,1556) determinations directly associated with early to late Pitrén ceramics of this phase. Ten of these dates came from the PU-165 site at the conjunction of the Purén and Lumaco River. It is a large domestic site containing several subsurface features and house floors. All ^{14}C for this phase were processed on single chunks of charcoal from hearths and burned features recovered from test pits, in the ~40–80 cm level. Although the Pitrén ceramics from PU-165 and other sites were largely undecorated, the assemblage did contain a few sherds of the classic polished mottled, negative resist Pitrén style. Also present in the levels with terminal or late Pitrén were a few red slipped wares of the early El Vergel type, suggesting a temporal overlap between the two styles between ~AD 950 and 1050. As discussed above, these two temporally successive styles present difficulties in distinguishing between them in the relatively small ceramic assemblages available to us. The two-sigma limits and relative areas for the ^{14}C dates for Pitrén ceramics are ~AD 100–1000. The four TL dates on diagnostic Pitrén ceramics dated between ~100 BC and ~AD 800.

Late Pre-Hispanic Period (LPH, ~AD 1000–1550)

The project produced ten radiocarbon determinations (B169771, 191668, 167558, 167559, 168999, 169000; AA64643, 64654, 203868, 282127) directly associated with several post-Pitrén ceramics, primarily not only of the El Vergel type but also of other late types (see Dillehay 2010). All of these dates extended roughly from ~AD 1100 to 1550. Three TL dates on an El Vergel sherds was processed for this period (UCTL 1555, 1558, 1559); they ranged between AD 1100 and 1400. Sites radiocarbon dated to this phase are domestic locales PU-9, PU-36, PU-39, PU-41, PU-120, PU-217, and PU-165 and two mound sites *Maicoyakuel* and PU-132A.

Early Hispanic Period (EH, ~AD 1550–1700)

Nine sites (domestic locales, PU-13, PU-20, PU-41, PU-165, and PU-271; four mounds, LU-23, PU-132B, *TrenTrenkuel*, and *Maicoyakuel*) have produced four TL (UCTL 1555, 1556, 1557, 1558) and seven ^{14}C dates that are relevant to this period yet overlap with the preceding LPH period (B69000, 167558, 167559, 294019, 294020; AA 64643, 86945). These dates range between ~AD 1500 and 1800 and are associated with Spanish glazed wares and plates. Also present with these dates were late red slipped wares similar to El Vergel and the black-on-white and red-on-white Valdivia ceramic style. The TL dates were processed at AD 1535–1615, 1560–1630, and 1640–1760. The first two TL dates are on Spanish roof tiles and the third is on a green glazed ware.

Epilogue

This previous section has compared the TL, radiocarbon, and diagnostic ceramic sequences from several sites. Ceramic assemblages are available from 21 archaeological sites excavated to date. The sequence is generally characterized by sequential and overlapping probability distributions. These parameters differ only slightly from ^{14}C assays on ceramic styles from other areas of south-central Chile. Lastly, we believe that our results stand as a confirmation of the previous research on the ceramic chronology for the study area (Dillehay 2010).

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Chapter 5
Archaeological Material Manifestations

Tom D. Dillehay

Introduction

We know the specific type and nature of the Araucanian society of the sixteenth and seventeenth centuries and the specifics of the social structure, political organization, religious beliefs and practices, and, to some extent, the demographic structure as well. Not well known are the archaeological manifestations of these attributes, though we have identified much of the settlement, economic, and ceremonial record of the Purén and Lumaco Valley (Dillehay 2007). There also appears to be greater standardization of and simplicity in the material culture during this period as best represented in ceramics and in mound stratigraphy, which is hypothesized to be the result of more collective labor given to the war and less to the production, display and accumulation of elaborate objects that symbolize individual wealth and prestige. That is, there seems to be a direct correlation between the Araucanian polity and its social and economic implications, demographic turmoil, and its unostentatious material record. The important questions are what can we interpret from this record, what does it means, and to what extent does it alter or enhance the information from the archival record?

In the field of material culture and historical archaeological studies, scholars vary and often disagree on how to evaluate the interpretative power of objects (e.g., Witmore 1996; Barrett 2001; Boivin 2004; Ingold 2007; Chilton 1999; Orser 2000). For instance, should we focus on material artifacts as windows onto the social relations that embedded them? Do objects have the power to constitute new social contexts as well as reflect them? Despite the lack of agreement, one issue that scholars concur is the value of integrated analysis in studying materiality (Robb 2004). An interdisciplinary perspective constitutes a methodological technique, but, in addition, it is a metaphor for reflecting on the boundaries of social power and control in material representations of past events and processes.

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The archaeological evidence of the Purén and Lumaco Valley and of south-central Chile does not as yet allow the levels of precision required to answer many of the questions raised by the historical sources: for instance, verification of the date and nature of certain events and the identification of the archaeological correlates of a patrilineal and patriarchical society (see Chapter 4). What might signify the former presence of a patriotic community in the archaeological record is difficult to achieve even with indicators of locality, function, and behavior are often provided in the historical records. The level and type of patrilineal society under study here were given to the organization of populations and to the recruitment and expansion of those populations for defensive purposes (e.g., Dillehay 2007; Bengoa 2003; Cooper 1942; Faron 1961, 1962; Zavala 2008). The objective is to identify and explain the archaeological record that is linked indirectly and directly to these behaviors. These are settlement and community patterns, *kuel* mound location and social construction, and artifact styles (i.e., ceramics).

Unfortunately, from a bioarchaeological perspective, there are no studies to test the hypothesis that multiple burials within houses and cemeteries were biological kin indicative of patrilineages. Based on the ethnographic and ethnohistorical records, we can only presume that domestic sites were organized into larger, biologically related patrilineal communities. Given the recruitment of distant non-kin groups, however, the choice for interment location may have transcended biological lines, thereby creating an alternate and more fluid definition of "kin." Future bioarchaeological studies at some sites should reflect coresidential groups from multiple localities.

Mounds, Ceramics, and Settlement Patterns

A primary database for this study is the *kuel* mounds for which we have established a minimum of archaeological, ethnohistorical, and ethnographical information, including the location, name, function, and aspects of the social and political organization to which they belonged. We know that various forms of patrilineality and patriarchy were enacted through mound style and stratigraphy. Not known is how the signs, meanings, and values of mound (and ceramic) styles helped to produce cohesive communities and to incorporate groups into the war effort. The argument is that by appropriating public ceremony at mound sites, war leaders appealed to ancestral tradition and to associations established in the past to legitimate their ruling positions and to bring groups together.

Another important database is the settlement pattern of the valley (Dillehay 2007; Dillehay and Saavedra 2010). We know that there was an increase in the size of domestic settlements, shifts in community and settlement patterns, and a higher density of ceremonial and mound sites between the sixteenth and nineteenth centuries. Several questions remain to be answered, especially concerning the adoption of Spanish cultural traits, social structure, and the internal spatial layout of sites during the late pre-Hispanic and early Hispanic periods.

One view of the Araucanians' cultural appropriation of Spanish traits and goods is to conceive of them as selectively adopting and assigning meaning to foreign cultural forms. The minimal presence of Spanish traits in ceramics, animals, and foods at archaeological sites indicates a powerful technological rejection that retained principles of the indigenous way of life while enabling the occasional presence of selected outside traits (see Dillehay 2007, 2010; Sauer 2012). Those traits immediately adopted by the Araucanians were the horse, wheat, and other domesticates, which impacted the political economic tactics of the Araucanians (Bengoa 2003; Zavala 2008).

In regard to social structure, not all Araucanian historical and ethnographic sites provide valid analogies for kinship patterns. Although the basic structure of social organization of the Araucanians has generally prevailed throughout the past few centuries, some spatial norms have changed and varied considerably. Many historical sites that comprised several *lof* households were located on hilly terrain rather than on flat terraces and dwellings were often built on top of small, isolated hills. Prior to the arrival of the Spanish, this also seems to be the general community pattern, although there may have been more dense and aggregated populations in some areas, as discussed below. Irrespective of these general patterns, the settlement and community pattern data of the Purén and Lumaco Valley indicate larger, more dense domestic sites in the late 1600s and throughout the 1700s, likely a result of increased conflict and greater security in larger numbers (Bengoa 2003; Dillehay 2007; Dillehay and Saavedra 2010).

Community structure and household size also can indicate traditional social patterns (Chang 1962; Levi-Strauss 1969). There is little known domestic architecture in the archaeological record of south-central Chile (see Ocampo et al. 2003, 2005; Sauer 2012); more information is available from the early historical archives, though these are not comprehensive in their regional coverage. The available archival and ethnographic descriptions are not totally in agreement as to what these structures and community layouts were (cf., Bullock 1970; Burger 1999–2003; Castro and Adan 2001; Joseph 1931). The earliest historic descriptions of domestic structures date to the late 1500s. Houses are described as being round or other shapes (oval, rectangular) and of single-set post construction with wattle-and-daub walls. Some houses are described as being small (~150 m^2; Pineda y Bascuñán 2003 [1673]); others were relatively large (300 m^2; Mariño de Lobera [1594] 1960) and ranged between 28 and 56 m in length. A few common characteristics can be found, including: large hearths, single or dual entryways, open work areas, corrals, and so forth, which collectively suggest a dispersed household pattern. Some settlements were large and comprised of hundreds of individuals; and others were small and made up of a few families (cf., Castro and Adan 2001).

Historians writing in the nineteenth and twentieth centuries followed these descriptions, as summarized from the early archives by the historian Tomas Guevara:

> When the Spanish came into the territory of the Araucanians, at that time the families were living clustered in small rural settlements. All of these villages had a small number of dwellings, round or of other shapes, which were rarely more than 50 [families]…. These settlements of kinsmen were in one location and increased in size according to the number of people. It was a local group [*lof*]. Some distance away from a given group and in different directions, others had settled, sometimes separated by accidents of terrain. It [the settlement]

> was made up of a number of families who occupied an area. The kin of the local group constituted a small autonomous community which recognized a single chief…. The regional aggregation was a simple confederation of groups [*regua*], each one having a chief at its head, they considered themselves united by the community of race or interest and they came together frequently to render each other mutual assistance (Guevara 1925, pp. 284–287).

In other words, each community consisted of several widely separated sectors, which were the residences of local patrilineal *lofs*. Each community sector also consisted of several houses, which were probably located in or near river bottoms and low hills and surrounded by fields of crops, as also indicated by the archaeological and ethnographic records in the valley today (Dillehay 2007; Dillehay and Saavedra 2010; see Chapter 11).

Another historian, Jorje Inostroza (n.d.), reports a different scenario along the Imperial River in the Araucania region. Writing in the latter half of the sixteenth century, Mariño de Lobera ([1594] 1960) mentions 800,000 "*indios casados*" (implying families) along the river (cf., Rosales [1674] 1989, p. 401 documents similar high numbers for the same area). In 1554, Pedro de Villagran reports a "*ciudadela*" named Pelacavi in the same vicinity, which had an estimated residential zone of about 300,000 m^2 (cited in Inostroza n.d.). The estimated dimensions of these dense settlements generally match those recorded archaeologically farther north in the Purén and Lumaco area (Dillehay and Saavedra 2010), where several large domestic sites extend more than 1 km in length and occupy at least 100 ha. The consistent artifact styles and dense, continuous distribution of materials in the Purén and Lumaco sites cannot be easily explained by the settlement of several groups over time having formed these large sites, because they are generally shallow and reflect continuous occupation in subsurface deposits. Given the historical descriptions of social group size in these valleys and the need for larger settlements for defensive purposes, it is most likely that large settlements existed in several areas, including Purén, Lumaco, Imperial, and Villarrica.

It also seems apparent that in estimating the size and layout of settlements, some chroniclers were generalizing too much from local settings where they first encountered indigenous settlements along the Bio Bio River; hence, caution must be exercised in generalizing the archival record too much. Some chroniclers probably never observed large settlements in regions where they were at the time of their writings, or they were observing at a time and place when communities had not yet begun to aggregate so densely. It also is likely that several later chroniclers simply repeated the observations of earlier ones. In sum, despite the degree of some uniformity in historical descriptions, it is difficult to know the community and household variability in different places over time, the differences between regions and groups, the variability within single communities that underwent rapid acculturation, and simply observer error.

Ethnographic Houses

Further material manifestations are provided by the traditional household and community environments that existed in late historical times and today. The physical manifestation of today's Mapuche *ruca* (house) and its activity areas is the

Fig. 5.1 View of a present-day Mapuche *ruca* (house) and associated activity areas and storage structures in the mountains near Lumaco.

household compound. The contemporary Mapuche household compound usually consists of a house, kitchen, and storage structure arranged around an informal patio work area (Fig. 5.1). Extended family households generally have an additional living house and a fenced area for animals. Household compounds are generally just over 500 m^2 in area (Dillehay, field notes, 2001).

Today, specific *ruca* foundations are well defined, making it possible to calculate their floor spaces. In connection with archaeological surveys in Purén, Lumaco, and elsewhere (Dillehay and Saavedra 2010), a number of hut remains dating to construction between 1920 and 1940 have been recorded, and informants have provided detailed information on older household sizes. The size range of twentieth-century *ruca* dwellings generally corresponds to that of archaeological house dwellings (~70–85 m^2). In Purén and Lago Budi, for instance, the smallest *ruca* foundation measures 7.4 by 10.9 m and the largest 9.4 by 13.8 m (Fig. 5.2). Reconstructions of these houses suggest that the length of the longitudinal axis generally determined the size of the houses. Accordingly, contemporary house foundations can be grouped into three size classes based on the length of the longitudinal axis: small (S), 7.4 by 9.1 m; medium (M), 8.4 by 10.6 m; and large (L), 9.4 by 13.8 m. Medium-sized foundations are by far the most frequent, accounting for 57.7 % of all documented houses in the study area, and all of the archaeologically recovered foundations. The largest ethnographic *ruca* we have observed housed more than 12 people and was 10.8 by 13.8 m (Fig. 5.3), while the smallest was occupied by a single elderly couple and a grandchild. Medium-sized foundations were the most frequent, housing four to eight people. Most houses are entered through a single door; a second door is sometimes present for larger houses.

Fig. 5.2 Small thatched *ruca* house and the *rehue* pole of a *machi* shaman in the Purén area today.

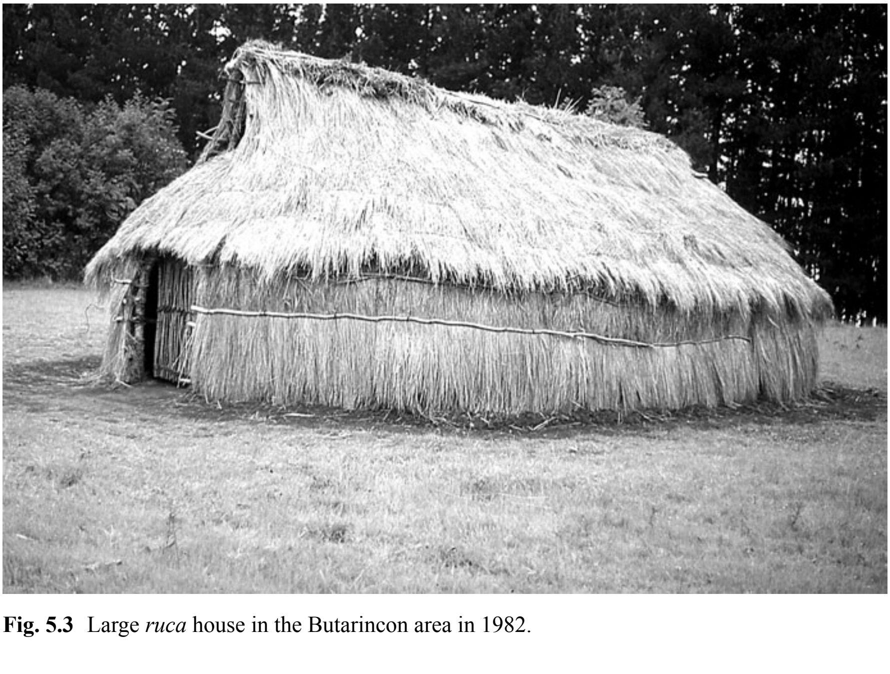

Fig. 5.3 Large *ruca* house in the Butarincon area in 1982.

Archaeological Houses and Community

With regard to the archaeological manifestation of early houses, little remains due to the poor preservation of organic material in humid south-central Chile: ceramic, lithic, and, possibly bone, interior hearths, a slightly depressed floor in some areas, a slightly raised, packed clay floor in other houses, and post molds. The only archaeological research providing interpretable evidence of historic houses is at the "KM-0 Enlace" site near Temuco (Ocampo et al. 2005; personal communication, 2013), a possible early Hispanic house structure at Santa Sylvia in the Liucura Valley (Sauer 2012), and late pre-Hispanic ones at sites PU-122 and PU-165 (see Chapter 7) in the Purén and Lumaco Valley where houses between approximately 30 and 45 m^2 were excavated, respectively. These houses are estimated to range in size between 6 by 9 m to minimally 7 by 10 m, which roughly correspond to the estimated size of an excavated house structure at the KM-0 site near Temuco. With the exception of Pitrén-dated house floors at PU-122 and PU-165, these few *ruca* remains are believed to date to the El Vergel period.

By comparing the size of archaeological floors to the floor area of recent traditional huts, it is possible to estimate the size of the archaeological households. These floors probably correspond to the size of a nuclear family ($\sim n=6$) and this is generally in accordance with the figures for the reconstructed fifteenth- and sixteenth-century houses mentioned earlier. A semi-rectangular structure with rounded corners was excavated at PU-165. This structure is difficult to explain given that semi-oval structures are generally most represented in historic and contemporary sites. The two partially excavated structures at PU-122 appear to have been elliptical or oval in form. The El Vergel structure dated at cal AD 1250–1450 (see Chapter 7) and the deeper structure was associated with Pitrén sherds and likely dated sometime around or before AD 1000. Substantially built semi-oval structures are characteristic of sites in the drainage of Purén since living memory according to local informants (Dillehay, field notes, 2005). These houses are reported to have been 6–7 m wide and 9–13 m long and generally 70 and 90 m^2 in size. The El Vergel house floor at PU-122 appears to be similar in form to the one recorded at the KM-0 Enlace site, which has an elliptical to a U-shaped floor plan and measures ~6 m in length by ~12 m in width (Fig. 5.4). There is no evidence of roof configuration associated with any of these house remains. Roofs were probably slightly gabled in the larger oval-shaped houses, with a ridgepole running parallel to the long axis of the structure.

The estimated number of people living together at *lof*-like settlements in the written records ranged from 800 to 2,000 (see Chapter 2), corresponding to the size of historical settlements described by Bibar (1966 [1558], p. 155), Rosales ([1674] 1989), Mariño de Lobera [1594] (1960), Bibar [1955] (1966), and others (see Bengoa 2003); but these are rough estimates only and, as discussed in Chapter 2, cannot be reliably generalized for the entire Araucania region. However, it is clear and can be generalized that these house forms and sizes correspond to a patrilineal social structure, one characterized by males having several wives, especially during the pre-Hispanic and early Hispanic periods.

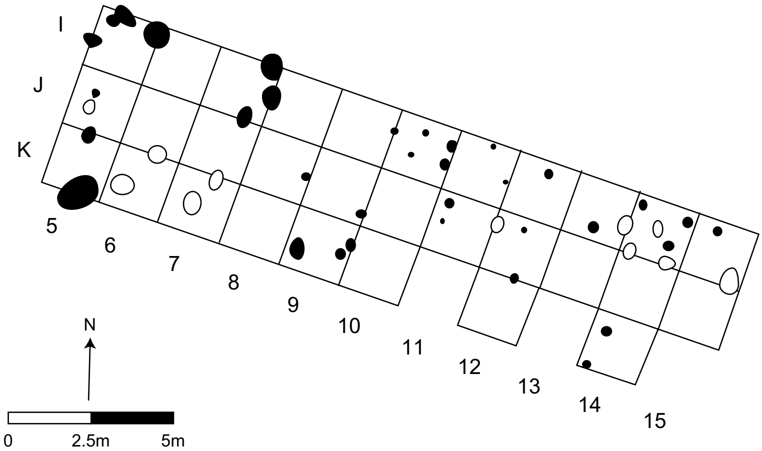

Fig. 5.4 Partial floor plan of large archaeological *ruca* at the KM-0 Enlace site near Temuco dated to the El Vergel late pre-Hispanic period. Large black dots to the left represent house postholes. (Ocampo et al. 2005)

Public Ceremony

It also is useful to briefly introduce the material culture of traditional Mapuche religion here. A distinct body of material culture manifests religious activity, and an important point to consider is that a strict dividing line between that of traditional religion and modern cannot always be drawn. This is readily apparent once the archaeological record is considered, as the integration of elements of late pre-Hispanic and early Hispanic Andean religions within a wider framework is a recurring feature (Latcham a-b 1924; Dillehay 2007), and something which can be recognized, as is considered in the following chapters reporting the archaeological data.

The archaeological evidence for traditional religion falls under the headings of rock art and burial rituals, monuments and shrines, ceremonial fields, and paraphernalia, and undoubtedly these are all important but broad categories. Sacred places alone, for example, cover a wide range of material, ranging from formalized *rehuekuel* complexes to single *kuel* mounds such as those unearthed in the Purén and Lumaco Valley, providing evidence contrary to historical reports (Dillehay 2003, 2007) that implied the Mapuche lacked the materials, techniques, and political local centralization necessary to build large-scale monuments and public works. Continuity in the importance of sacred space is a recurring feature indicating either the appropriation of the old or its integration within the traditional. Other important natural shrines are: sacred groves, trees, watercourses, artificial pools, rocks, and so forth.

There is also the case of Mapuche animism, which has spiritual linkages with animate and inanimate objects (Faron 1986 [1968], p. 66). Usually, *nguillatufe* ritual priests and *machi* shamans maintain contact with and manipulate these powers. Sacrifice can take many forms and involve animate or inanimate offerings. The centrality of the horse, guanaco, and llama within the Mapuche culture provides an example of a sacrificial animal, as was excavated at the *TrenTrenkuel* mound in the study area (see Chapter 7). Yet, these are three among a few species that could be of significance within an archaeological faunal assemblage, while any human sacrifice crosses the divide into the category of "burial rituals" or cannibalism. This latter type of sacrifice probably was comparatively frequent during periods of conflict (see Bengoa 2003; Boccara 1999, 2003; Dillehay 2007), as noted by many chroniclers.

A widespread ritual symbol throughout the Araucania is that of burning special plants; the supernatural receives the essence of a sacrifice through the medium of smoke (Faron 1964, p. 100; Gundermann 1985, p. 182). Like all significant Mapuche sacraments, rites of passage must take place in the presence of sacred fire and smoke. Fire is thought of as the master of the house. Fire is the cosmic witness to the sacrament. Annual rites to commemorate one's ancestors are also done before a fire. It is thus important in all ceremonies for the *machi* shaman to burn medicinal plants (e.g., *foye*, *boldo*, and *maqui*) and tobacco (see Chapter 13 for report of the residues of the tobacco *Nicotiana rustica* that was recovered from a stone pipe in the *TrenTrenkuel* mound) and to spread the smoke over the ritual ground in order for the god *Pillan* to use his powers to control evil forces and to send warriors into battle and *lonkos* to negotiate political issues. This latter act reminds us of Rosales' description of the use of ritual smoke during ceremony in the early 1600s:

> They sprinkled herbs that the witchdoctors [*hechiceros*] gave them over the field, and spread tobacco smoke as incense calling on Pillan for his favor and throwing the smoke toward where the Spanish were so that they might disperse like the smoke (Rosales [1674] 1989, p. 445).

The most obvious material correlate for this behavior is sacred places and burned surfaces and floors in the excavated mounds and ceremonial fields reported in Chapter 7. Since burning of sacrifices is important in Mapuche religious ideology, we should expect intensely burned shallow depressions in the soil around altars and on top of mounds, which we have recovered archaeologically.

Sacred Hilltops

Rosales ([1674] 1989, p. 1154) states that the houses of the *machi* (*boquibuyes?*) were located on a mountain or "convent" called a "*regue*" (*rehue*), which are public meeting places for special events:

> And the head *toquis* or the highest-ranking caciques ordinarily summon everyone in the land to these feasts. And during some of these they have, in addition to their dances, their entertainments in which they represent different figures and in others men and women exchange clothing. They also hold other feasts called *Guicha-boqui* in which they set up a tree in the center of the circle of poles with four [ropes] hanging from it adorned with different colored wool yarn which are held so that all the relatives of the one offering the feast may dance who, since he is the lord of the land, calls forth all the nobility who live therein…. And in the top of the tree which is always a cinnamon tree at all the feasts the place the son of the highest-ranking *cacique* or *toqui* who sponsors the feast…and he is adorned with lances and stones as all the nobility tell it…. Referring to the high-ranking personages from their lineage who have died in past years and giving their blessing to the

> living who are present…. The most solemn feast is the one convoked by the *boquibuyes*, who are the priests of the Devil, may they leave their prison and abandon their habit. For this [feast] they not only summon their relatives to bring them *chicha* and meat but also [they call on] their allies from far away who are not obligated to this service and require from them *sheep of the land* [camelids] which are the most greatly esteemed. And although at other drinking feasts, they only kill one or another because of the esteem they have for them. But at this drinking feast they kill all [the animals] the *Cullas,* as they call these friends, bring them. And there is a great feast in the following century ([1674] 1989:1154).
> Rosales describes similar public ceremonies and the burial of important leaders on "*regue*" hilltops where ritual games are played and feasts are performed to honor the dead.
> But the *caciques* and noble indians, so that their memory should endure forever, have themselves interred on the highest hills and in places where they gather to play *chueca* or in the *regues* which are the places where they gather to consider matters of importance, which are like the places where the *cabildo* [council] meets, and there they also hold the drinking parties and the principal feasts, the kindred before beginning the drinking, goes to his [the dead chief's] tomb, each one pouring a jar of chicha onto the tomb, offering it to him so that he may drink and take part in the feast (Rosales [1674] 1989, p. 164).
> …and dance which lasts ten or twelve days (Rosales [1674] 1989, pp. 141–142).

The duration and size of these ceremonies are mentioned by Bibar and Quiroga, the latter describing ceremonies having 7,000–8,000 "souls."

> They celebrate in designated places, pleasant and cool…because some lineages invite others and seven or eight thousand souls come together (Quiroga [1690] 1979, p. 22).
> This gathering lasts fifteen or twenty days and there they drink and become drunk. This is the custom throughout the province. In each *lebo* there are great witches [shamans] who speak with the devil (Bibar [1555] 1966, pp. 160–161).

These observations inform us not only of the variety, size, duration, labor commitment, and economic cost of feasts, but also the different elites either hosting, administering, or blessing these events.

Ceremonial Fields

Observing in the mid-1500s, Bibar specifies the relationship among *lof* or *lebo* units, designated feasting areas, called *regua*, where ritual celebrations and political decisions were performed, and paramount leaders who scheduled and controlled these events and their settings. (The term *regua* also means multiple *lofs* or *lebos*, which seems to also be the case here in terms of their gathering in ceremonial space.)

> They have this organization among them such that each lebo, which is a *parcialidad* [patrilineage], has a lord, and these leaders obey the paramount chief. One of these lebo has 1,500 and 2,000 indian men and some have more, and all come together at certain times of the year in a place they have designated for this purpose. Gathered there, they eat and drink and judge injuries, and they award justice to those who deserve it, and there they make agreements, and issue orders and commands and these are obeyed (Bibar [1558] 1966, p. 155).
> At certain times of the year they come together in a place which they have set aside for that purpose which is called regua, which is to say "place where they meet"…this gathering is to hear complaints and deaths and there they marry and drink long…and all that which is agreed and done is kept and held and not broken. When all these chiefs are there together, each one asks for justice [for his claim]. If they are at war with another chief, all these cabis and chiefs are required to present themselves with arms and men to support that group as

> they are ordered…and there they sell and buy during the days that parliament and meeting lasts (Bibar [1555] 1966, p. 160).

In the mid-1600s, other chroniclers refer to the use of material items (i.e., trophy heads, tobacco, camelid bones, probably llama) in rituals that could appear in the archaeological record.

> …and because of rumors that Lientur [after defeating the city of Chillan] was returning, he had all the people together and at arms until they learned that he had arrived in his country and celebrated the victory with great feasts and drinking parties…and they considered it one of their greatest celebrations to kill a Spaniard in their drunken feasts and to sing the victory with his head and to eat his heart (Rosales [1674] 1989, p. 1039).
>
> …in the field where they held their drinking feasts, they had trophy heads [displayed] and in one of these as a sign of victory they had put the head of the unfortunate Captain Anton Sanchez (Rosales [1674] 1989, p. 842).
>
> The *maches* [*machi*], who are healers, as our physicians are among us; they consult the devil, who gives them power when they cure; when they call on him by sacrificing a camelid, and with the tobacco smoke they blow out through their mouths, they incense the branches of the cinnamon tree that is placed within sight of the sick one (Pineda y Bascuñán [1673] 2003, p. 95).
>
> The indians of Arauco and their long-time allies seeing the restlessness that these tales were causing, and wanting to undertake a task so as to retain our friendship, the indians of Purén and the coast undertook to hold a ceremony that they only hold from time to time which is considered a great ceremony and a very effective means for keeping the peace. This is the installation of *Boquibuyes*, who are a kind of priest…these make peace, and wear different dress, they live on a hill, which they have for this purpose which they call *regue* and it is like a convent where they stay…and while they are priests none can take up the weapons of their warriors, nor make war…. What was pertinent for this effort was that the Araucanos invited those from Purén, who had never made peace or only for twenty-four hours…. And now they have truly embraced it, and so they may keep it for some time and come to value it, they told them to designate *Boquibuyes* and that they would also do this, and coming to agreement, they elected the highest-ranking chiefs from one Province and the other, for these people do not allow commoners to hold priestly office (Rosales [1674] 1989, p. 1154).

Pineda y Bascuñán notes that the enclosed field (*lepum*) of ceremonies had a central altar (*llongo-llongo* or *llangi llangi*) where the *rehue* pole was placed. He also gives the size of the central area of the *lepum* as 15–20 *varas* long and 5–6 varas wide (one *vara* is about 1 m long), which is similar in size to the central *llangi llangi* areas today in *nguillatuns*. In both the past and the present, the *llangi llangi* is comprised of *rehue* poles made of branches of the cinnamon (*foye*) tree and is the place where food, *chicha,* and sacrificial animals (and humans in the past) were offered to the deities and ancestors.

> …in the middle of the *lepum*…a rectangular space of some 15–20 *varas* long and 5 or 6 *varas* wide is enclosed with branches or canes planted at intervals, leaving one of the ends open. Within this sacred space, called *llangoll* or *llongo llongo*, was raised the *rehue* itself, which was made up of a kind of *ramada* [or structure of branches] some two and a half vara high, which was the true altar. It is called *llanguill* and was a kind of high table on which the offerings and sacrifices were placed (Pineda y Bascuñán 1974 [1673], p. 67).

Collectively, these quotes suggest that the ceremonial or *rehuekuel* spaces still in use today are the ancient *regue* or *regua* places described by the chroniclers in Purén, that the *llangi llangi* altar today is the same as the *llongo llongo* pole of the past, that the *nguillatun* is the ancient *guicha-boqui* ceremony, and that the *machi* is similar to or was the *boquibuye* administering these ceremonies. Further, the ceremonies described by the chroniclers are very similar in size, design, function, and meaning to today's *nguillatun* ceremony (Dillehay 2000, 2007).

The Nguillatun Ceremony

Today, the *nguillatun* ceremony is seen as a political and ceremonial nexus that integrates understandings of what togetherness does for patrilineages and how each lineage views the other as a result of the cultural dynamics of ritual. This site also is a nexus for integrating "passive" and "active" readings of material culture. In other words, the ceremony is an opportunity to interpret the social relations that rise during it and the social relations that it creates. It is not a static practice but a creative form of doing that constitutes new social connections and interactions, especially for outsiders who are recruited into the nexus as future marriage, economic, and/or alliance partners (Faron 1962; Casamiquela 1960; Dillehay 2007).

Many *nguillatun* sites are situated in areas with sediments that form flatplains, flat hilltops or hill saddles, or benches and terraces where there are no topographic formations or boundaries. These flat areas allow ceremonial huts to be arranged in rows of family *rucas* or structures (Dillehay 1990, 2007; Figs. 5.5 and 5.6). *Ruca* rows sometimes occur parallel to features such as streams, but just as often they are orientated at right angles to, or even at some distance from watercourses. Thus, topographic features cannot be ruled out as controlling factors in the location of *nguillatun* sites. However, social and kinship considerations determine the strict internal arrangement of huts. This arrangement represents several patrilineage groups coming together at the same ceremonial site.

In common with the general appearance of contemporary *nguillatun* sites, the *rucas* are arranged contiguously to each other and in rows to form a U-shaped layout. As a microcosmic projection of the local *lof* and *regua* patrilineal social structure and settlement pattern, the spatial outline of *nguillatun* sites appears distinct and clear. Yet, the most obvious connection between social and spatial structure in the form of lines is that of the *lofs* or sublineages, whose individual family units sit in a specified sector. Family and sublineage dwellings are arranged in rows along the base and the wings of the field. The rows of foundations and hearths are the physical expressions of kinship relations. That is, kinship and community pattern are perceived in terms of proximity to and distance from kin. Close kinship relations correspond to proximity in space. Taking the interpretation one step further, the spatial arrangements may be seen not only as a reflection of kinship relations, but also as a statement. Dwelling rows of family units and *lofs* signify the notion of *togetherness*, each row stating "this is us," claiming "this is ours," and this is "where we belong."

At each *nguillatun* site, the longitudinal axis of the field is oriented to the east toward the sun, except along the coast where it usually faces to the west. The spatial configuration of features, postholes, and hearths in what is interpreted as an archaeological ceremonial site (see Chapter 7, site PU-36) has contemporary equivalents in the *nguillatun* where hearths, also arranged in rows, are found frequently. Both

Fig. 5.5 View of *nguillatun* ceremony near Lumaco in 1985.

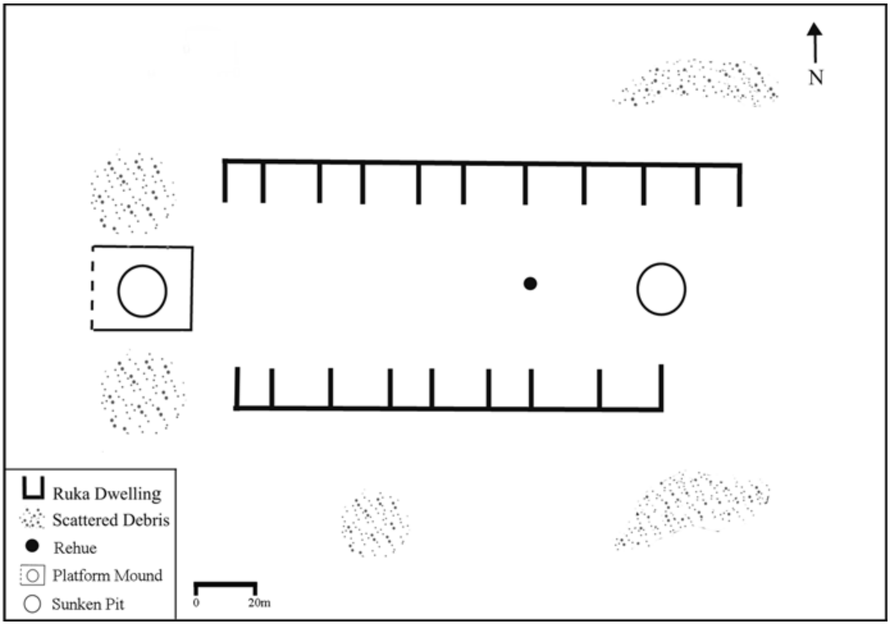

Fig. 5.6 Plan of *kuel* or mound, individual family units, and shaman's *rehue* pole in a *nguillatun* field near Lumaco.

the ancient and modern-day hearths are generally 1 m in diameter, and individually associated with each family *ruca*.

The striking temporal and spatial conformity between the ethnographic, historical, and archaeological fields suggests that a single catalyzing factor acted over a large area over a long period of time, raising the question: what made past and present communities throughout the region need to articulate kinship and social structure by formalizing the spatial arrangement of ceremonial sites and building their family *rucas* in rows? This explicit spatial articulation of ceremonial kinship may suggest a society either under significant stress or one that is socially complex. The emphasis on consolidating the core level of social organization, i.e., household, *lof*, *regua*, and *nguillatun* units, in public ceremony may also suggest that the consistent homogeneous manifestation of a formalized microcosm of the settlement pattern points toward tensions of both an internal and external nature.

Conditions of warfare would certainly have raised the need to underline the security of these core kinship units, the *lof* and the *regua*. In this context, the formalization of dwellings in rows, stating explicitly the close kinship ties between households, is entirely logical. It may be that, in the historic past, many of these ceremonial sites were built during periods of dramatic and substantial change among communities and that their segmented U-shaped layout reflects this. These sites also may represent the decisive moment of transition from scattered *lof* households to aggregated multi-*lof* or *regua* units, but this is a hypothesis that requires more archival and archaeological testing. In that situation, the consolidation of the *regua*, as expressed by the spatial structuring of settlement sites, may have been a means of addressing the internal tensions across and among regional populations. The *nguillatun* sites thus likely represent a stage in which the settlement solidarity remained as a uniting structure against internal tensions; however, the forces leading to the ceremonial field had probably already been set in motion before the arrival of the Spanish, as suggested by the ceremonial field dated in late pre-Hispanic times at site PU-36.

Kuel Mounds

Another place to consider in the archaeology of patrilineal communities is provided by the *kuel* and *rehuekuel* complexes. The criteria that define a *kuel* are simple: a conical-shaped earthen mound oriented toward the living community across *Nagmapu* (earth's surface) and upward to *Wenumapu*, namely the sky where the important deities and ancestors reside. Community prayer and sacrifice occur at four levels: individually, congregationally (*lof*), communally (*regua*), and universally (the living and the dead), all of which are oriented toward the *kuel* and other ceremonial places. Material manifestations of these offerings are: first, the prayer and its offering in the form of ash, charcoal, *chicha*, animal blood, and selected foods on or at the base of *kuel* or in the *nguillatun* field. The actual act of prayer can be reflected in the form of the mound, with the conical shape of the sanctuary, the *nichi* or artificial platform upon which it sits, and the surrounding ceremonial field or *rehuekuel*, which combines the mound, its *nichi* platform, and adjacent off-mound space of the participatory public (Dillehay 2007; see Chapter 7).

Various features might be incorporated around a *kuel*, which aids its archaeological recognition. Primary among these and related to the question of orientation is the physical marker of one to four outlying smaller *kuel*, which are considered to be kinsmen mounds (Dillehay 2007). From in front of the *kuel* the prayers are led by *machi* shamans, and although almost always a *rehue* or altar in form, it can be decorated in many ways, including branches of the *canelo* tree (*foye*), various ribbons and flags, and sometimes a sheepskin. The *rehue*, which has been called the *axis mundi* of the Mapuche (Grebe et al. 1972; Dillehay 1990, 2007), is usually a stepped pole, attached to other poles near the *kuel*. The *rehue* contains a staircase leading to a stepped platform for the *machi* to make the call to prayer and to call the ancestors from the *Wenumapu* world above into the ceremonial field. Other features include a bench of wood sometimes placed next to the *rehue*, which also has offerings such as food and drink. To these elements could be added an enclosed plaza as an absolution area. The entrance to the plaza and thus the ceremonial field is also of significance, a marker between the living and the dead. A number of other features may or may not be present: holes on top of the *kuel* for pouring the sacrificial blood and foods into the mound and stakes to hold the sacrificial animals. Chapter 7 provides the archaeological details of the excavated record of several *kuel*.

Sacred Trees

The importance of sacred trees in traditional religion is another feature worth commenting on. Several chroniclers state that ceremonial places were special spaces and aesthetically lined with "*deformadas*" (deformed?) trees like "galleries and parks" (Bengoa 2003, pp. 93, 109). Nájera mentions that ceremonial fields "seem to be forests that were made or created for this affect, with little circulation and with high, deformed trees" (Gonzalez de Nájera [1614] 1889, p. 91). Elder informants in Lumaco told us that in the past the foot trails leading to old *nguillatun* fields were lined with large trees and that some mounds were flanked by sacred oaks. Today, the largest mound in the *Rapahuekuel* complex is characterized by ten large oak trees that are symmetrically placed around its base (see Chapter 7). (Growth rings counted in a core taken from one oak showed that the trees were planted more than 200 years ago.) Another large mound is called *Maicoyakuel*, which means a mound with ten oak trees. Local informants report that this mound once had several oaks planted around its base, but that they were cut more than 30 years ago. Other informants state that another mound complex, *Rehuenichikuel*, was stripped of most of its forest growth in the 1920s, so that ceremonies could be seen from across the river where kinsmen lived (Pineda and Bascuñán [1673] 1974, pp. 187–193). Only a few tall trees were left standing for an aesthetic effect. Gonzalez de Nájera describes a similar setting in the early 1600s:

> And there is nothing in which these barbarians take more care than in the things relating to their drinking, they have designated special places in the most pleasant and peaceful fields to celebrate other different drinking feasts…which are several groves which appear to be made or cultivated for this purpose, of small circumference with very tall, strangely-shaped trees, places which our people commonly call drinking places [*bebederos*] because they are where, in particular, the Indians engage in drinking, where, at these drinking feasts, as in consistories or palaces of council, the *caciques* (and captains) hold their councils and take decisions on matters of government, the war, how to deal with rebellions, peace, military expeditions or other undertakings. A thing which causes amazement, that to conduct business of such importance to them they meet on occasions of so much drunkenness to settle them and to resolve them so much to their benefit as they do to which the government they keep for their defense bears witness (Gonzalez de Nájera [1614] 1889, pp. 48–54; see Bengoa 2003, pp. 112–113).

The *canelo* or *foye* tree and others such as oak, can be of special significance because they can be identified in the macro- and micro-botanical remains of archaeological sites (see Chapter 14).

Burials

The burial site is another primary category of evidence, but one that, because of understandable prohibitions on disturbing such sites by archaeological excavation, is largely an intangible element of importance here. Throughout the Mapuche world, essentially uniform funerary rites were employed, and they were generally straightforward, unostentatious, and simple. In its simplest form, the place where the head of the deceased is laid may be commemorated with a marker of stone slabs or wood boards. Needless to say, many exceptions to these rites occur, such as slab rock or wooden canoe tombs as well (e.g., Latcham 1924, 1928; Bullock 1955; Menghin 1962; Gordon 1975, 1978, 1984; Aldunate del Solar 1989). However, it is above ground that complications arise, and ideals and reality diverge, for it is the means of commemorating the dead—the funerary monument, the *tumulo*, or mound—that is subject to most variability (Dillehay 1985, 2007). This is not to be confused with the *kuel* mound, which is a ceremonial mound associated with a ritual field, and it may or may not contain burials.

Miscellany

Numerous other elements of ritual practices could be manifested in the archaeological record. These range from seemingly humble items such as a polished *toquicura* axes that symbolize the authority and identity of *toqui* leaders through to ceramic pipes used in ceremony (e.g., Gonzalez de Nájera [1614] 1889, pp. 97–98). More detail on the possible significance of these categories of material is provided where required in the following chapter discussions.

In summary, the examples just described—shrines, altars, *kuel*, ceremonial fields, burials, settlement patterns, and sacrifice—are a short list of the material manifestations of traditional Araucanian or Mapuche religion; others exist, and these will be referred to where necessary in the ensuing discussion.

Patrilineality, Simple Materiality, and Social Integration

The Araucanians clearly underwent continued changes in social structure and residence rules during the sixteenth to seventeenth centuries that must have produced a reduction in the association between ceramic styles and traits and considerable shifts in the settlement pattern as well. An examination of archaeological sites in the study area shows a trend toward larger domestic sites and possibly a reduction of house size during this period (Dillehay and Saavedra 2010; see Chapters 7 and 9). These shifts suggest a restructuring in the residence group or in its premise (*sensu* Deetz 1965, 1973) probably due to the stress of armed conflict, which might have moved residences away from most traditional norms of patrilocality toward supra-patrilocality (i.e., *regua*, *ayllaregua*), especially where men were away fighting or killed in battle, and population displacement occurred. How might these changing residential conditions have impacted ceramic and mound materiality, the two most prevalent artifact categories in the archaeological record? Other than these two material categories, the archaeological record of the valley and time period under study produced no diagnostic or elaborate stone, shell, wood, bone, or other industries. Simple lithic unifaces, an obsidian projectile point, and a few bones and shell fragments were recovered but nothing very informative and useful for interpreting the research problems under study here.

Our prior work focused on both the decorative and non-decorative attributes of pre-Hispanic and Hispanic ceramics (Dillehay 2010). The high degree of clay source diversity in the ceramic collection resulted from population mixtures from different geographic areas. Yet, the low diversity of decorative style and vessel form was attributed to high degrees of population mobility, fissioning and fusioning due to fragmentation, and less emphasis on social status marked by material means. That is, the styles had to be familiar or mutable (Chilton 1999) across fragmented and mobile groups coming together to reside in the same place. Style encoded messages about the flexibility of new, mixed group membership, permeable kinship boundaries, and social identities (see Chapter 4).

Studies show that social identities and networks variously influenced and constrained the choices potters make (Miller 1985; Van der Leeuw 1993; Gosselain 2002, 1998; Pétrequin and Pétrequin 1999; Smith 2000; Stark 2003). As choices become more technical and inflexible, smaller networks of people tend to influence them. For instance, more people influence what pots will look like, but fewer people influence the specialized gestures and symbols used to fashion vessels. Consequently, choices are variously affected by the different learning and post-learning interactions of potters (see Fowler 2008) and by the ideology of the times.

For our purpose here, I follow Godelier (1984) who believes that a society's ideology is related to its social or kinship relations of production and access to resources. The linkages between kinship networks and materiality studies generally have received little attention and often are considered either unrelated or remotely linked to material culture and too difficult to identify in the archaeological record. However, when the documentary evidence clearly indicates the specific type of kinship structure, as is the case with patrilineality here, it becomes more feasible to relate the material correlates even if they do not directly point to patrilineality. Also important is how kinship structure changes in response to major transformations, migration, warfare, depopulation, and other crises and stresses (Ember 1973; Haviland 1973; Deetz 1973). In this regard, patrilineality was probably best equipped to deal with expansion, fragmentation, and mobility (see Keegan 2010).

We can postulate that supra-patrilocal residence during the early Hispanic period evolved where either (1) a group of migrants entered a previously inhabited region or joined a larger, more secure group for security purposes; or (2) there was frequent extra-community warfare; or (3) a community's cultural practices were under stress due to contact with more dominant societies such as with the Spanish. These three explanations share a common element: fragmented groups reconstitute or move into and reside with stable or, at least, more militarily secure groups. These conditions most likely explain the development of super-patrilocal *regua* and *ayllaregua* units whereby the threat of war created a culturally unstable core group through which fragmented male and female members were incorporated in a "traditional" manner, probably through the informal, long-distance kin network of the *kuga* system (see Chapters 1 and 2). In this scenario, we can easily envision patrilocal residence having been fostered as a way to allow groups of males to leave for long periods of time on trade expeditions, or, most often, prolonged warfare.

Patrilocality provided the people a social structure in which not only were women able to form somewhat stable agricultural communities but also the majority of the able men were freed to take part in war, long-distance resource procurement, and, later, trade into the Argentina pampa and elsewhere. Political leaders took advantage of this situation and developed strategies to build a power base from them (see Goicovich 2007; Zavala 2008). Out of this patrilocal structure and the associated corporate political strategies arose the large domestic and ceremonial communities that came to dominate the Purén and Lumaco Valley, the intense interaction between those communities, and possibly the rise of influential pan-societal kinship groups like the *kuga* or *koyan*.

To understand the social organization of the production of simpler and more familiar ceramic and mound styles in the Purén and Lumaco world of the early Hispanic period and the intense interaction between communities, we must approach it through the lens of patriarchy residence. We would expect ceramic production to be directed primarily toward group or community rather than individual consumption. We would expect consumption, on the other hand, to be focused at points of group articulation at *nguillatuns* and other large-scale gatherings such as *coyans*, *cahuins*, *nguillatuns*, and *borracheras*. Again, all of this was affected by the ideology of the Araucanians and by the world they were experiencing at the time.

In summary, we do not currently have clear material culture correlates for patrilineality and patrilocality. However, we do know from the written records that they were the predominant mode of sociopolitical organization, and we can associate the archaeological record of the time with it. As such, we can suggest that patriarchy was associated primarily with simple incised, punctated, and corrugated patterns on ceramics. These simple designs appear to be the material indicators of the *lof* and *regua* social structure and patrilocal residence and probably polygamous marriage for the early Hispanic period in the valley. Such strategies may have been more successful in situations where families or lineages could not easily survive independent of others. There are little, if any, clear material indicators of elites and leaders in ceramics and mounds. Leaders who stressed cooperative activities, mutual support, and group survival evidently were probably more successful in gaining followers than those who stressed individual advancement and the exclusion of others (see Bengoa 2003; Boccara 2007). Successful recruitment and retention were seemingly more important in legitimizing social status than the display and accumulation of exotic and/or wealth items.

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Chapter 6
Environmental Responses to Climatic and Cultural Changes

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Introduction

Modern landscape evolution is the product of complex interactions between human, cultural, and natural processes that must be studied from a multidisciplinary perspective. The effects of people on their surroundings are only one way of viewing the relationship between humans and their environment (Redman 1999). Advocates of "environmental determinism" view the interaction "in reverse." They believe that the environment primarily influences human cultural development (Menocal 2001). The late Quaternary period, after the initial colonization of the Americas, provides an excellent setting to analyze the evidence that climate, environment, and human cultures are intimately linked (e.g., Brenner et al. 2002; Hodell et al. 1995; Weiss and Bradley 2001). Paleolimnological investigations have complemented archaeological studies to provide the environmental context in which cultures arose, flourished, and collapsed. Analysis of lake sediments can be employed to infer the long-term regional/local ecological history; they contain physical, chemical, and/or biological information about past conditions within lakes and in their surrounding watersheds.

In south-central Chile, multiproxy paleoenvironmental studies that focus on landscape changes associated with human and climatic influences are scarce. Chilean paleoclimatic records have shown that major changes in precipitation and temperature are strongly associated with the strength and position of the Southern Westerlies (SW) and the South Pacific subtropical high (STH)-pressure system during the late Quaternary (e.g., Caviedes 1972; Villagrán and Varela 1990; Lamy et al. 1999; Abarzúa et al. 2004; Fletcher and Moreno 2012). In southern Chile (41 °S), pollen-based vegetation reconstructions show the prominence of hyper-humid vegetation (North Patagonian/Subantarctic forests and moorlands) during the Last Glacial Maximum (LGM, ~26.5–19 kyr BP (1,000 calendar years before the present),

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Heusser et al. 2006; Clark et al. 2009; Sanchez-Goñi and Harrison 2010). Similarly, two pollen records from central Chile at 34 °S (Laguna Tagua Tagua) show increased percentages of evergreen temperate forest taxa (*Nothofagus dombeyi*-type and *Prumnopitys andina*) between ~33 and 15 kyr BP (Heusser 1990; Valero-Garcés et al. 2005), implying a northward shift of the southern vegetation zones during the last glacial period, which was linked with enhanced moisture availability in central and southern Chile (30–42 °S) (Lamy et al. 1999; Kaiser et al. 2008; Toggweiler et al. 2006).

During the early to middle Holocene (~11.5–6 kyr BP), thermophilous arboreal taxa became dominant in the temperate rainforest region at 41–43 °S (Villagrán 1988; Abarzúa et al. 2004; Moreno and León 2004; Abarzúa and Moreno 2008). A comparable trend was observed between ~8 and 5 kyr BP in central Chile (30–34 °S), where arboreal components of Mediterranean vegetation disappeared from pollen records and were replaced by grasses, Chenopodiaceae, and xerophytic taxa (Heusser 1990; Maldonado and Villagrán 2002; Jenny et al. 2002; Villa-Martínez et al. 2003). Such evidence suggests that the climate became drier and warmer than the present between ~11 and 7 kyr BP in south-central Chile (40 °S) and between ~10 and 5 kyr BP in central Chile (~30 °S), presumably driven by a southward shift of the Intertropical Convergence Zone (ITCZ), the STH, and at least the northernmost boundary of the SW (e.g., Kaiser et al. 2008).

On the Pacific side of South America, the Araucanian region (~38 °S) constitutes the current boundary between Mediterranean-type and temperate-type climates (Schmithüsen 1956; Di Castri and Hajek 1976). Accordingly, this is a particularly sensitive area to decipher the climate change patterns that characterized the late Glacial and Holocene periods in southwestern South America, by use of different biological proxies. In addition, this region has been inhabited by a dense population of indigenous communities that have impacted the environment for several thousand years (Bullock 1958; Bengoa 2003). For example, the Purén–Lumaco Valley (Fig. 6.1) is currently associated with extensive pre-Hispanic agricultural systems (e.g., agricultural terraces, raised fields, and canalized fields), associated with several archaeological sites from this culture. In this valley, there are more than 300 artificial mounds (*kuel*), some of these ritual complexes are constructed around 30 mounds on top of artificially flattened platforms for ceremonial purposes, but most of them are now small sites associated with nearby agricultural settlements (Dillehay 2007; Dillehay and Saavedra 2003, 2010). All *kuel* structures and diagnostic ceramics are radiocarbon dated from circa AD 1000 to 1800, and two *kuel* are still in ceremonial use by Mapuche communities (Fig. 6.1; Dillehay 2007). Today, it is unclear when a strong human influence on the environment started in south-central Chile, but it must have been related to population size and the population's technological development (Gastó 1979; Donoso 1983) and, consequently, their level of organization and social complexity (Dillehay 2007). Indigenous people are known to have used fire for clearance of forested areas and wetlands to cultivate different plants, such as the Chenopodiaceae quinoa (*Chenopodium quinoa*), the maize grasses (*Zea mays*), mango (*Bromus mango*), teca (*B. berterianus*), and the Asteraceae madi (*Madia sativa*) (Gay 1865; Mösbach 1930; Donoso 1983;

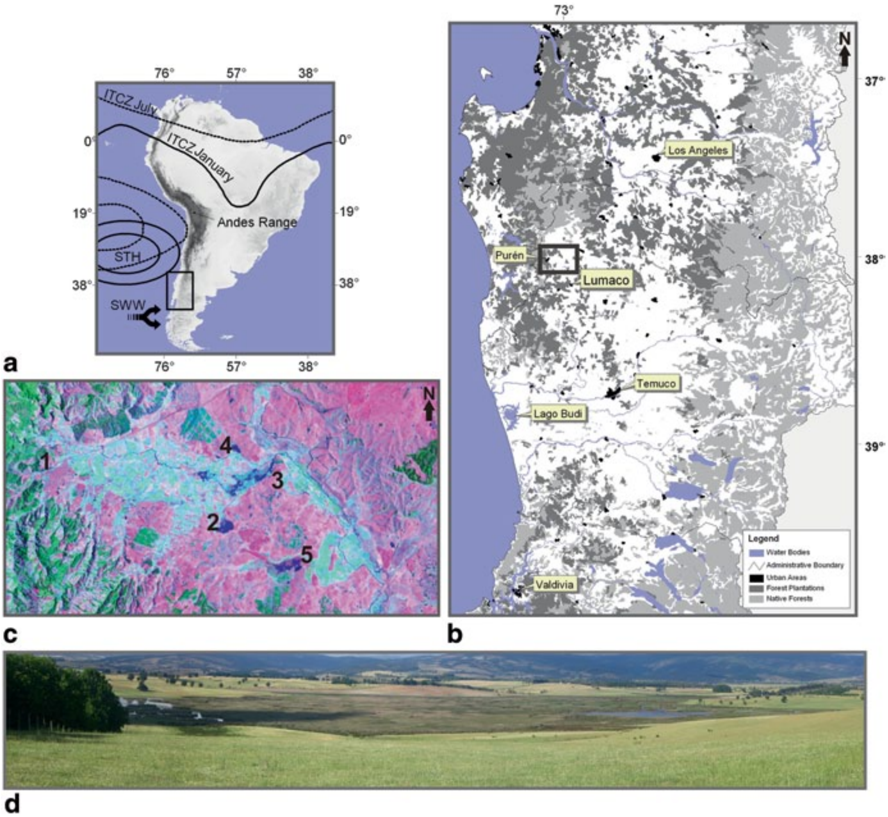

Fig. 6.1 Climate figures in South America, present-day land cover in south-central Chile, main modern-day towns of the region, satellite image of the Purén–Lumaco Valley, and (*1*. town of Purén, *2*. El Valle, *3*. Huitranlebu, *4*. Maicoya, *5*. Buchihueico sites) coring points at the El Valle site.

Aldunate and Villagrán 1991; see Chapter 8 and Appendix 2 for a discussion of the maize species recovered at mound and domestic sites).

The reconstruction of landscape features from the Purén–Lumaco Valley can thus reveal important information about past crop production and hence population densities and characteristics. In many respects, the approaches used in paleolimnology and archaeology have much in common. Whereas archaeological excavations yield artifacts that enable inferences about past cultural development, paleolimnological analyses provide physical, chemical, and biological information buried in lake sediments, allowing insights into paleoenvironmental conditions. In this context, we developed an interdisciplinary project to decipher the landscape history, based on analyses of peat-sediment cores in the Purén and Lumaco Valley in order to expand the current state of knowledge concerning interactions between climate, vegetation, and the past indigenous culture (see Appendix 3 for a discussion of wood charcoal and tree species recovered from excavated sites).

Environmental Setting

The climate of the southern Andes is dominated by the SW and their seasonal latitudinal shifts (Miller 1976; Di Castri and Hajek 1976; Rutlant and Fuenzalida 1991). The seasonal shifts of westerly storm tracks, related to seasonal shifts of the STH pressure cell in the southwestern Pacific Ocean, produce a Mediterranean type of precipitation regime between 30 and 38 °S, with hot, dry summers and mild and wet winters. Mean temperatures vary from 6.5 to 24.1 °C (Di Castri and Hajek 1976). Mean annual precipitation is 350–1,300 mm, falling principally between March and August. El Niño Southern Oscillation (ENSO) variability also affects precipitation, producing higher amounts in spring during El Niño events at these latitudes (Montecinos and Aceituno 2003). During this warm phase of ENSO, pressure shows a low anomaly over the Southeast Pacific, leading to a weakening of STH, and a consequent northward shift of the SW (Aceituno 1988; Villalba et al. 1996; Kitzberger 2002).

The climate at 38 °S/72 °W is characterized by a mean annual temperature of 12 °C and an annual precipitation of 1,240 mm (Traiguén climatological station, Amigo and Ramírez 1998). In contrast, in the coastal region south of 38 °S, precipitation occurs essentially year-round, with mean annual values of over 5,000 mm south of latitude 45 °S. The topographic relief results in marked rain shadow effects on the leeward side of both the coastal and Andean mountain ranges.

Latitudinal and altitudinal precipitation and temperature gradients are the primary controlling factors that determine the vegetation zonation in southern South America (Schmithüsen 1956). West of the Andes, from 33 °S to 38 °S, the prevailing Mediterranean-type climate is associated with sclerophyllous forests, which includes patches of deciduous *Nothofagus* with *N. obliqua, N. alpina*, and *N. glauca* (Donoso 1993). In the past decades, the natural vegetation has been increasingly disturbed by logging, burning, and grazing, and replaced by commercial plantations of *Pinus radiata* and *Eucalyptus* sp. plantations. Between 37 °S and 40 °S, these Mediterranean-climate forests grade into seasonal temperate rainforests, characterized by a high diversity of tree species (Arroyo et al. 1995).

The Purén and Lumaco Valley (38° 15′ S/72° 40′ W) is located in the eastern lowlands of the Nahuelbuta coastal range (Fig. 6.1). Climate-derived natural vegetation theoretically consists of deciduous southern beech forest (*Nothofago-Perseetum*), and wet forest “Temu-Pitra Hualve” (*Blepharocalyo-Myrceugenietum exsuccae*) (Schmithüsen 1956). Mapuche communities represent 90 % of the rural population and the total watershed area has a high level of anthropogenic disturbance, resulting in a mosaic of current land uses, including crop cultivation, pastures, and wetlands (Endlicher and Mäckel 1985; Hauenstein et al. 2001). The El Valle site is a small peat bog (0.76 km^2, 4-m water depth) within a Tertiary bedrock depression at ~70 m above sea level (a.s.l.). The drainage basin is mainly composed of metamorphic rocks and contains no carbonate rocks. Water is mainly supplied in the winter by the Purén River (Fig. 6.1). The El Valle peat bog contains a diverse community of emergent and submerged macrophytes, which contains many types of birds. *Scirpus* sp., *Juncus* sp., *Sagittaria* sp., and *Myriophyllum* sp. are dominant at water depths <1 m, while the small catchment area (~1.5 km^2) of the bog is characterized by grasslands and a few patches of exotic trees.

Methods

We conducted a multiproxy study in the Purén and Lumaco Valley (38 °S/73 °W) that was based on sedimentological parameters, magnetic susceptibility, loss on ignition (LOI), geochemical, pollen, chironomids, diatoms, and charcoal analysis. Sediment cores were recovered from four different bogs in the valley (Huitranlebu, Maicoya, Buchihueico, and El Valle; Fig. 6.1), using a Livingstone corer (Wright 1967). Three cores were taken at the El Valle site (VM1, VM2, VM3), and they are the focus of this present work and interpretation (Fig. 6.1). The sediment cores were split lengthwise, photographed, and visually described in the laboratory. Magnetic susceptibility, iron and phosphorous content, inorganic density, organic matter, and pollen content were all analyzed in the VM3 core. Chironomid and macro-charcoal analyses were conducted on the VM2 core and diatom analyses on the VM1 core.

Magnetic susceptibility analysis ($10–^6$SI) was performed every 0.1 cm along the entire length of the VM3 core, using a Bartington scanner with an MS2E sensor. The VM3 sediment core was sampled every 5 cm for geochemical analysis; a total of 101 samples (2 g dry weight) were dehydrated over 24 hrs at 60 °C. To estimate the iron (Fe) content, an atomic absorption spectrophotometer (AAS Flame-Shimadzu AA-6800) was used. Phosphor concentration (ppm) was measured using the molybdenum-blue methodology with an ultraviolet (UV) spectrophotometer (Shimadzu UV-2401PC). To estimate the organic matter content, we conducted the LOI analysis (Heiri et al. 2001) in 1-cm^3 volumetric subsamples each centimeter in the VM1 core.

For pollen analyses, 0.9–1.2-cm^3 volumetric subsamples were taken at 2.5-, 5-, or 10-cm intervals and were prepared using standard techniques (KOH deflocculation, HF digestion, and acetolysis) (Faegri and Iversen 1989). The basic pollen sum included at least 300 pollen grains of trees, upland shrubs, and herbs. *Lycopodium* tracer spores were added to each sample in order to calculate absolute pollen concentrations (grains cm^{-3}). Pollen data were analyzed and plotted using Tilia 2.0.b.4 (Grimm 1991–1993) and Tilia Graph View version 2.0.2. (Grimm 2004), and the pollen sequence was divided into zones using stratigraphically constrained cluster analysis (CONISS; Grimm 1987). In each pollen slide, charcoal particles were counted and their concentration was calculated (particles cm^{-3}) in relation to the *Lycopodium* tracer. For diatom analysis, 86 subsamples of 0.1 cm^3 were taken at 5-cm intervals in the VM1 core. The samples were oxidized in a 3:7 mixture of H_2O_2 (30 %) and distilled water at 60 °C (Renberg 1990). The slides were fixed in Naphrax (I.R.: 1.7010) at 130 C. At least 300 diatoms were counted under an optical microscope at 1,000× magnification. For chironomid analysis, 2-cm^3 volumetric subsamples were taken at 5- and 10-cm intervals in the VM2 core and were prepared using KOH (10 %) at 60 °C for 1 hour. The samples were sieved at 300- and 95-μm mesh sizes and analyzed using an optical microscope at 400× and 1,000× magnification (Massaferro and Brooks 2002; Epler 2001; Paggi 2001; Walker 2007; Cranston 2000). The macroscopic charcoal content of the sediment samples (2 cm^3) was obtained from contiguous 1-cm-thick slices in the VM2 core to document the local fire history. The sediment samples were disaggregated in a 10 % KOH solution, and sieved at a 125- and 250-mm mesh size. Macroscopic charcoal particles were individually counted under a stereomicroscope.

The chronology of the sediment cores (VM1, VM2, VM3) was developed on the basis of radiocarbon dates on plant remains or charcoal particles, measured at the University of Colorado. To calibrate the dates, we used Calib 5 (Stuiver et al. 2005). Dates younger than 11 kyr BP were calibrated using the southern hemisphere calibration curve (McCormac et al. 2004) and Intcal 0.4 was applied to the older dates (Reimer et al. 2004).

Results and Interpretations

Geochemical Sediment Description and Chronology

We recovered several cores from the Purén and Lumaco Valley: El Valle, Huitranlebu, Maicoya, and Buchihueico sites (Fig. 6.1). All of the cores have similar stratigraphy, suggesting synchronous environmental changes along the valley (Fig. 6.2). We selected the El Valle site (VM) for a more detailed analysis, because it has a small catchment area with high sedimentation rates. The 400-cm-long VM3 core can be divided into eight sedimentological units (Figs. 6.2 and 6.3): Between 400 and 377 cm in depth, light blue inorganic coarse sands prevail, with <5 mm poorly sorted quartz grains and high magnetic susceptibility values (MS) (Unit 1). This unit is overlain by a sharp horizontal unconformity and bioturbated brown silty sands (377–361 cm, Unit 2). Between 361 and 257 cm, the grayish-brown silty clays are characterized by an increase in organic matter and several layers: At 310 and 275 cm in depth, yellow concretions are interspersed, probably formed by siderite minerals, associated with peaks in mass spectrometry (MS), Fe, and phosphorous (P) (Unit 3). Gray homogenic clays prevail between 257 and 241 cm, with an erosive diastem on top. Between 241 and 191 cm in depth, the sediments are characterized by a brownish silt with a few vertical roots and increased organic matter (Unit 4). At 191 cm in depth, the sediment gradually changes into a more organic grayish silt (Unit 5) and into dark gray peat between 122 and 78 cm in depth (Unit 6). Phosphorus concentrations start to increase slightly in Unit 5, and the organic matter continues to increase towards a maximum of 53 % at 117 cm in Unit 6 (Fig. 6.3). Above the 78 cm in depth, there is a gradual transition to less organic and bioturbated silts up to 40 cm in depth (Unit 7). At 50 cm in depth, a high peak in P and a minor peak in organic matter content are observed, as well as a minor disturbance in MS values (Fig. 6.3). Between a 40- and 33-cm depth, the sediment is composed of light brownish-gray silty clays with high levels of organic matter, P, and MS (Fig. 6.3). The upper 33 cm are characterized by organic silt (Unit 8) and high but variable P and organic matter concentrations. Fe concentrations slightly decrease in the upper 78 cm of the core (Units 7 and 8; Fig. 6.3).

Eleven accelerator mass spectrometry (AMS) radiocarbon dates were obtained on sieved plant or charcoal material in the valley (Fig. 6.2, Table 6.1). In the El Valle site, six radiocarbon dates were selected for the depth/age model, using a cubic spline interpolation with the MCAgeDepth program, resulting in a ~26 kyr BP paleoenvironmental record (Fig. 6.3). Considering the similar stratigraphy, LOI,

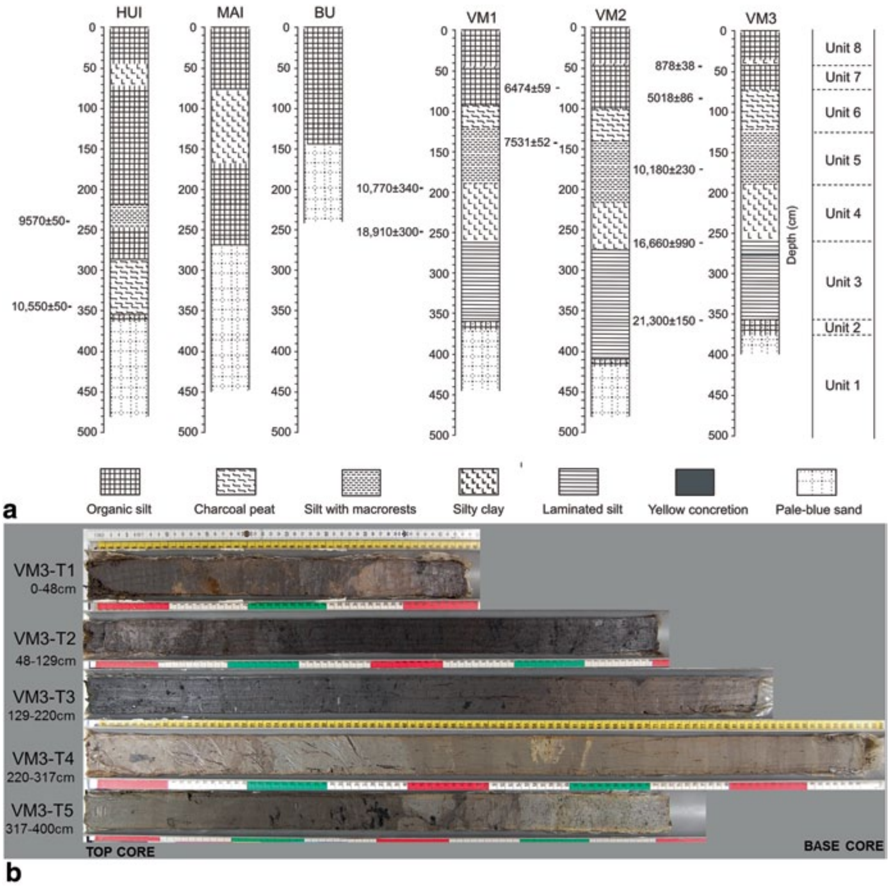

Fig. 6.2 Lithology, ^{14}C dates, sedimentological facies, and cores in the Purén–Lumaco Valley.

and MS parameters in the three cores, we correlated and extrapolated the radiocarbon dates in order to perform the depth/age model in each sediment core from the El Valle site. The changes in sedimentology (high MS, low sedimentation rates, and the abrupt increase of Fe and P in the upper 100 cm of the core) suggest a possible hiatus. Extra coring and dates can help to solve this problem.

Biological Proxies: Pollen, Diatoms, Chironomids, and Charcoal Records

The LGM (~26.5–19 kyr BP) was characterized by very cold and per-humid climate conditions. A high water level caused the inundation and the genesis of the El Valle site. The landscape was dominated by forests, principally *N. dombeyi* and *Araucaria araucana*, but including *Saxegothaea conspicua* and *Podocarpus nubigena.* Poaceae,

Table 6.1 Radiocarbon dating and calibrated ages from cored sites in the Purén-Lumaco valley: El Valle (VM cores) and Huitranlebu (HUI cores).

Lab code	Core	Depth (cm)	Material dated	$\delta^{13}C$	^{14}C age BP	±Age	Cal. age BP
AA81801	VM3	49	Macrorest	−27.2	878	38	741
AA84034	VM2	70	Wood	−28.0	6,474	59	7,346
AA75322	VM3	84	Charcoal	−29.4	5,018	86	5,708
AA81802	VM2	142	Wood	−27.1	7,531	52	8,289
110207	VM3	170	Charcoal	n.d.	10,180	230	11,848
AA75326	VM1	195	Charcoal	−26.8	10,770	340	11,985
AA75323	VM1	249	Charcoal	−27.6	18,910	300	22,170
110208	VM3	260	Charcoal	n.d.	16,660	990	19,976
AA81803	VM3	357	Charcoal	−28.8	21,300	150	25,454
B.210862	HUI2	190	Charcoal	−27.4	9570	50	10,931
B.210867	HUI1	344	Wood	−27.7	10,550	50	12,503

n.d. not defined

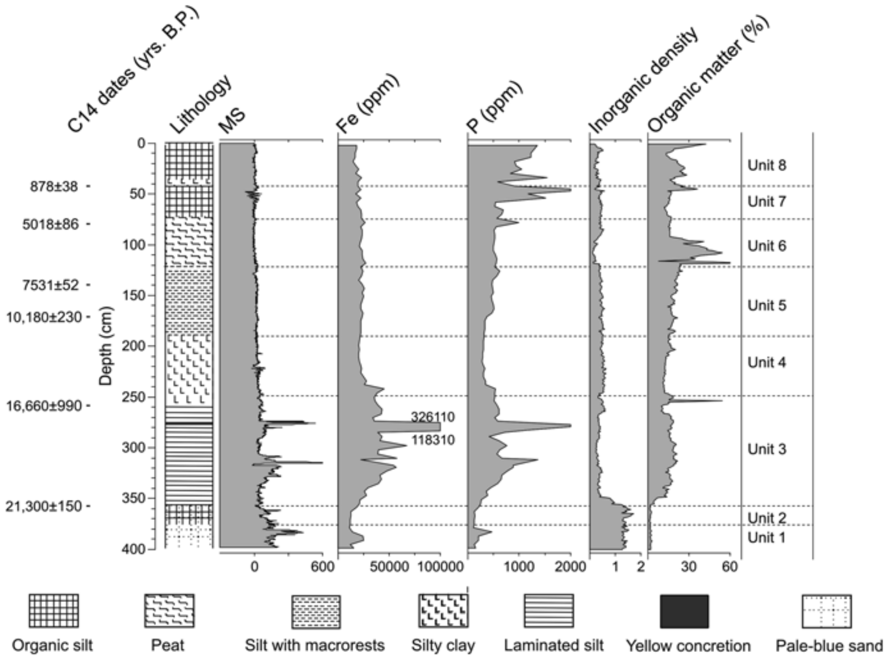

Fig. 6.3 Sedimentary features, calibrated dates, biogeochemical characteristics, and ignition results from cores in the Purén–Lumaco Valley.

Asteraceae, and Magellanic moorland characterized open areas. Cyperaceae, ferns like *Isoetes*, and the algae *Pediastrum* indicate the formation of a shallow lake or possibly an anastomosing river at the El Valle site during the LGM (Fig. 6.4). The diatom record supports this finding with high abundances of epipelic taxa that thrived well in acidic conditions before 25.4 kyr BP (e.g., *Pinnularia*, *Diploneis*, *Nitzschia*, and *Eunotia*), which was replaced by a tychoplanktonic community of Fragilariaceae indicating a high water supply (*Fragilaria* and *Staurosira*; Fig. 6.5). The chironomid record shows very low concentrations of larvae, like the cold stenothermic taxa Tanytarsini and *Chironomus* sp. Some thermophilous taxa like *Dicrotendipes*, *Ablabesmyia*, and *Pseudochironomus* are also recorded in fewer amounts (Fig. 6.6). The macroscopic charcoal content reveals the absence of fires during this period in the study area (Fig. 6.6).

The late Glacial Transition (~19–11 kyr BP) was warmer and with less wet conditions which were associated with the decrease of *N. dombeyi* and *Araucaria* forests when Poaceae and the aquatic *Sagittaria* expanded at the site. At ~14.5 kyr BP, some warmer taxa appear, such as *P. andina*, Myrtaceae, and *N. obliqua* (Fig. 6.4). The diatoms shift to an assemblage with high abundances of *Pinnularia, Eunotia*, and *Frustulia,* typical for lower water levels or shallow swamps, with slightly more acidic and mesotrophic conditions (Fig. 6.5). All chironomids disappear from the sediments and the abrupt increase of charcoal particles are recorded at ~12 kyr BP (Fig. 6.6).

The early–middle Holocene (~11–4 kyr BP) shows an increasing trend to warm and dry conditions, which culminates with turf sediments very rich in charcoal particles at ~8.3 kyr BP. Warm-temperate arboreal species increase in abundance: *N. obliqua, Weinmannia trichosperma*, and *Eucryphia/Caldcluvia* become dominant in the landscape. *N. dombeyi* dramatically decreases towards a minimum (Fig. 6.4). At ~7 kyr BP, the *Eucryphia/Caldcluvia* forest expands, implying a probable increase in the humidity by this period. Diatom assemblages are again dominated by *Staurosira* taxa, and planktonic *Aulacoseira* are still variable and increasing towards the top of the core (Fig. 6.5). Some warm-tolerant chironomid taxa (*Macropelopia, Ablabesmyia, Tanypodinae*, and *Cricotopus/Orthocladius*) appear at ~8.3 kyr BP, albeit in low quantities (Fig. 6.5). Macroscopic charcoal particles reach the highest level in all of the sequences (Fig. 6.6).

During the late Holocene (last ~4 kyr BP), *Eucryphia/Caldcluvia* dramatically decreases and traces of *Z. mays* pollen grains (<2 %) are registered in the sediment. The last ~2 kyr BP are characterized by the increase of Poaceae and *Nothofagus.* There is a relative increase of woody sclerophyllous taxa, along with the presence of introduced exotic trees such as *P. radiata* and *Eucalyptus* sp. at the top of the record (Fig. 6.4). Diatoms show abundant benthic taxa like *Eunotia,* and (tycho) planktonic taxa like *Staurosira* sp., *Aulacoseira*, and *Fragilaria,* which indicate a fluctuating water level. Especially at ~2 kyr BP, a sudden increase of *Nitzschia* is observed, as well as a modest decrease in *Aulacoseira*. At the top of the core, *Eunotia* and *Frustulia* increase in abundance (Fig. 6.5). At ~2 kyr BP, the chironomid record reveals a highly diverse community that contains both stenothermic cold- (*Parakiefferiella, Parapsectrocladius, Corynoneura/Thienemanniella, Chironomus*, and the Tanytarsini group) and warm-tolerant taxa (*Dicrotendipes, Labrundinia*, and *Parachironomus*, and *Pseudochironomus, Labrundinia, Macropelopia, Ablabesmyia, Tanypodinae, Cricotopus/Orthocladius*, and *Nanocladius*) (Fig. 6.6). Charcoal particles show a small rise at ~2 kyr BP (Fig. 6.6).

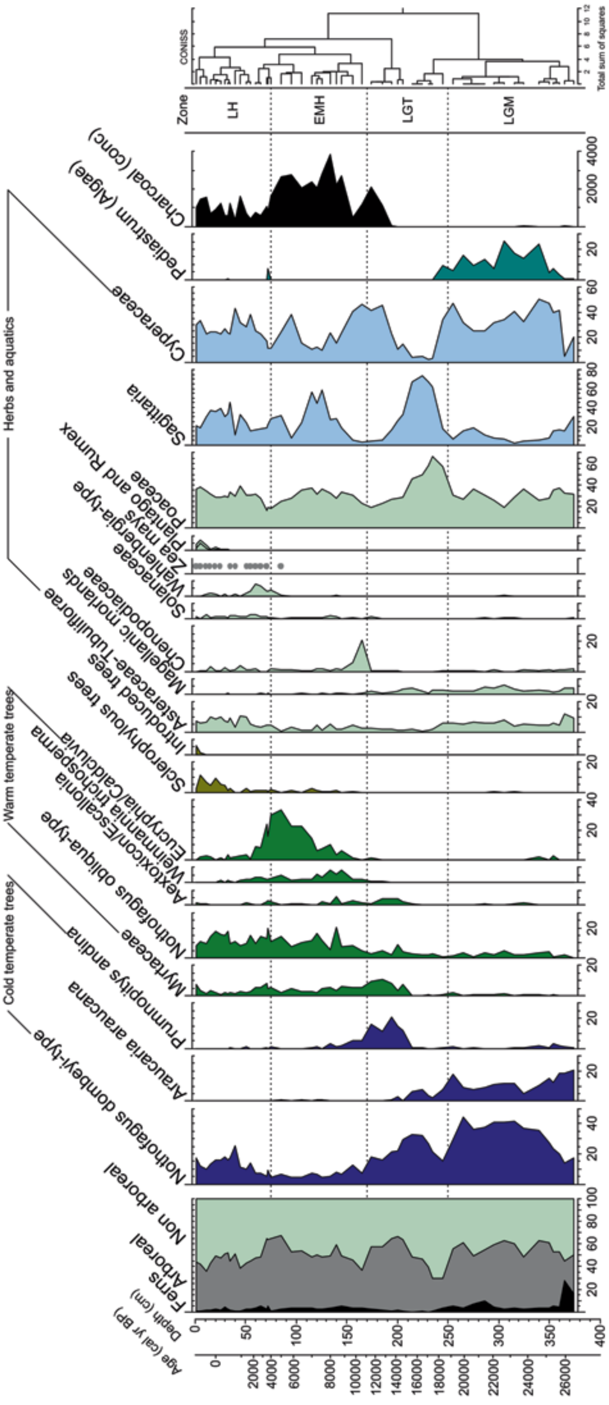

Fig. 6.4 Pollen record from the El Valle site.

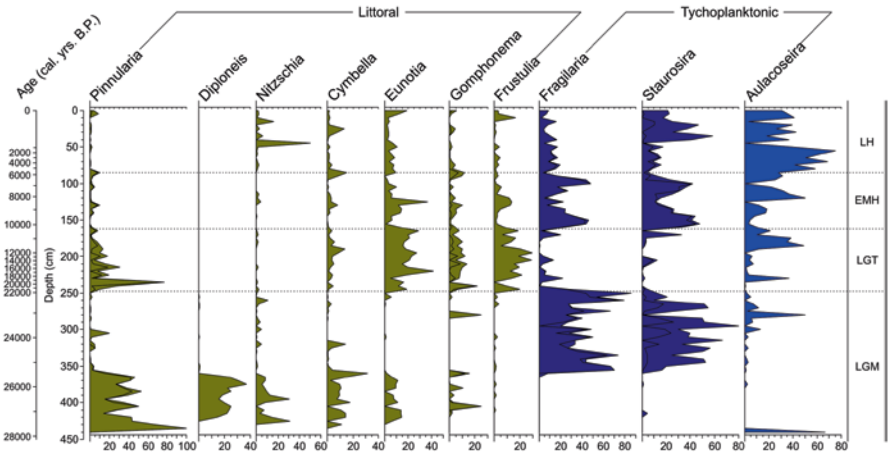

Fig. 6.5 Diatom record of the El Valle site.

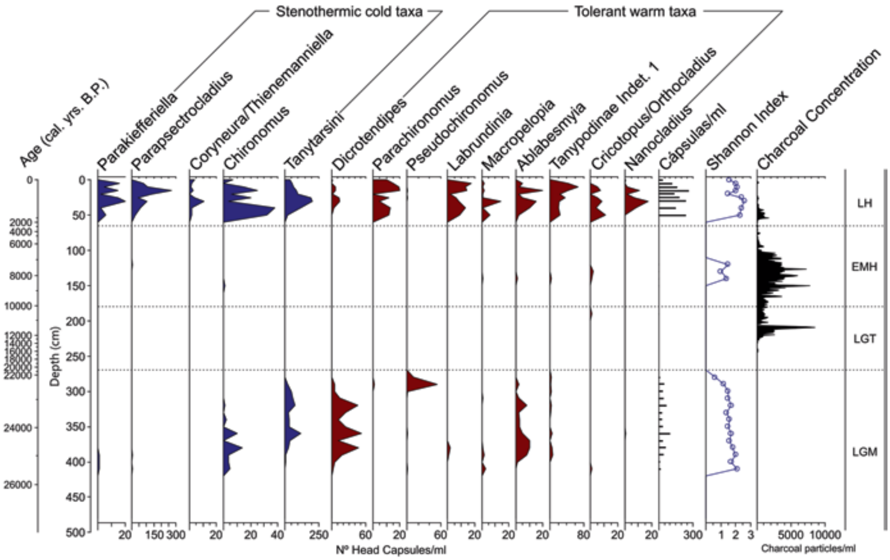

Fig. 6.6 Chironomid record at the El Valle site.

Calibration of Z. mays Pollen

To quantify the maize crop production during the past in the valley, we did a preliminary analysis to assess the relationship between the amount of *Z. mays* pollen in modern sediments and its surrounding land cover at different latitudes in south-central Chile. We selected three different marsh areas characterized by markedly different maize crop production between 34° and 38° S in Chile. We collected the water–sediment interface to analyze the modern pollen contained in Huilmay (34° 05′ S/71° 50′ W), Bobadilla (35° 34′ S/71° 42′ W), and Huitranlebu (38° 01′ S/72° 56′ W) marshes. From the analysis of satellite images, we selected an area of 2 km^2 around each marsh to determine the crop production for comparison with the maize pollen contained in the sediments. Due to the morphology of maize pollen (70–120 µm size, Erdtman 1952), it generally has a very low dispersion between 500 and 800 m in distance (Chamberlin and Chadwick 1972). The abundances of all pollen in the sediments were calculated by use of *Lycopodium* tablets, as was similarly done in the fossil pollen records. A preliminary linear Pearson regression between the amounts of maize pollen inside the surface sediment samples was compared with areas of maize cultivated in modern-day fields. In Huilmay (34° 05′ S/71° 50′ W), an area of 7.500 % of maize crop production, the pollen content is about 0.028 %. In Bobadilla (35° 34′ S/71° 42′ W), the area of maize reaches 0.96 %, and the pollen content is 0.063 %. In Huitranlebu (38° 01′ S/72° 56″ W), the maize area is only 0.019 %, and the pollen content in the sediments reaches 0.015 %. In the first two sites, the maize pollen was underrepresented in the sediments, but well preserved in the Huitranlebu site. In marsh sediments, as well as aeropalynology studies of crop fields (Treu and Emberlin 2000; Madanes and Millones 2004) and the modern sediments of lakes (Lane et al. 2010), the coverage of *Z. mays* is underrepresented in the pollen record. The Pearson regression from our preliminary analysis predicts that 1 % of *Z. mays* pollen corresponds to 3 ha of local production (Pinchicura 2008). The resulting equation needs much more calibration to infer the extent of the maize coverage in the past, since problems of dispersal/deposition of current maize pollen significantly affect the predictive value of the equation.

Discussion

Our results in the Purén and Lumaco Valley indicate several environmental changes since ~26 kyr BP. The dominance of cold-temperate *Nothofagus* and *Araucaria* forests during the LGM (LGM: ~26–19 kyr BP) suggests cold and per-humid conditions in the lowlands of the Araucanian region (south-central Chile, ~38 °S). At this time, a shallow lake or an anastomosing river covered the valley with abundant grasses in the surrounding terrain. The presence of Magellanic moorlands suggests climatic conditions characteristic of the crest of the coastal mountains and southern moorlands today (south of 48 °S). Actually, these vegetation types are associated with high rainfall, low temperatures, poorly drained soils, and exposure to high winds (Ruthsatz and Villagrán 1991). The absence of local fires in the valley during LGM times corroborates our interpretation of cold and per-humid climate derived from these plant associations. The high amount of Fe in the sedimentological record between ~26 and 19 kyr BP (Fig. 6.3) supports strong precipitation resulting in enhanced runoff of iron-rich sediments mixed with fluvial fine particles from the mountains (Lamy et al. 2001; Stuut and Lamy 2004). All aspects of the Purén–

Lumaco record (sedimentological patterns, pollen, chironomids, and diatoms) agree with the hypothesis of a northward displacement and intensified circulation of the SW during glacial times in south-central Chile (e.g., Villagrán 1988; Heusser 1990; Lamy et al. 2001; Valero-Garcés et al. 2005, Fletcher and Moreno 2012).

The Last Glacial Transition (LGT: ~19–11 kyr BP) is characterized by an abrupt change in the hydrological balance in the valley. The paleo-lake had completely desiccated; chironomids and *Araucaria* disappeared; and the conifer *P. andina* expanded under cold and humid conditions. Diatoms like *Pinnularia, Eunotia,* and *Frustulia* are typical for low water levels, slightly more acidic conditions similar to the marsh at the El Valle site. This pattern is also supported by the intense fire activity demonstrated by the first charcoal peak at ~11.3 kyr BP.

At ~11 kyr BP, the end of the Glacial Period is defined in the pollen record from the valley. Warm-temperate taxa appeared, such as Myrtaceae, *N. oblique*-type, *Aextoxicon punctatum, Weinmannia trichosperma*, and *Eucryphia/Caldcluvia*. High charcoal concentration values are recorded between ~10 and 7.5 kyr BP, which are associated with high *Sagittaria* and non-arboreal taxa, principally Poaceae and Chenopodiaceae. Several pollen records in central Chile show the disappearance of the arboreal components and the dominance of herbaceous and xerophytic vegetation during the early–middle Holocene (Heusser 1990; Maldonado and Villagrán 2002; Maldonado and Villagrán 2006; Jenny et al. 2002, 2003; Villa-Martínez et al. 2003). All of these results suggest that the climate was dry and warm (~2 °C) between ~10 and 7 kyr BP in central Chile due to the southward/weakness of SW. The posterior increase of *Eucryphia* forests between ~7 and 4 kyr BP indicates more humidity and/or the water input from the paleo-Purén River at the El Valle site.

Climatological data suggest that the latitudinal position of the SW is strongly related to the position of the ITCZ (Broccoli et al. 2006) and the strength of the STH (Markgraf et al. 2002), which is, in turn, closely related to the ENSO (Rutlant and Fuenzalida 1991; Villalba et al. 1996; Kitzberger 2002). During the warm phase of ENSO (El Niño events), pressure is anomalously low over the southeast Pacific, leading to a weakening of the STH and a consequent northward shift of the SW (more rains in central Chile). In the early and middle Holocene, the ITCZ shifted northward, strengthening the easterly winds and favoring oceanic upwelling. This caused a sea-surface temperature (SST) cooling in the eastern Pacific. This is related to La Niña-like conditions, which agree with findings of dry conditions in north-central Chile between ~10 and 7 kyr BP (Kaiser et al. 2008; Garreaud et al. 2008). This represents the SW's "extreme interglacial mode" (Moreno and León 2003). This further implies that the subtropical gyre circulation was intensified during the middle Holocene and that there was a weaker SW over the continent that was associated with large burned areas. El Niño events might have been absent during this period (Jenny et al. 2002; Whitlock et al. 2007). After ~6 kyr BP, the ITCZ shifted southward and the frequency of El Niño events increased, causing higher humidity in the eastern Pacific at low–mid-latitudes (Moy et al. 2002; Jenny et al. 2002).

At ~5 kyr BP, human-related environmental changes are documented in the El Valle record, such as the presence of cultivated taxa (e.g., Asteraceae, Solanaceae, and traces of maize pollen), the decrease in arboreal taxa, and several charcoal peaks. In the Purén and Lumaco Valley, the impact of soil erosion by converting the native forest into agricultural areas is observable in the high phosphorous concentration since ~5 kyr BP, which is a consequence of human impact and runoff (Brenner et al. 2002; Likens 2001; Sharpley et al. 1992; Oyarzún et al. 2007). Preliminary archaeological data document human settlements in the valley by at least ~7 kyr BP, with more intense landscape transformation occurring during the last ~1 kyr BP (e.g., ceremonial mound constructions, canalized fields; see Dillehay 2007 and Dillehay and Saavedra 2010). Settlements of hunting and gathering communities are abundant in coastal Araucanian areas since ~7 kyr BP (Quiroz and Sanchez 2004), which are related to warm early–middle Holocene climates. Macroplant remains of several cultigens, including maize (*Z. mays*), tarweed (*M. sativa*), quinoa (*C. quinoa*), and an unspecified seed (Poaceae), have been found in the archaeological excavations of sites in the Purén and Lumaco Valley (see Chapter 8 and Appendix 2). Preliminary studies suggest that the varieties of maize and quinoa recovered from these sites have morphological affinities with central Andean varieties. The Araucano variety of maize (4–12 rows) grown in south-central Chile today is likely derived from varieties in Bolivia, Peru, or northern/central Chile (Sanchez et al. 2004). The origin of Araucanian quinoa is also not well understood, but probably has its roots in the central Andes or central Chile; the presence of this cultivated species has been dated in other valleys in the Araucanian region to around 3 kyr BP (Planella and Tagle 2005). The most fundamental human impact in the Purén and Lumaco Valley occurred during the Spanish and Chilean colonizations (circa sixteenth to nineteenth centuries), with the establishment of "modern" agriculture (wheat and barley) and exotic forest plantations (*P. radiata* and *Eucalyptus* sp.), respectively (Torrejón and Cisternas 2002).

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Chapter 7
The Archaeological Record

Tom D. Dillehay and José Saavedra Zapata

Introduction

Our excavation work at 21 *kuel* and domestic sites in 1995 and between 2000 and 2007 had several strategic objectives: (1) to determine the chronology, function, and meaning of *kuel*, domestic, and defensive sites in the study area; (2) to gain knowledge about the stratigraphy, geochronology, and paleoenvironment of the sites, especially in regard to the archival material of the valley; and (3) to attempt to relate all interdisciplinary data to the ethnographic oral tradition and present-day beliefs of today's Mapuche occupants of the valley and to the history of these people (see Chapters 4 and 5).

The archaeological fieldwork in the Lumaco Valley began in 1978 when Dillehay first visited and opportunistically surveyed the area and continued intermittently up to 1995 when the first systematic survey and excavations began to take place. From 2000 to 2007, a series of lengthy field seasons were focused on 90–100% survey of the valley and the excavation of various sites throughout the valley. (An attempt was made to carry out 100% survey but there were times when political turmoil between the Mapuche and logging companies prohibited us from accessing some areas.) Several questions emerged from each field season that guided the next season's work.

Although an attempt was made to excavate sites by following the artificial stratigraphy, this was impossible in most locales, especially in the mounds, because the strata varied so much with respect to the poncho-loads of soil deposited systematically but irregularly to form these structures (see for LU-69 and Appendix 5). Thus, we turned to excavating in arbitrary levels, usually 20 cm in thickness, and to sectioning trenches and block units into 1×1 m squares. The results of these

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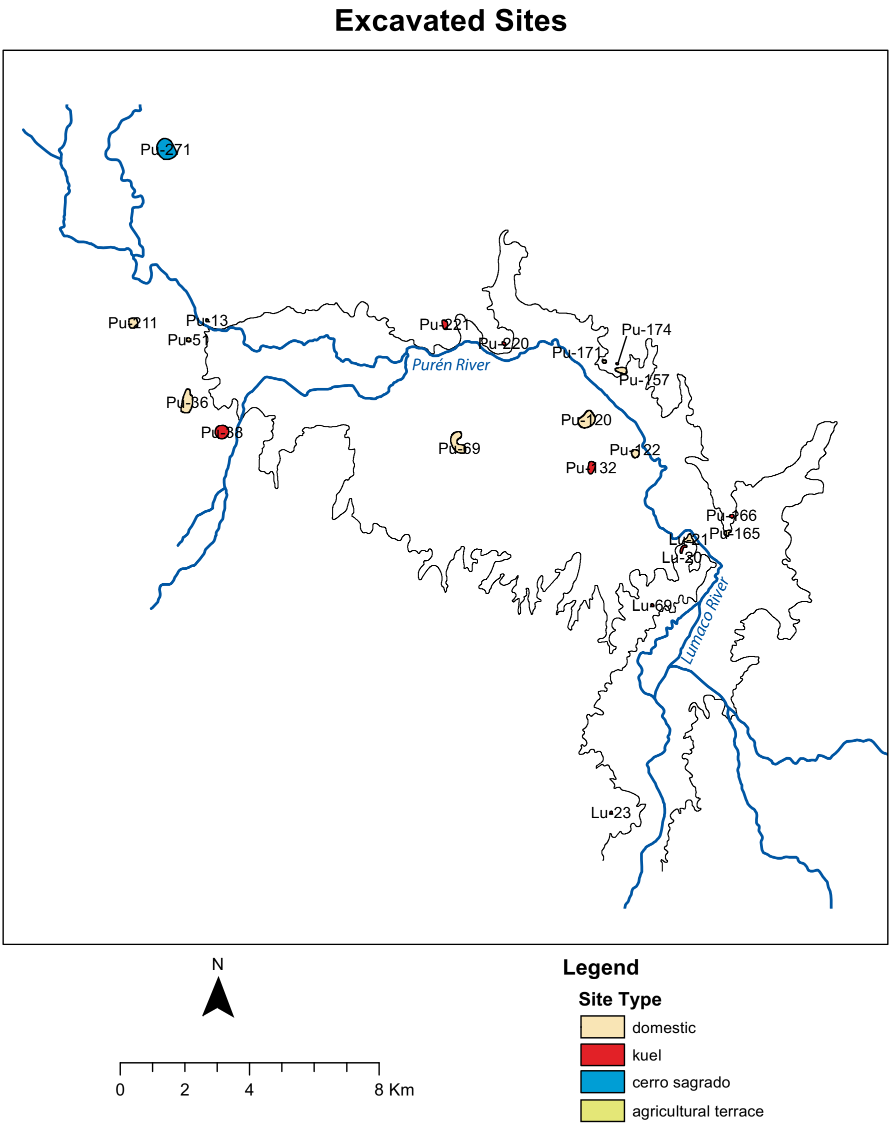


Fig. 7.1 Map of the excavated sites in the Purén and Lumaco Valley.

excavations are reported below. More detailed information on the historical and ethnographic significance, location, chronology, and ceramic typology of these sites is available in Dillehay (2007, 2010) and Dillehay and Saavedra (2010). Figure 7.1 locates all sites discussed below.

Site Number: PU-13 (previously PU-14 in Dillehay and Saavedra 2010)
Map: Purén
Universal Transverse Mercator (UTM) Coordinates: 670843E 5791125N

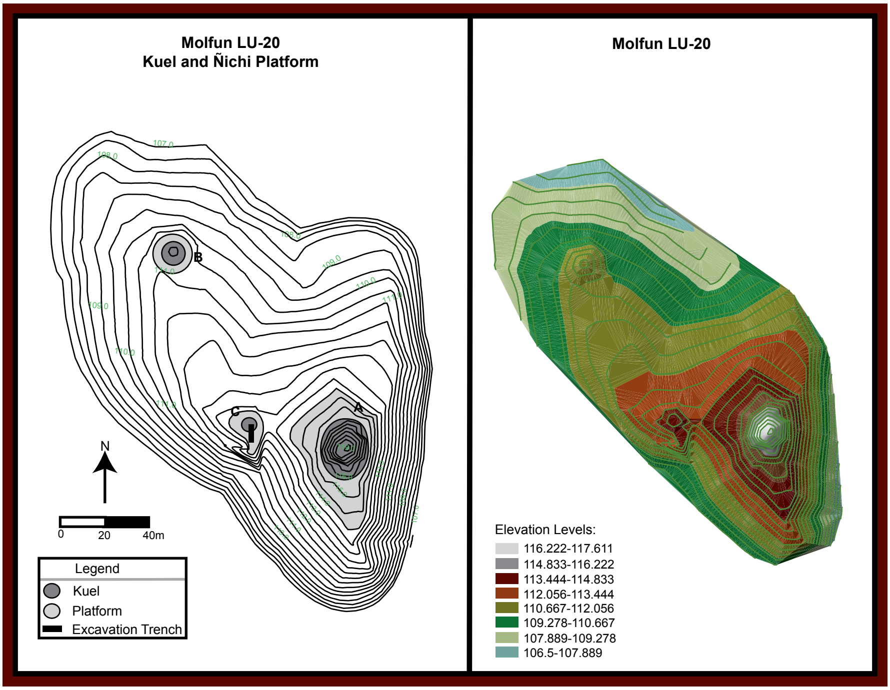


Fig. 7.2 Map of site LU-20C.

Dimensions: 80 × 100 m

Description: This is a light ceramic scatter located on a small terrace overlooking the conjunction of the Purén River and two small streams. Two test pits were placed in the site to establish its chronology and cultural affiliation. Only five ceramics (types 2 and 5) and four lithics were recovered from the excavations. However, in Test Pit 2, two use surfaces with hearth-like burned areas were documented below the plow zone (~20 cm level) at depths of 35 and 48 cm, respectively. The stratigraphy in both pits was the same, characterized by a grayish plow zone (5YR 4/3) underlaid by a yellow brown loamy clay (2.5Y 8/4).

Chronology: The two burned areas were dated by Thermoluminescence (TL) assays at 300 ± 60 BP or AD 1700 (UCTL 1557) for the upper level and 1540 ± 160 BP or AD 460 (UCTL 1556) for the lower level. Type 2 sherds were associated with the upper one and one Pitrén (type 5) fragment was recovered from the lower one.

Site Type: Domestic

Site Number: LU-20-C, *Molfunkuel*
Map Location: Lumaco
UTM Coordinates: 685510E 5784170N
Dimensions: 180 × 250 m

Description: The site is a large *ñichi* platform (~180 × 250 m) with three mounds located on the crest of a low series of knolls in the northwest corner of the Butarincon area (Fig. 7.2). The three mounds are A (4 m high and 22 m in diameter), B (1.5 m high and 12 m in diameter), and C (1.6 m high and 6 m in diameter). Each mound sits on its own *ñichi* platform. A single trench of 2×5 m was placed on the south side of Mound C. The strata were fairly consistent in the lower and middle levels of the trench. The central and higher sections were much more complex and comprised of various soil types representing distinct poncho-loads of sediments. Only the strata in sections 1 and 2 (1–2 m) are described. The trench was excavated in 20 cm arbitrary levels.

Stratum 1 (0–20 cm): The soil is a brownish, clayey humus (5YR 4/3), with abundant roots from trees planted on the top of the *kuel*. In the lower part of the stratum (below 10 cm), a heavier soil with various types and colors of clay appeared (7.5YR 7/8, 7.5YR 5/2, 2.5YR 4/6, 5YR 6/2, 2.5Y 7/8) in the form of poncho-loads. No cultural materials were recovered.

Stratum 2 (20–40 cm): The soil is clayey with some looser sectors of pockets of humus (5YR 4/3). There is charcoal in all of the upper levels, but it is not clear whether it is from ancient or modern activity. No features or cultural materials were recovered.

Stratum 3 (40–60 cm): Toward the west wall, there is a lot of fractured quartz and the soil is a fine yellow clay (2.5Y 8/4). Toward the east, the soil is browner (2.5Y 4/4). At the 50–52-cm level, there is a prepared floor-like layer with many small charcoal fragments and burned clay. No other evidence of cultural activity was recovered.

Stratum 4 (60–80 cm): The soil is a reddish yellow, loamy clay (7.5YR 8/6), more compact in some areas than in others. There are no cultural remains in this stratum, but there are fragments of charcoal. Clay of different geological origins appeared toward the base of the stratum (same as those listed for stratum 1, in addition to 2.5Y N4/, 5YR 5/3, and 7.5YR 4/4).

Stratum 5 (80 cm to 1.2 m): The soil is a loamy clay humus similar to that in stratum 4. No cultural material or evidence is present. There is a little scattered charcoal and some noncultural fractured quartz.

Stratum 6 (1.2–1.4 m): The soil is the same loamy clay humus reported above. There were no cultural remains. The soil has clear evidence of the individual portions of poncho-loads of clay used in building the *kuel* (Fig. 7.3). These portions are clearly defined and inclined on the sides of the submound; they are more or less flat on top, due to the overlying weight of stacked soil above. In general, the individual loads are 10–15 cm thick and 25–35 cm long. They overlap in irregular fashion.

Stratum 7 (1.4–1.6 m): The soil is a compact loamy clay. There was no evidence of cultural remains. The section was closed at this level. The portions of soil of various types of clays deposited by poncho-loads can be seen very clearly. The clays are the same as those observed in other levels, in addition to other reds and yellows (2.5Y 6/6, 5YR 8/4 and 5YR 4/6).

Chronology: One radiocarbon date was obtained from a burned, floor-like surface in stratum 3: 530–550 cal BP or cal AD 1400–1920 (Beta 169000). This date places the upper middle section of the mound in the terminal late pre-Hispanic to early Hispanic period, which agrees with the diagnostic sherd types (types 1 and 3) recovered from the surface area around the mound. No diagnostic ceramics were

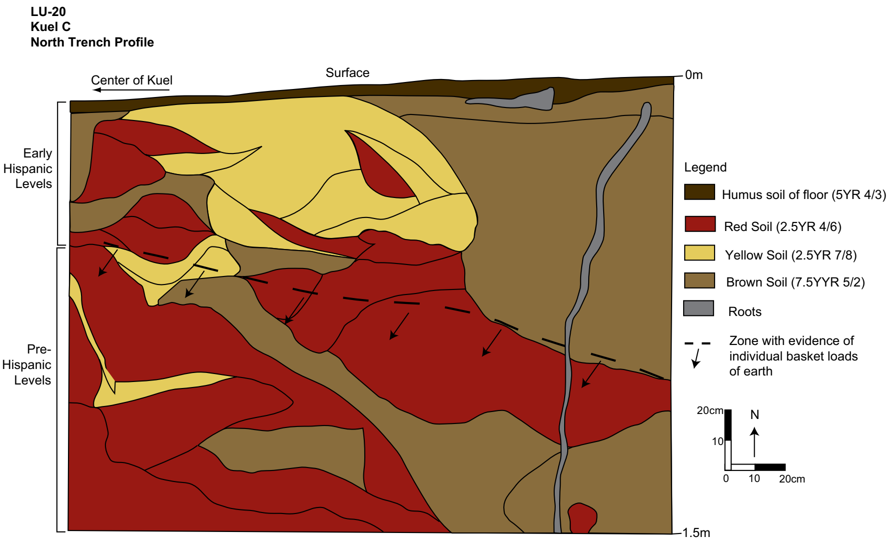


Fig. 7.3 Profile of the LU-20 site showing late pre-Hispanic and early Hispanic levels and poncho-loads of soil.

excavated in Mound C. The consistent use of certain clay types from the base to the top of the mound, as well as a few new types in the middle and lower layers, suggests that it was built and used over a relatively short period of time, perhaps with a mixture of different visitors or relatives from outside the area. This is the interpretation given by our Mapuche workers excavating the site. It also should be noted that the upper early Hispanic levels contained fewer types of different sediments, a pattern observed in other mounds and discussed later.

Site Type: Ritual *kuel*

Site Number: LU-21
Map Location: Lumaco
GPS Coordinates: 0685860E 5784400N
Dimensions: 1,500 × 1,500 m

Description: The site is located in a series of grassy plains dissected by narrow drainages in the northwest sector of the Butarincon hills ~32 m above the Purén River and floodplain. The presence of surface ceramics and grinding stone fragments suggests a domestic locality. Two test pits measuring 1 × 2 m each were placed centrally within the site, which is located between the river to the immediate north and a low line of knolls featuring several *kuel* to the immediate south. Within Test Pit 1, there were two defined strata, the plow zone (~0–20 cm) with its friable, organic soils (7.5YR 3/1, very dark gray) and an underlying zone (~20–45 cm) that contained silty clays (10YR 4/2, dark grayish brown). A culturally sterile soil was reached at 45 cm. Five type 2 ceramic fragments were recovered from the plow zone and underlying stratum. Test Pit 2 was placed near the low crest of the slope that leads down to the river at the northwestern edge of field. The strata were

Fig. 7.4 View of LU-23, *Gundermankuel*, and *nguillatun* field with family *rucas* and shaman's *rehue* pole.

the same described for Test Pit 1. Two ceramic fragments (type 3, El Vergel) were recovered from the plow zone in this pit. The soils range in texture from silty clays to silty clay loams with colors that range from a very dark gray (7.5YR 3/1) for the plow zone to a very dark grayish brown (10YR 3/2) for the layer underneath it.

Chronology: circa AD 1300–1800

Site Type: Domestic

Site Number: LU-23 (previously site *Kuel* 36, LU-1b in Dillehay and Saavedra 2010), *Gundermankuel* or *Trawulepuche*

Map: Lumaco

Global Positioning System (GPS) Coordinates: 683450E 5776030N

Dimensions: 3 m high and 18 m in diameter

Description: This is a small *kuel* located on the summit of a high hill about 2 km north of the present town of Lumaco. The mound sits on a low *ñichi* platform that has been heavily modified by plowing in recent years. The location of the mound has a commanding view of the valley floor of the Lumaco River to the east and south. Today, the site is used as a *nguillatun* ceremonial field today (Fig. 7.4). Local informants report that it has always been a sacred place for ceremony. A 1 × 8-m-trench was placed in the center of the mound, oriented to the west and excavated in 20 cm arbitrary levels. The placement of this trench aimed to explore the construc-

Fig. 7.5 Excavated posthole at site LU-23.

tion history of the site, to better understand the activities that occurred in this site area and to add to the diversity of contexts examined in the valley.

Stratum 1 (0–20 cm): This is a shallow humus zone produced by trees on top of the mound. This stratum also contained silty clay soils, which were dark grayish brown (10YR 4/2). The humus zone extended to approximately 20 cm below surface and contained four Spanish period *tejas* or roof tiles and two type 1 sherds.

Stratum 2 (20–40 cm): This stratum extended from ~20 to 45 cm throughout most of the trench, where it also included an architectural feature at the top center of the mound. This was a 32-cm-wide posthole that appeared at the 22-cm level and extended down to the 79-cm level (Fig. 7.5). In addition, there were two small pockets (~8 cm wide) of differently defined yellowish and brownish soils (2.5Y 7/8, 7.5YR 3/4) in the southwest corner of section 1, some of which yielded tiny flecks of charcoal. Three more *tejas* and two sherds (type 3) were recovered from this unit. Mapuche workers thought the posthole was that of a *machi's rehue* pole, which is likely since many *kuel* were said to have had them in the past.

Stratum 3 (40–60 cm): Stratum 3 soils range in texture from silty clays to silty clay loams with colors that range from a very dark gray (7.5YR 3/1) to a very dark grayish brown (10YR 3/2). Pockets of poncho-loads of clay are visible in this stratum. No sherds were recovered but two *tejas* were associated with this stratum.

Stratum 4 (60–80 cm): The soil is characterized as a brownish yellow (10YR 6/6), sandy clay loam that became increasingly clayey with greater depth into strata 6–8. Between 65 and 70 cm below the ground surface, a semi-prepared surface appeared. A loose and uneven configuration of a few scattered stones and flecks of charcoal formed the surface. One type 3, El Vergel, sherd was recovered.

Strata 5–14 (80 cm to 2.8 m): The lower two-thirds of the mound are associated with a foundation of various clays (e.g., 5YR 4/4, 2YR 3/2, 10YR 6/6, 2.5Y 5/2), but no clear use surface. None of the strata, however, appear as formally and compactly laid as the surface identified in stratum 4. Nonetheless, the clayey soils are much more variable in color and texture than those in strata 1–3, perhaps suggesting a wider participation of local and nonlocal social groups in the construction of the basal levels of the mound. Strata 5 and 6 yielded two small fragments of Spanish *tejas*, but these could have moved down from the upper strata. One type 1 and one type 3 sherds were recovered from strata 6 and 8, respectively.

Stratum 15: (2.8–3.0 m): This stratum was below the mound and associated with a few small burned areas and four basalt flakes. One burned area was radiocarbon dated to the Archaic Period.

It should be noted that the upper three strata with Spanish *tejas* were more homogeneous in clay texture and color and with fewer visible poncho-loads of soil. Beginning in stratum 4, where El Vergel sherds were recovered, the stratigraphy is much more varied with different clays and clearly marked poncho-loads.

Chronology: The presence of Spanish roof tiles in the upper mound fill indicates an early Hispanic period for the site. The presence of ceramic types 1–3, 7, and 11a also fits within this period. A radiocarbon date from stratum 2 measured at 0–308 cal BP or cal AD 1692–2000 (AA86945). One radiocarbon date from a living surface under the mound, which was defined by a few burned areas and four lithics, was processed at 6390–6590 cal BP or 6900–7220 cal BC (Beta 191662), which suggest the presence of an earlier Archaic occupation.

Site Type: Ritual *kuel* and an earlier Archaic period domestic site (?)

Site Number: PU-36 (previously PU-39 in Dillehay and Saavedra 2010)
Map Location: Purén
GPS Coordinates: 670058E 5788422N
Dimensions: ~400 × 400 m

Description: PU-36 is a large habitation site, located immediately south of the town of Purén. Also present at the site is a small *kuel* measuring ~1.0 m high and 8 m in diameter, which was observed in 2009 when a grove of trees were cut and thus not reported in Dillehay (2007). The primary site area is approximately 100 × 200 m in size, running east to west along the bench of a low knoll and is bordered by a small perennial creek to the north. The land has been heavily plowed, which has led to considerable degradation and erosion. Initial survey identified surface artifacts and primarily domestic ceramics (types 2, 3, and 12), suggesting the presence of habitation or similar uses, possibly associated with a large *kuel* mound (PU-38, *Boyoncokuel*) located approximately 700 m to the southeast.

Two test pits were placed in PU-36 to determine subsurface features, site depth, and other cultural materials that remain buried. Test Pit 1 was placed in the northern portion of the site, at the highest point of the rise, before the site slopes slightly to the creek. The test pit measured 1 × 2 m, oriented north to south and was excavated to a depth of 45 cm. Three stratigraphic layers were identified in this pit, the first being a plow stratum extending approximately 15 cm below the present ground surface. The soil was generally homogeneous, consisting of fine to very fine light grayish brown soils (2.5Y 5/2), not very compacted but hardened by weather exposure and with limited cultural materials. Twenty-eight ceramic sherds were recovered from the fill, identified primarily as types 1, 2, and 12, as well as several chunks of burned clay. No other cultural materials were identified in this layer. The second stratigraphic layer transitioned from the plow stratum into a dark grayish brown (2.5Y 4/2), coarse-grained fill, approximately 25 cm thick, with small stone inclusions, evidencing some bioturbation, perhaps from previous modern agricultural activities. Several ceramic sherds (primarily types 1, 3, and 8) were recovered from this fill, tapering off until none were recovered approximately 24 cm below the ground surface. Several chunks of burned clay were also identified, though no other cultural materials were recovered. The lack of cultural remains corresponds to an increase in small pebble inclusions with the greater depth of the excavation. Due to the paucity of data recovered from the first two layers, only the northern 1 × 1 m portion of the pit was excavated to 45 cm, with a final stratigraphic layer identified at 47 cm below ground surface. This layer was defined by a change to a very fine-grained brown reddish soil (5YR 4/4), with a greater number of stone and pebble inclusions, which made the soil softer. No cultural materials were recovered from this deeper layer, which is the culturally sterile surface of the hill.

Test Pit 2 was placed approximately 30 m south of Test Pit 1, in the middle of the south-running slope of PU-36. Oriented east–west, this pit exhibited many of the same features as the first. The first identified layer was a plow stratum, extending approximately 15 cm below the ground surface and composed of a light brown/gray, fine-grained, and loosely compacted reddish yellow soil (5YR 7/6), with a few inclusions of mica, quartz, and other minerals. A few dark ashy spots appeared in the stratigraphic profiles of this layer. Several small ceramic pieces (mainly types 2, 3, and 12) were recovered, as well as burned clay. A second layer was identified below the plow stratum, approximately 20 cm thick, composed of a slightly red to a light brown red soil (5YR 5/3), fine-to medium-grained soils with an increase in gravel and small pebble inclusions at about 35 cm below the ground surface. Only three ceramics were recovered from the fill, and no other cultural remains were identified. In the western profile, a 2-cm-thick gray lens (5YR 5/1, not ash) was observed approximately 20 cm below ground level. A third layer was identified at 35 cm below the surface, which contained reddish brown, fine-grained soils (5YR 6/3). This layer was followed in the western end of the pit to a depth of 45 cm. Although slightly more compacted, the soil stayed consistent in both color and texture, with numerous gravel and stone inclusions and without any cultural materials present.

Based on these test pits, it appears that PU-36 has been partially eroded, with considerable natural and cultural material eroding downslope toward the southern end of the site. It is doubtful that many more cultural materials could be recovered, as plowing episodes and natural erosion have destroyed most subsurface materials. It is possible, however, that more subsurface remains, such as postholes and hearths, may be located in the higher portions of the site, to the west of Test Pit 1, though this is yet to be determined.

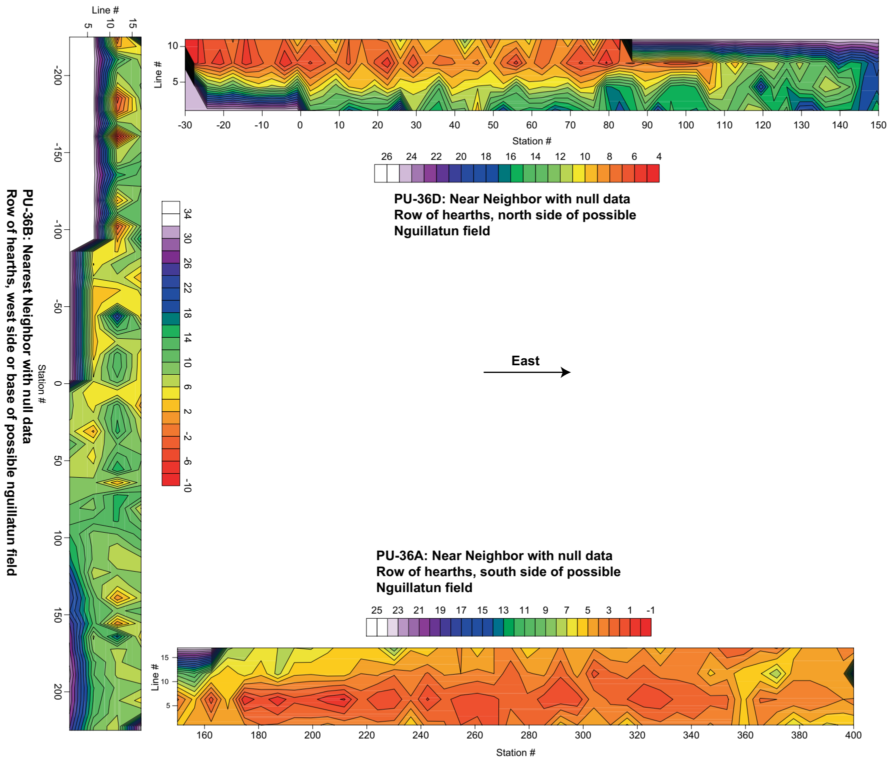


Fig. 7.6 Electromagnetic Induction Survey map of possible *ngullatun* field at site PU-36.

Results of Electromagnetic Induction Survey

The shallow geophysical Electromagnetic Induction Survey profiling of PU-36 revealed varying areas of anomalies that are approximately equally spaced at 4.1–5.5 m along two relatively straight lines running east–west and separated by approximately 40–45 m in distance. Lying about 10 m to the far western end of the two lines was a north-to-south trending row of similar anomalies. Based on the conductivity readings, these anomalies vary between 1 and 3 m in size (Fig. 7.6). Electromagnetic Induction Survey also reveals at least 12–14 features that are interpreted as rows of possible hearths, possibly fronting hearths, and *rucas* or family huts facing the open area between the two lines. Limited shovel testing in four of these areas revealed slightly burned depressions roughly measuring about 1–2 m in diameter. These burned depressions extend about 5–8 cm below the plow zone at a depth of about 23–25 cm (Fig. 7.7). The impression is that the plow disturbed the upper portions of these features because none of the excavated ones were completely intact. Although no historic glass or metal fragments were found below the plow zone in test pits and shovel probes, the presence of a few types 1 and 3 pot-

Fig. 7.7 Buried depression or hearth at site PU-36.

sherds suggests that these features are of the late pre-Hispanic period to the early Historic period. As mentioned above, local informants state that the area alongside the creek was an old *nguillatun* field. The Electromagnetic Induction Survey results also suggest this by the alignment of the burned areas or hearths, which form a rough U-shaped area measuring about 40×50 m and are similar to the layout of *ramadas* and hearths in present-day *nguillatun* ceremonial sites in the region (see Dillehay 2007; see Chapter 5).

Chronology: One radiocarbon date was obtained from a hearth in the tested burned areas of the possible *nguillatun* field. It dated to 530–690 cal BP or cal AD 1260–1420 (Beta 191668), placing it in the late pre-Hispanic period. Based on the chronology of the one radiocarbon date and of the ceramic types recovered from the surface and excavations, PU-36 appears to be a late pre-Hispanic to early Historic domestic and ceremonial site. Although fairly extensive in size, the surface and rather shallow subsurface materials and soil characteristics suggest that it was a briefly occupied locality. As suggested by the subsurface geophysical survey of the site, the lines of features may indicate an ancient *nguillatun* field. The cultural debris recovered from the test pits and from the surface of this area is compatible with this inference. Whether the site was contemporaneously utilized as both a residential and a ceremonial site is not known, although this is unlikely since oral tradition and the ethnographic present indicate that these two functions are separated spatially from a community and settlement perspective. Whether the small *kuel* was associated with the possible *nguillatun* field is also not known. The two areas are separated by 100 m.

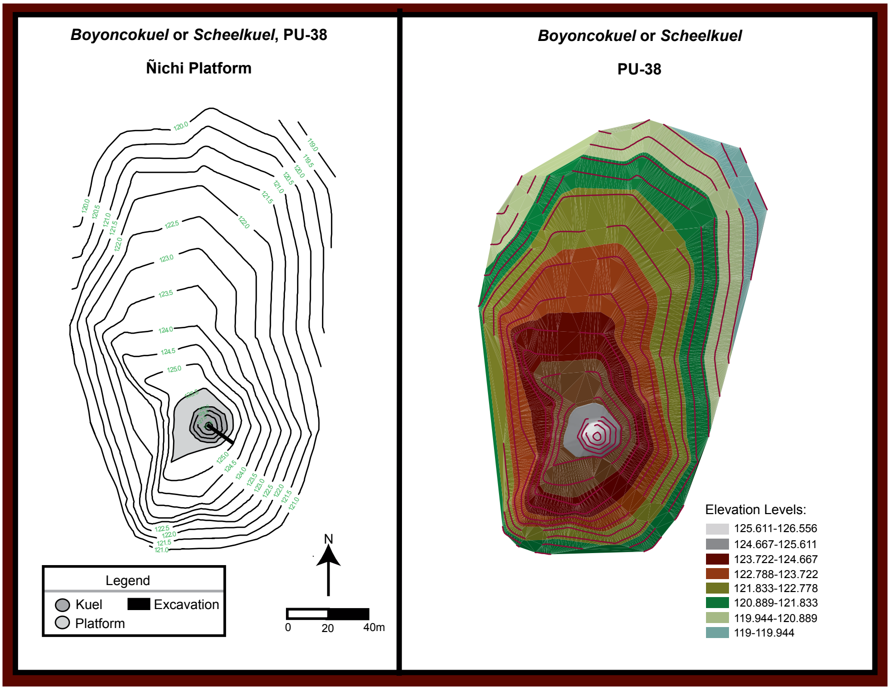


Fig. 7.8 Topographic map of *Boyoncokuel* or *Scheelkuel.*

Site Type: Primarily a domestic site with a small *kuel* and probably a ceremonial field.

Site Number: PU-38, *Boyoncokuel*, or *Scheelkuel*
Map: Purén
GPS Coordinates: 671019E 5787654N
Dimensions: ~2.5 m high and ~30 in diameter
Description: Located at the summit of a low knoll directly east of PU-36 and about 1.5 km west of the town of Purén, the site lies on the property of Rodolfo Scheel. This is a single mound that is ~2.5 m high and ~18 m wide. It is located on a small, ~30-m-wide *ñichi* (Figs. 7.8 and 7.9). The site sits on a high bench above the valley floor and is surrounded by a large domestic site, PU-41. The *kuel* is bordered on the east by a steep slope and on the west by an extensive flat expanse (~100 × 200 m) that may have been a *nguillatun* field, as suggested by the presence of a light scatter of late pre-Hispanic to early Hispanic period ceramics and by local Mapuche informants who report that their grandparents attended ceremonies there. This area is very flat, as if it had been worn down or modified by much activity (e.g., plowing, ceremony) and appears as a *terra plein* from a distance, somewhat reminiscent of other *nguillatun* fields in the valley. The entire site, as a whole, has been heavily affected by foresting efforts, primarily the planting of trees on top of and around it, which has caused both site erosion and bioturbation within the *kuel*.

Fig. 7.9 View of excavation trench at *Boyoncokuel.*

Possibly affiliated with *Boyoncokuel* is a low isolated hill, located about 400 m to the north. The hill has been modified considerably and has a deep moat around its base (PU-26). Both indigenous and Spanish artifacts were recovered on and around the hill. Local informants report that it was the fortress of the Spanish governor Oñez de Loyola's when he occupied the valley in the early 1600s.

A 1 × 12-m-long trench, broken up into six 1 × 2-m sections, was placed in the center of the *kuel*, extending from the top of the mound to the southeast, toward the interface between the base and the immediate off-mound area. The trench ran approximately northwest by southeast in order to accommodate excavations through extant trees on the mound summit. Each section was excavated in 20-cm-deep artificial layers, following the contours of the mound itself and leading smoothly into neighboring sections.

Strata 1–2 (0–40 cm): The first layer in each section was composed of humus from the trees for ~ 5 cm, transitioning into a loose reddish beige soil (7.5YR 4/4) that had been heavily disturbed by bioturbation with no evidence of artifacts. In section 1, a burned layer appeared, probably from a recent removal of weeds and undergrowth. The next layer in each section, ~ 20–40 cm deep, continued the same loose reddish beige soil with an increase in root activity, again without any artifacts. In sections 1–2, the 20–40-cm layer continued with the same friable beige soil and without artifacts and features. Feature 1 appeared in section 4, composed of a dark gray clay lens (6Ley 4/N) that is visible in the western profile. The lens measured 15 × 38 cm. The same burned gray lens appeared at a depth of 52 cm in section 3 (Feature 2), measuring 13 × 40 cm. These two lenses are associated with different use surfaces or floors where burning episodes occurred. These burned layers are also associated with chunks of burned clay and with several yellowish brown (10YR 6/6) micro-lenses of many different types of soil. No other features or artifacts appeared in other layers at these depths (40–60 cm).

Strata 3–4 (40–80 cm): Feature 3 appeared in section 3 at approximately 60 cm, also a dark gray clay lens (10YR 4/1), but thicker than the other features (25 × 35 cm), slightly rectangular to ovoid with irregular borders. In section 2, Feature 4 was uncovered at 72 cm, extending to 75 cm and measuring 22 × 28 cm. This feature was mostly dark gray (10YR 4/1), but contained red/tan clay (5YR 5/3) and small pieces of charcoal, unlike the previous features, and had more thickness than the other lenses (~3 cm more). No other features were found in this layer (60–80 cm), and the soil became noticeably more compact, changing from the beige, loose soil to brown/red (5YR 5/4). One ceramic sherd (type 11b) was recovered from the use-surface in section 5 at the 74-cm level.

Strata 5–6 (80 cm to 1.2 m): Four sherds (types 1, 4, and 11a) were found in the 80–1.0-m layer, one at 90 cm in section 3, 2 at a depth of 85 cm in section 4, and one at a depth of 1.0 m in section 4. The sherds are types 5, 8, and 12. Feature 5 appeared in section 2 at a depth of 1.0 m in the west profile; it consisted of charcoal and a burned clay lens, dark gray (5YR 4/1) and similar to other features in the site. The same lens appeared in the east profile (Feature 5), and may be a part of the same layer, though not appearing as one continuous burned area in the excavated trench and thus was divided into two features at this depth during the course of excavation (Fig. 7.10). No other features or artifacts appeared in any of the other sections at this depth.

Due to the relative absence of artifacts and features in the lower sections of the trench, excavation was continued in only sections 1 and 2 at the higher central portion of the mound, at which point the soil became more compacted with considerable root activity affecting the integrity of both the excavation and the profiles. The soil also became drier, more compacted, and a darker red/tan (5YR 4/4). Feature 6, a burned clay area measuring 32 × 39 cm, was located at the 1.0-m level; its texture and structure are similar to those recorded for Features 1–5. At 11 m, Feature 7 appeared, extending down to a depth of 1.1 m. The excavated portion of this feature was amorphous in shape and about 1.3 m long (Fig. 7.10); it contained the same dark gray burned clay as the others in other sections. Two more features appeared, one at 1.2 m (Feature 8) and the other at 1.1 m (Feature 9), again composed of the dark gray (5YR 4/1) burned clay (Fig. 7.11). No artifacts or other features were found in this level, and section 2 was closed at 1.1 m. From 1.1 to 1.2 m in section 1, no artifacts or features were found, as the soil became somewhat more compacted and with the same amount of root activity. At the 1.2-m level, a Spanish *teja* fragment was recovered.

Strata 7–11 (1.2–2.2 m): At 1.9 m, Feature 10 appeared, composed of burned red/gray clay (5YR 5/2), localized in the southeast corner of the section. The same

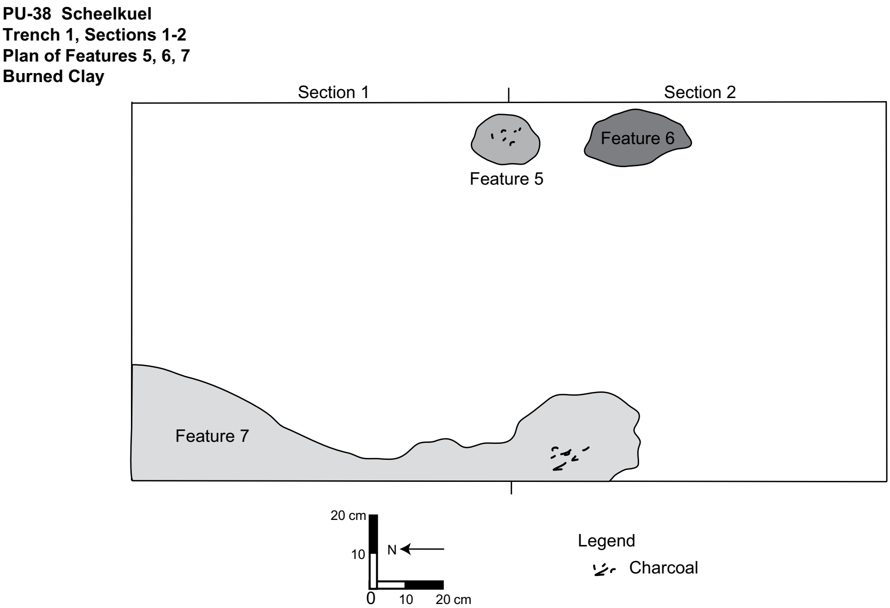


Fig. 7.10 Plan of Features 5–7 in profile at *Boyoncokuel.*

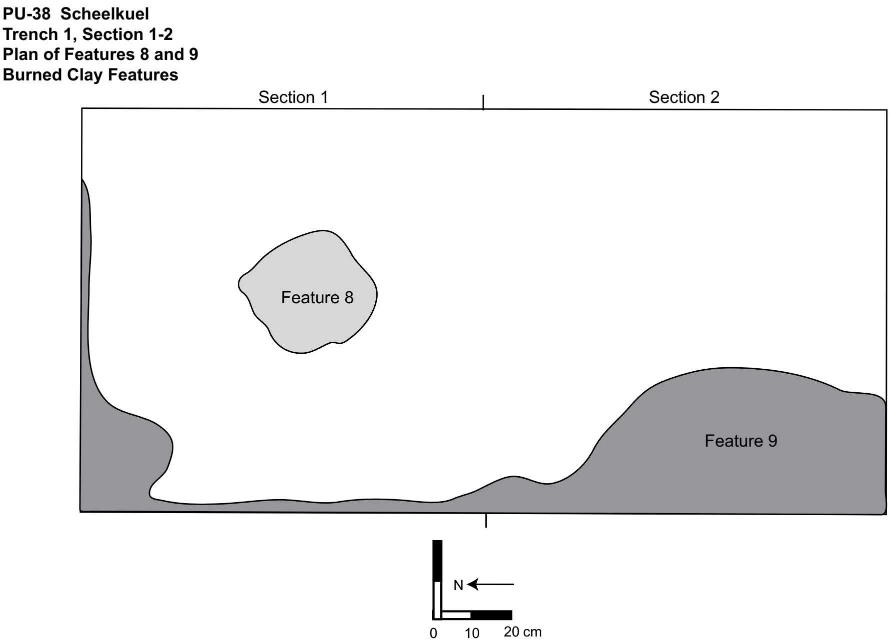


Fig. 7.11 Plan of features in profile at *Boyoncokuel.*

type of stain, Feature 11, was found in the northeast corner of the section, and may belong to Feature 10, a small burned area recorded at the 1.92-m level. Two El Vergel (type 3) sherds at this level were noted, but no features appeared in the section. Excavations continued to approximately 2.2 m in the south part of section 1. Charcoal appeared at about 2.14 m. At 1.6 m, a small submound, in the form of the *kuel* itself, was partially excavated and observed in the wall profiles. In each profile wall, the thickness of this layer tapered and thinned as it declined away from the center of the mound, giving the impression of a submound or possibly of a tomb in the central base of the mound. Due to our agreement with the local Mapuche communities, which was no excavation of human burials, we did not proceed further. No more artifacts were found, and the excavations at the *Boyoncokuel* were closed.

From this excavation, it appears that PU-38 is a typical ritual *kuel* that experienced several building and use episodes associated with burning activities and possibly a single human burial. The burned areas extending across and down, through the mound, are very different from the dark, ashy burned lens observed in the first layer, which continues across the mound and is clearly a more modern clearing and burning. With regard to the construction of the mound, the soil layers suggest multiple capping episodes, perhaps at least five to six associated with localized burning plant remains that are typical of other mounds.

Figure 7.12 reveals the profile of a portion of the south wall at the center of the *kuel*. The upper two-thirds of the mound, which is estimated to date back to the terminal pre-Hispanic to the early Hispanic period, based on sherd types and the presence of a Spanish *teja* at the 1.2-m level, show a more homogeneous sediment fill unlike the lower third, which is characterized by various sediment types, El Vergel sherds, and more visible poncho-loads of soil. This pattern of greater sediment variety in the lower or late pre-Hispanic layers of *kuel* is typical throughout the valley and is discussed in detail later.

Lastly, shovel probes and two 1 × 2-m test pits were placed in the flat extensive area about 40–50 m to the east of the mound. One ceramic sherd (type 11b) was recovered from the 15-cm level in Test Pit 1. One sherd (type 11a) was also recovered from Test Pit 2 at a similar depth. This area was probably used in early to late historic times and possibly associated with activities on and around the mound, given the absence of ground stone artifacts and more numerous ceramics, which are usually more indicative of a domestic site.

Chronology: circa AD 1200–1700
Type Site: Ritual *kuel*

Site Number: PU-51
Map: Boyeco
GPS Coordinates: 670286E 5790561N
Dimension: 150 × 250 m

Description: This is a domestic and cemetery site located immediately south of the Purén River and ~2.5 km east of the town of Purén. Several clusters of small but dense concentrations of ceramics and grinding stone fragments are distributed along a low rise adjacent to the river.

Local informants report finding human bones after plowing the site. Two test pits were separated by 200 m and placed in the central area of the site. Eighteen

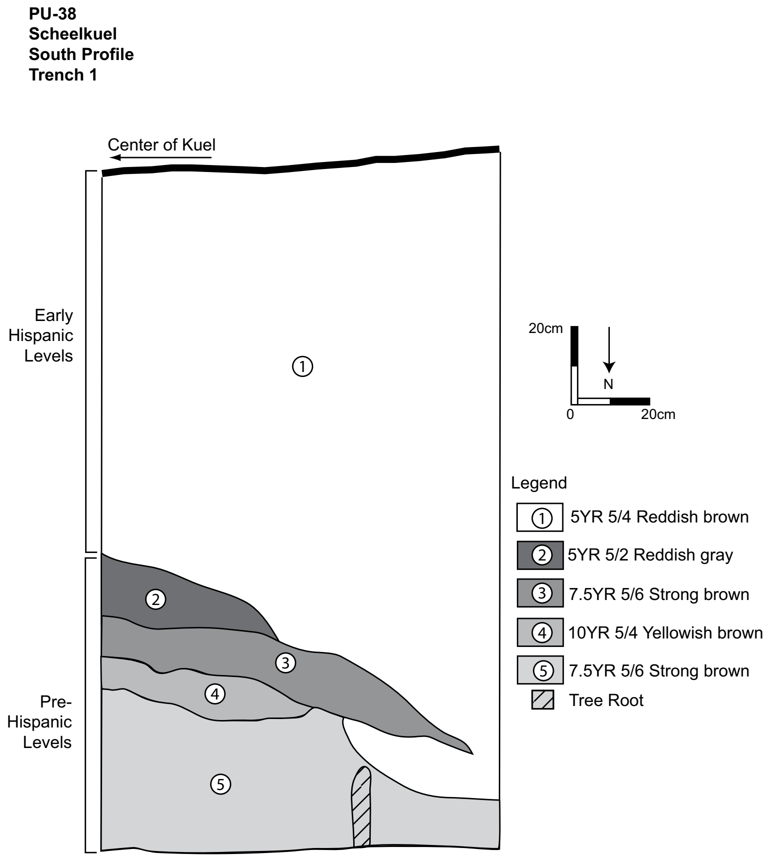


Fig. 7.12 Plan of features in profile at *Boyoncokuel.*

ceramics (primarily types 1, 2, and 11b) and four grinding stone fragments were recovered from the plow zone of the two pits, which extended down to ~20 cm. No artifacts were recovered below the plow zone. Both the plow zone and underlying layer contained soils with a silty clay texture that was mostly 7.5YR 3/1 (very dark gray).

Chronology: circa AD 1400–1700

Site Type: Domestic and cemetery

Site Number: LU-69, *TrenTrenkuel*

Map: Lumaco

GPS Coordinates: 0684728E 5782352N

Dimensions: ~12 m high and ~48 m in diameter; the *ñichi* platform is ~69 × 132 m

Description: This *kuel* has been discussed in several publications (Dillehay 2007; Dillehay and Saavedra 2010), especially in regard to an ethnographic ritual narrative gathered there during a ceremony. The mound is built on the highest crest point of the chain of hills in Butarincón that runs from north to south along the Lumaco River (see Figs. 7.13 and 7.14). The mound is approximately 9 m high today, although considerable erosion from its use today can be seen on top. The base is about 48 m wide. The *ñichi* platform upon which it is built has been modified greatly not only with sediment deliberately having been removed and deposited downslope on the north and south side of the crest, but also with different sediments having been imported from the valley floor to cap the crest and to smooth the flattened *ñichi* surface (see Chapter 16). This is the most stratigraphically and architecturally complex *ñichi* and mound that we have excavated in the study area. The entire *rehuekuel* complex (mound, *ñichi*, and five small outlying mounds) is constructed of different colored and textured sediments brought not only from the valley floor but from other valleys or depositional environments as well (see Appendix 5). Flanking the base of the *ñichi* are five small mounds said by local informants to be the most recent sons and daughters of *TrenTrenkuel* (see Dillehay 2007). This is the most dominant *kuel* in the whole valley and takes the name of the benevolent snake in the Mapuche's creation story; local informants report that it is the father *kuel* to all others. It can be seen by and can see all other *kuel* and important sacred mountains and hills in the valley.

Three 1 × 2-m test pits and al 12-m-long trench were placed at the site.

Trench 1: The trench ran from the top of the mound to the south. It is 12 m in length and divided into six sections of 1 × 2 m. Excavation began with arbitrary strata of 25 cm. In the first three strata (0–75 cm), the following was observed: a very dark reddish brown, organic soil (5YR 3/4) about 5–20 cm thick was found in the first level of the first five sections, immediately below the surface and beginning at the top center. It continued in section 4, below a layer of clay. In section 1, this dark soil appears at 50 cm, overlaid by a light gray, milky clay layer (5YR 7/1) some 20–30 cm thick, which is part of the first surface layer of the *kuel.* Below this first layer is a more compact soil, which is light brown, milky clay in color (7.5YR 7/4). These two layers make up the first 50 cm of the profile. Following these layers at the 1-m level in section 1, the soil is looser, with less clay, although the color varies slightly to a reddish brown (5YR 5/4) and transitions to the horizon of the dark soil. A light gray clay (5YR 6/1) layer extends down to section 5 and may have been brought from the river or its floodplain. In general, the layers within the mound form no rigid natural boundaries, because there are hundreds of different pockets poncho-loads of soils of different textures and colors (see Chapter 16) from different places and at different times, especially in the deeper pre-Hispanic levels (Figs. 7.15 and 7.16). It should also be noted that the profile in Fig. 7.15 reveals retention layers in the outer portions of the mound that provide stability to the structure as it grew in height and breath (see later discussion and Chapter 16).

Stratum 1 (0–35 cm): sections 1 and 2 show a light beige soil (7.5YR 7/4) and reddish yellow clay (7.5YR 6/8) with charcoal, which transitions to a darker soil (7.5YR 3/2) in sections 3 and 4 and a darker, looser soil in sections 5 and 6 (7.5YR 3.4). In these latter sections, the soil is very hard and with a layer of light gray clay (7.5YR N7/). There is pottery (e.g., types 1, 3, and 11b) at all levels with larger concentrations in sections 3 and 4. There is thick ware with a rustic paste and surface

Fig. 7.13 General view of *TrenTrenkuel*.

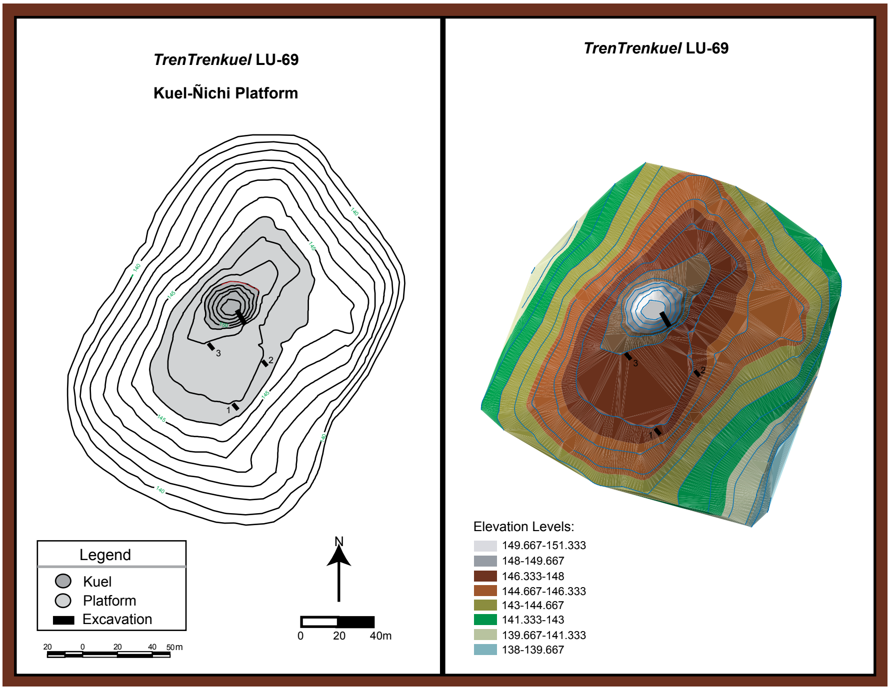


Fig. 7.14 Topographic map of *TrenTrenkuel*. Numbered test pits and trenches are shown in black.

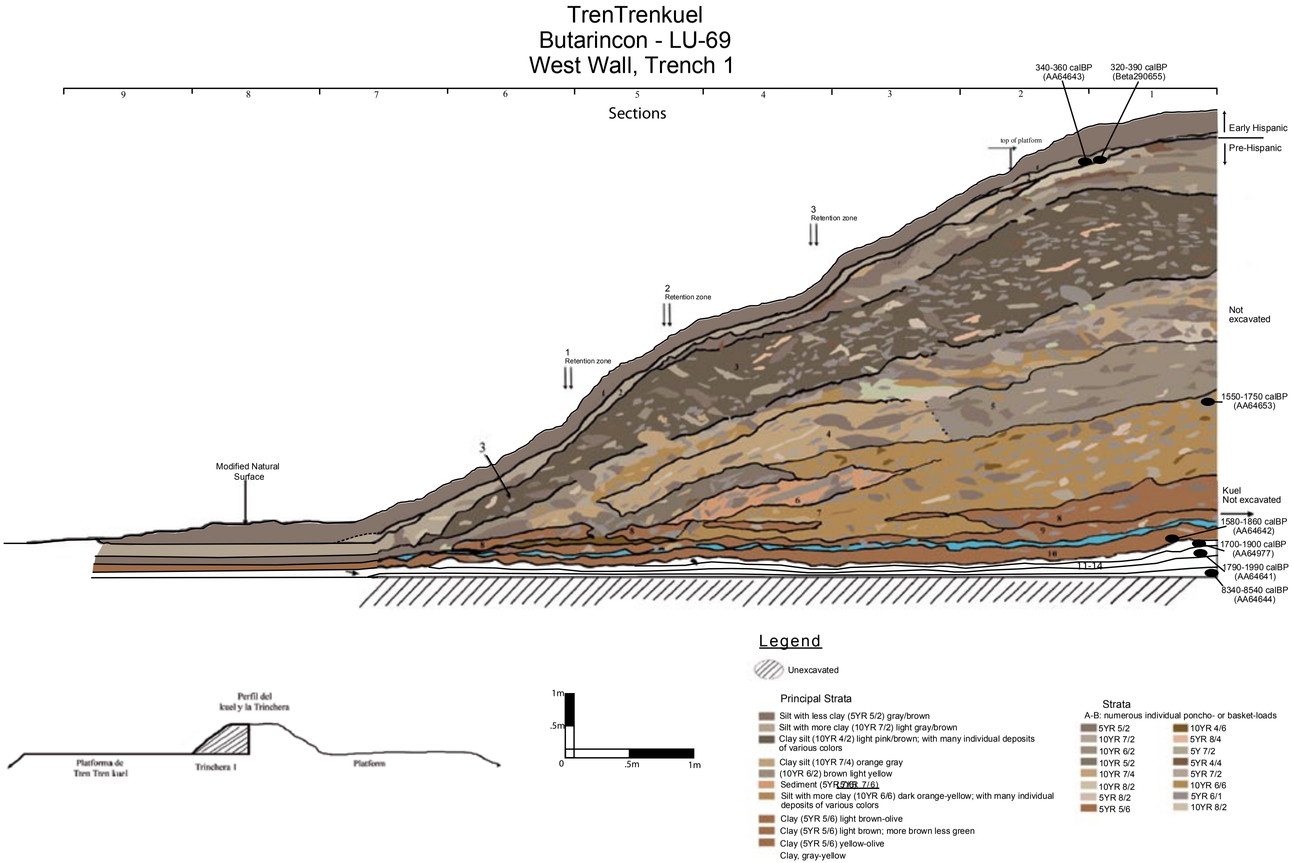


Fig. 7.15 Profile of excavation trench at *TrenTrenkuel*. Mound sections are listed across the top of the figure.

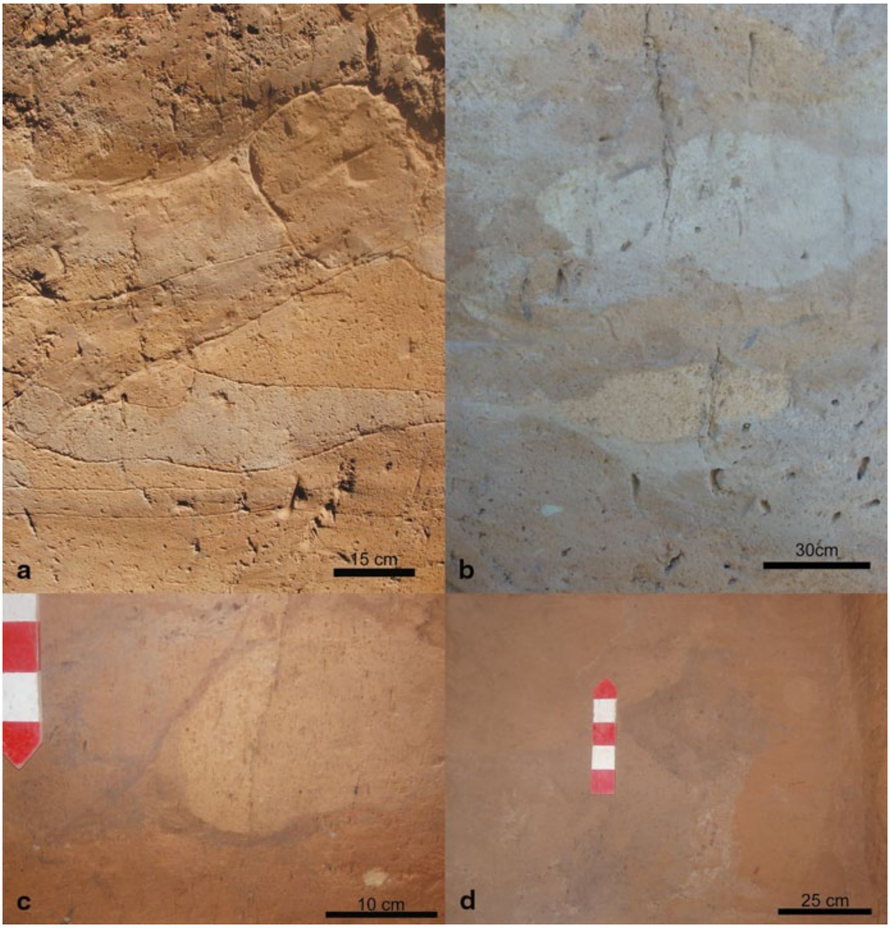


Fig. 7.16 Poncho-loads of soil in the excavated profile at *TrenTrenkuel.*

treatment and also a ware with a red slip, which appears to be El Vergel (type 3). In section 5, the soil is a compact, very hard, light gray clay (7.5YR N7/). It extends toward section 6. An incised sherd (type 7), with two perpendicular incisions, was recovered from it. Below it was the rim of a small vessel (type 3). Toward the center of section 6 is a loose soil. In the extreme south of the section is a small obsidian flake with red bands on a black background and a black obsidian projectile point (see Chapter 9).

Stratum 2 (35–60 cm): In sections 1–3, there is a very hard, compact milky pinkish gray soil (7.5YR 7/3). In section 4, Feature 1 was recovered at the 35–40-cm level. It consists of the burial of the jawbone of a horse in a reddish yellow soil (7.5YR 7/6). It was not associated with other cultural materials. The jawbone was deposited on its side and oriented longitudinally east to west (Fig. 7.17). There was no area

Fig. 7.17 Mandible of horse offering at *TrenTrenkuel.*

of burning or charcoal associated with the jawbone. In section 5, a sherd (type 11b) was recovered from this stratum, but not associated with the feature, though there is a burned stain that yielded phytoliths of *Cucurbita* sp. and *Zea mays* (see Chapter 8, 13 and 15). These food remains evidently represent a burned offering.

Stratum 3 (60–80-cm): sections 1–3 produced no discernible features or artifacts. At the 70–75-cm level, a white clay soil (7.5YR N8/) was recovered. In the southern sector of section 4, at this depth, there is a layer of white and yellow clay soils (10YR 7/6) between 10 and 20 cm in thickness with white and gray sandstone fragments. In section 5 at 70 cm, a thick layer of clay mixed with sand appears.

Stratum 4 (80-cm to 1.2-m): In all sections, the soil is clayey with a white sand. Between 80 cm and 1.0 m, there were deposits of a white clay/sand (10YR 8/1) mixed with yellow clays (mainly 10YR 8/6), possibly from the riverbank or the flood plain. These are small, irregular poncho-shaped deposits, but taken together, they make up a more or less homogeneous clay layer. Two distinct burned use surfaces were recovered from this stratum, each containing chunks of charcoal. Two red-slipped El Vergel sherds were found in association with a small smoking pipe made of serpentinite (see Chapter 9), which is available from the local coastal area.

Stratum 5 (1.2–1.4 m): In all sections, the soil is porous and reddish with dark red (2.5YR 2/6) irregular stains. At the 1.0-m level, the soil is clayey, but between 1.2 and 1.25 m, in the southern sector, there appears a very reddish soil (2.5YR 5/6), mixed with a dark red soil (2.5YR 4/8), which is soft and semi-porous.

In stratum 5, the soil also is clayey with irregular stains and gravel. In the central part of section 5, at 1.3 m, there is a clean hard floor compacted with gravel mixed with black grains and iron oxide. There is a gray clay (2.5YR N6/) between the gravel and oxide. At the base of the stratum, there is a hard gravel, mixed with a dark gray loamy clay (2.5YR N4/).

Strata 6 (1.4–1.7 m) and 7 (1.7–2.4 m): These strata are mainly comprised of a yellowish green loamy clay (10YR 6/4) with white veins. In section 6, at 1.4 cm, there appears a layer of compact reddish brown clay (5YR 4/4) with black grains from 1.4 to 1.6 m. In the east profile of section 6, at 1.5 m, there are circular and semicircular stains of clay. They are light yellow in color (2.5Y 7/4). This level of loamy clay is mixed with some fine gray or milky strands (5YR 8/1) and with "veins" of more intense yellow (10YR 7/6), although, in general, the color is reddish brown or yellowish brown (10YR 5/8). A Mapuche worker, Fidel Cheuque, states that the only source of this clay comes from San Gerardo, which lies about 1 km to the southwest. At 1.8 m, there are distinct layers of dark and light gray, compact clays (10YR 7/1, 10YR 3/1), as elongated or inclined deposits, following the angle of the edge of the *kuel* (see Fig. 7.15). The largest deposits correspond to red clays (10R 4/6). In stratum 7, between 1.90 and 2.1 m, there were several sherds, possibly Pitrén and a polished brownware (type 3). Between 2.1 and 2.3 m, there is a dark soil, very soft, but mixed with small grains of burned clay and charcoal.

Strata 8 and 9 (2.5–4.3 m): These strata are characterized mainly by gray and pinkish silty clays (5YR 6/2) and fine sandstones. No pottery was recovered in them. A lens of green silty clay (5YR 5/4) appeared at a depth of 280 cm. The silty clay had small granules of charcoal. In the center of these strata, to the north, there appeared a mixture of dark gray and very light gray clays (5YR 7/1), which ran in a line toward the east wall of the strata. *Cucurbita* sp. and maize phytoliths were recovered from a use surface between 2.5 and 2.7 m in depth, suggesting food consumption or offerings (see Chapters 8 and 15).

In the center of the mound, at the 5.2 level, we recovered a discontinuous floor defined by numerous small to moderate square chunks of a celestial clay. It is not known why the clay sections were cut into rough squares. The clay pieces measured between 3 and 5 cm in thickness and 10–16 cm in size (Figs. 7.19 and 7.20) and were laid out intermittently to form a sort of checkerboard surface across the base of the mound. The Mapuche machi shamans working with us stated that we were just above the tomb of a very important "toqui" war leader buried there and that the blue clay layer overlying his grave represented and aided his transcendence into the upper Wenumapu world of the great deities and ancestors, a world celestial in color. Geologists working on the project could not locate this clay source anywhere in the valley's depositional environment. Fragments of charcoal were recovered and dated from the clay stratum (Chapter 16).

Stratum 10 (5.3–5.5 m): Feature 2 was defined between 5.3 and 5.4 m. It consisted of deposits of different colored clays (e.g., 2.5YR 3/6, 5YR 4/6, 5YR 5/9, 2.5Y 4/1), charcoal lenses, and ceramics as follows: at 3.05 m, in the east wall, a sherd (type 1) appeared, and at 3.1 m, a complete rim (type 4) was excavated in the east wall. In this area, red earth (2.5YR 5/6) and lenses and fragments of charcoal are

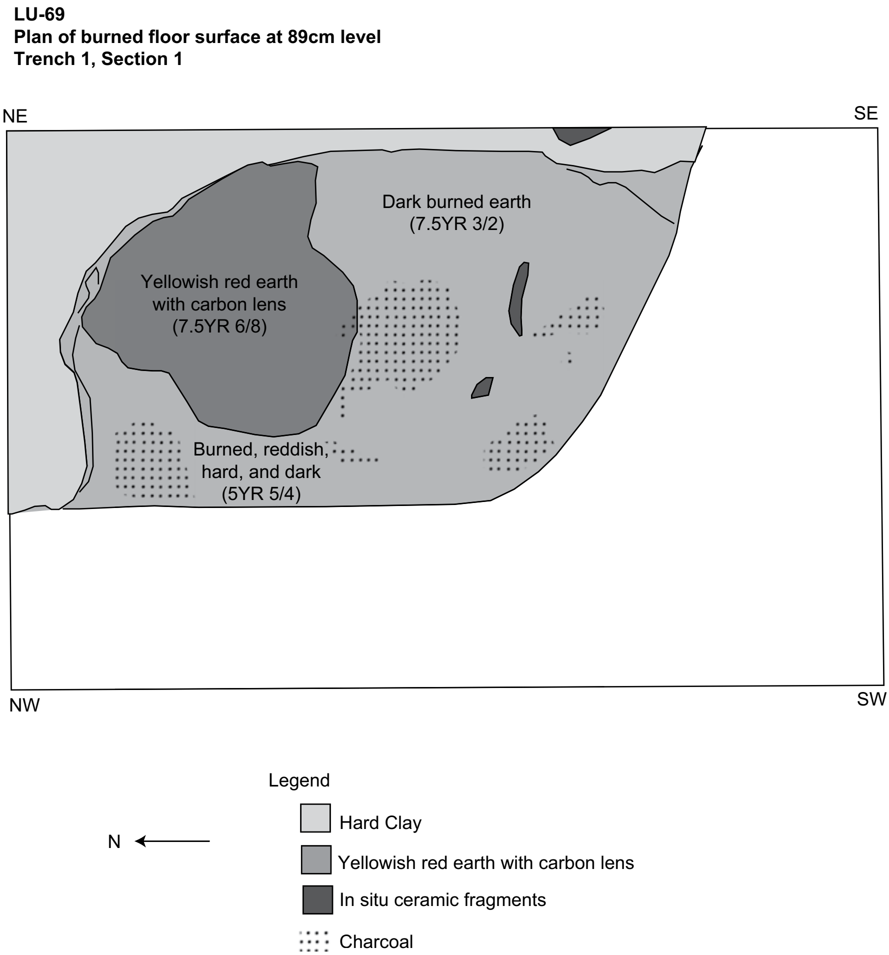


Fig. 7.18 Burned ritual floor at *TrenTrenkuel*.

present. A strand of unidentified animal (?) fiber or hair was also recovered between 5.4 and 5.5 m. Various sherds (primarily types 1, 2, 7, and 11b) between 2 and 5 cm in size appear between 5.3 and 5.4 m, including an apparent Pitrén rim.

At the 5.3-m level in section 1, at the top of the mound, there was a complex feature with a burning event associated with a light gray "mortar" mix (12.5YR N6/) that surrounds several sherds (types 3 and 11b) and a soil containing *Cucurbita* sp. and corn (*Z. mays*) phytoliths (see Chapter 15). There are pieces of charcoal from 1.0 to 6.0 cm in size and many thin lenses with charcoal, suggesting a ritual involving a prepared floor or platform (Fig. 7.18). In general, the whole north sector of section 1 has a hard soil with charcoal lenses and the clay "mortar." This soil extends toward sections 2 and 3 with small charcoal lenses. In section 2, the same configuration of a mass of clay in the form of a leveled area or platform appears in the east wall at 5.4 m. After the feature was completely defined and excavated to

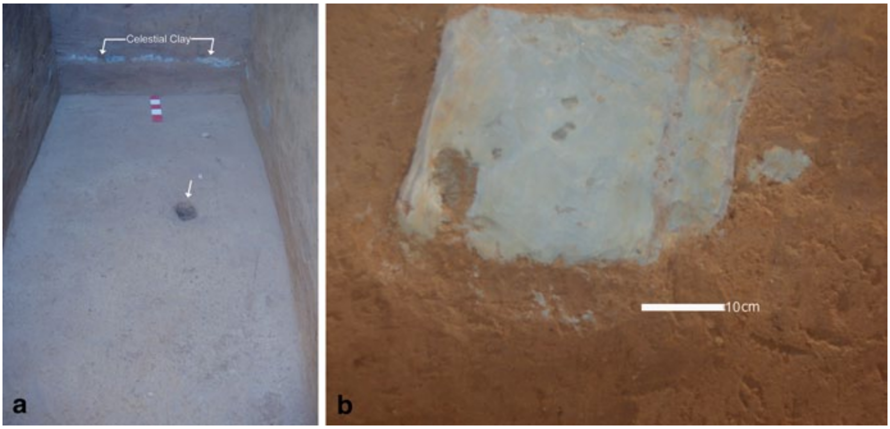


Fig. 7.19 **a** Celestial clay at the base of *TrenTrenkuel*. **b** Close-up of one square section of clay.

its base at 5.5 m, abundant burned clay appeared with coarse sands and charcoal, together with a polished black rim sherd (type 10).

In section 2, Feature 3 was at a depth of 5.35–5.45 m, against the east wall. It is burned clay, charcoal, and a blue gray sand (2.5YR N5/). A burned seed (identified as *Cucurbita* sp.) was recovered at a depth of 5.4 m. The layer containing the feature was 20–30 cm thick, hard, and flat as if deliberately stamped or leveled. Also recovered from these deeper levels and the burned area were corn phytoliths (*Z. mays*, see Chapters 6, 8 and 14), suggesting the consumption and/or offering of corn or *chicha*.

Strata 11–12 (5.5–5.7 m): The base of stratum 11 and the upper surface of stratum 12 revealed charcoal, ash and a red earth (2.5YR 4/8), and variegated soil like a kind of floor.

Stratum 13 (5.7–5.8 m): At 5.71 m, an intermittent layer of green clay (2.5YR 7/4) was introduced into a reddish brown silty clay matrix. At the 5.78 m level, a burned posthole was encountered just below the layer with the green clay deposit (Feature 4). This appears to be a floor as there are three pieces of quartz, one at the lip of the posthole and two rocks of volcanic origin at the same level.

Stratum 14 (5.8–6.0 m): This was the basal layer of the mound, a light gray clay (5YR 6/1) with no cultural materials. Excavation in the center of the mound terminated at this point. However, we continued the excavation beyond the layer of clay toward the edge of the mound. At 6.0 m, the sterile base of the mound appears.

Similar to the stratigraphy in the *Boyoncokuel* (PU-38), the upper portion of an estimated 2 m of *TrenTrenkuel*, which dates to the early Hispanic period, contained very homogeneous sediments of the same color and texture. A few individual poncho-loads were visible in these sediments (Fig. 7.20). However, the lower 10 m of the mound (below stratum 4) were characterized by a wide variety of many different types, textures, and colors of sediment, derived from the local valley as well as distant areas (see Chapter 16). In the middle and lower portions of the mound, the poncho-loads are much more visible, due to the variety of differently colored

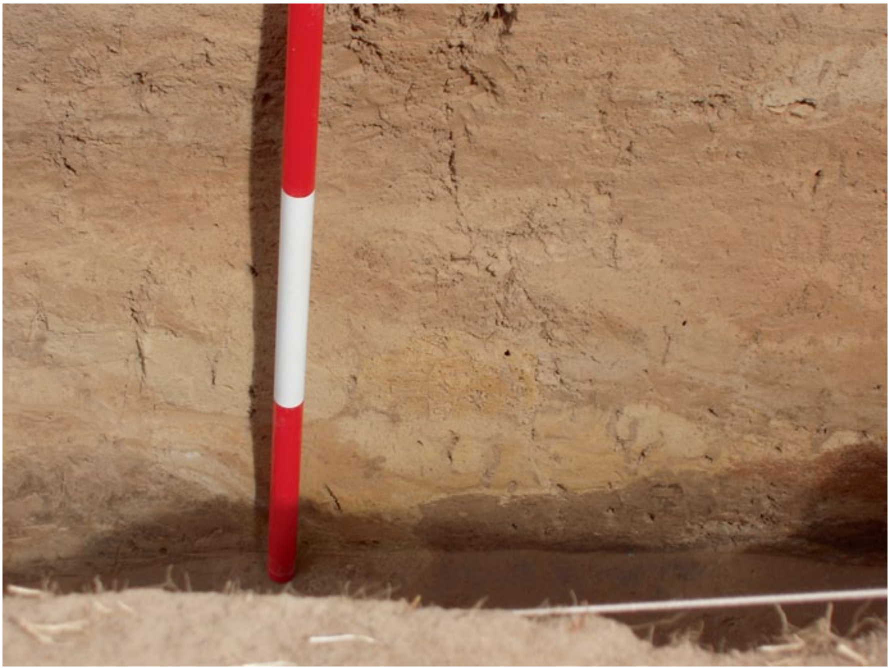


Fig. 7.20 Poncho-loads of soil in profile at *TrenTrenkuel.*

and textured clays forming it (Fig. 7.20). Several smashed ceramic vessels were associated with the floors in these sections (Fig. 7.21). These portions date to the early and late pre-Hispanic period, as evidenced by radiocarbon dates and ceramics types, Pitrén and El Vergel, respectively.

Test Pit 1: This pit is located 30.4 m southeast of Trench 1. Two 20-cm artificial strata were excavated. The first stratum (0–20 cm) had a yellowish clay soil (2.5Y 7/6). The second stratum (20–40 cm) had a darker reddish soil (2.5YR 3/6). Two potsherds were recovered from the second stratum. A third stratum (40–50 cm) was excavated. It was culturally sterile and composed a hard soil matrix with iron oxide staining and gravel (see Chapter 16).

Test Pit 2: This pit is located 19.7 m southeast of Trench 1. It was excavated in 20-cm artificial levels. The strata were the same as for Test Pit 1. No artifacts were recovered. At the 55-cm level, a ferrous oxide mineral was reached. It was very hard and was the same as in Test Pit 1.

Test Pit 3: This pit is located 20 m southwest of Trench 1. The stratigraphic levels are the same as in Test Pits 1 and 2 to a depth of 35 cm, where there is a layer of sandy clay, possibly brought from outside the sector.

The three test pits clearly indicate that the original top soil of the *ñichi* had been removed to at least a depth of 50 cm and used as borrow soils for the mound (see Chapter 16).

Fig. 7.21 Ritually smashed pottery vessel on burned floor in *TrenTrenkuel.*

Fig. 7.22 Aerial view of *TrenTrenkuel* and its *ñichi* platform.

Chronology: Local Mapuche informants report that *TrenTrenkuel* is the oldest and most elaborate mound in the valley, the grandfather of all others (Fig. 7.22). A prepared use surface in the upper part of stratum 2 at the top center portion of the mound yielded a ^{14}C date of 340–360 cal BP or cal AD 1590–1990 (AA64643). Another burned surface in the lower level of stratum 2 dated at 320–390 ± 30 cal BP or cal AD 1560–1630 (Beta 290655). Elder informants report that about 1 m of the top of the mound had eroded since they were children. This erosion is clearly visible in Fig. 7.13. Ceramics from the upper three strata fall within the time range of this single date, placing the prepared surfaces in the early Hispanic period and any eroded surfaces in the later historic and modern era. The burned use surface in stratum 7 near the lower center of the mound dated to 1580–1860 cal BP or cal AD 90–370 (AA64642), which places it in the early Pitrén ceramic or early pre-Hispanic Period. In stratum 10, there is another compacted burned level. A single chunk of charcoal from it dated at 1550–1750 cal BP or cal AD 200–400 (AA64653), locating it at about the same time period as the prior date. Stratum 14, at the level of the celestial floor, dated to 1700–1900 cal BP or cal AD 50–250 (AA64977). At the base of stratum 14, a single chunk of charcoal from a burned area dated to 1790–1990 cal BP or 40 cal BC-cal AD 160 (AA64641). This date falls into the earliest Pitrén period or terminal Archaic period. No ceramics were excavated in these levels to establish a diagnostic artifact period. One meter below the mound was a burned area with lithics and charcoal. A single chunk of charcoal dated to 8340–8540 cal BP or 6390–6590 cal BC (AA64644), clearly a pre-mound surface of the Archaic period. It should be noted that the upper early Hispanic levels are homogeneous in color and soil; type as opposed to the deeper early to late pre-Hispanic levels that are much more heterogenous in type and color.

Site Type: Ritual *kuel*

Site Number: PU-120 (previously PU-23 in Dillehay and Saavedra 2010)
Map: Purén
GPS Coordinates: 682676E 5788114N
Dimensions: 400 × 500 m

Description: PU-120 is a large habitation site, located ~ 8 km east of the modern town of Purén in the Huitranlebu area, and is situated on the north slope of a hill leading down to the valley bottom, above an ancient channel of the Purén River. The site itself measures approximately ~400 m east–west by 500 m north–south. The south section of the site has been heavily affected by plowing.

Three test pits were placed in the central part of the site. Each pit measured 1 × 2 m and was located in areas previously determined to have the greatest possibility for cultural remains.

Test Pit 1 was placed in the north-central portion of the site and was oriented north–south (Fig. 7.23). A first artificial layer was excavated from ground surface to 15 cm in depth. The plow zone (0–15 cm) was light brown with clay (10YR 7/3), along with inclusions and fine-grained sands. No specific features were identified, though ceramic fragments were recovered, identified as types 2, 5, 6, 11a, and 11b. A second layer was excavated down to 35 cm. The soil became significantly harder, with a coarser grained red-brown soil (5YR 4/3) that contained four ceramic fragments (type 2), none appearing below 20 cm. No features or other cultural materials were identified.

Test Pit 2 was placed approximately 10 m east of Test Pit 1 and oriented on the same north–south axis. Like Test Pit 1, a second 20-cm layer was first excavated, revealing no features and only three ceramic fragments, also identified as types 1, 2, and 6. The plow zone was composed of about 5 cm of a soft, fine-grained, light brown soil (7.5YR 7/4) that became compacted in the deeper portions. A second artificial layer was excavated to 38 cm, producing no ceramics, features, or other cultural materials, but a burned stain was located at the 35-cm level. The soil was red-brown (5YR 5/4), compact, with clay inclusions.

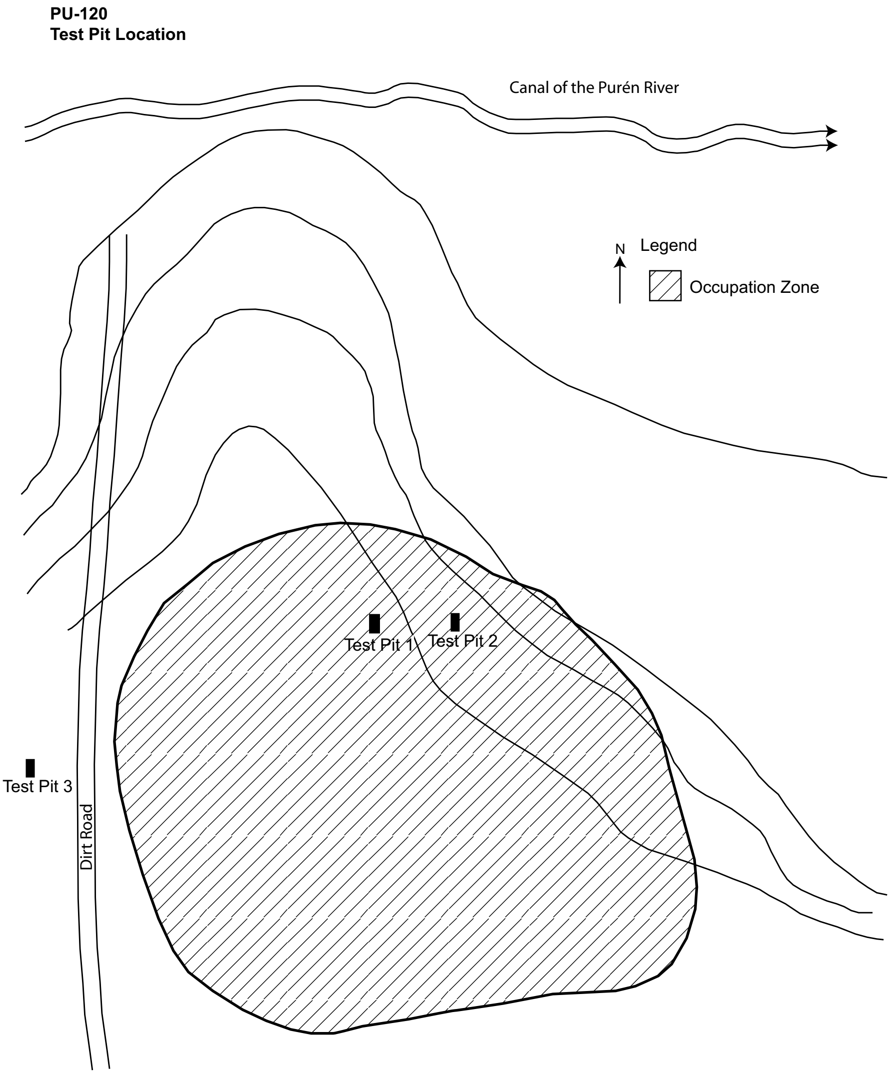


Fig. 7.23 Location of test pits at site PU-120.

Test Pit 3 was located approximately 50 m south and west of pit 1. This particular section of the site had been heavily plowed, making the soil soft, light brown in color (10YR 6/3), and fine grained. Like the other pits, pit 3 was oriented north–south, and a plow zone was excavated to 15 cm. Numerous ceramic fragments (types 2, 5, 6, and 11 a–b) were recovered, though no features or other cultural materials were identified. A second artificial layer was excavated to 25 cm, and like pits 1 and 2, the soil became noticeably compacted, red-brown in color (5YR 5/4), and yielded no cultural materials.

Based on these limited tests, it is likely that PU-120 was a habitation site; it appears to have been heavily eroded from time and later human activity. As the site slopes down toward the valley floor on the north and west, most cultural materials have been plowed and destroyed. Conductivity tests at the site yielded no significant intact subsurface features, as also indicated by the test pits.

Chronology: One radiocarbon date from a burned stain at the base of stratum 2 in Test Pit 2 yielded a date of 870–1230 cal BP or cal AD 920–1080 (Beta 168999), placing the age of the site in the early pre-Hispanic or late Pitrén Phase. Other ceramics from the site, especially in the upper levels, date to the late pre-Hispanic to early Hispanic periods. (It should be noted that the Beta 168999 date was previously reported for two domestic sites, PU-11 and PU-23 (see Dillehay 2007, p. 465). The assignment of this date to PU-11 was an error; PU-23 is correct but reassigned site number PU-120.)

Site Type: Domestic

Site Number: PU-122

Map: Lumaco

GPS Coordinates: 0684051E 5786872N

Dimensions: 60 × 80 m

Description: Situated on a flat bench midway up a large hill overlooking the Lumaco River in the Huitranlebu area of the Purén Valley, PU-122 is a large habitation site. The site has been heavily disturbed by plowing. Test pits and blocks were located in areas where ceramics were more prevalent on the surface of the site. PU-122 produced more features and house floors than other sites excavated in the valley.

Strata 1–2 (0–40 cm): Excavations revealed numerous artifacts, features, and other remains that indicate at least one pre-Hispanic *ruka* or house. Test Pit 1 measured 1 × 2 m, oriented east–west, and was excavated in artificial increments of 15 cm. The first 10 cm across was a plow stratum, composed of a loose gray (5YR 7/1), weathered soil. At 12 cm, the soil changed to a more compacted, tan/gray soil (5YR 6/2). The soil became noticeably compacted at 15 cm, changing color to a red/tan (10R 4/6). No artifacts or other materials appeared in the fill until about 20 cm, where modern plastic and glass were found from a trash dump. The soil continued to compact, and it became redder (5YR 4/4) down to 30 cm, where approximately 134 ceramic sherds (mostly unpainted utilitarian wares, types 1, 2–10, 11a–b), 16 lithic fragments (quartzite flakes), and 1 metal fragment were recovered. A possible feature was detected in the eastern section of the pit at 28 cm, composed of a light beige (5YR 3/2) soil with some charcoal inclusions. The soil was of a silty clay texture and remained consistent in color (red/tan, 10YR 4/6) and consistency (lightly compacted) to about 32 cm, when a brown/beige layer (5YR 3/4) appeared down to 42 cm in the eastern section. Seven soil stains ranging in size from 12 × 18 cm to 22 × 40 cm and thickness from 1 to 3 cm were excavated between level 38 and 40 cm and interpreted as features resulting from house activities. Additionally, Feature 8 was identified in the western profile of Test Pit 1, which appeared to be a bisection of a posthole. The base of the posthole was flat rather than cut and tapered like a modern fence post. The feature was below the plow stratum and began at about 24 cm, extended down to 39 cm, and was about 20 cm wide. Five sherds, identified as El Vergel style (type 3), were found in the fill in the northeast corner of the pit. The change in color and compactness of the soil indicates a floor level of a *ruka* at about 35 cm. The western 1 × 1 m of the pit was excavated to 50 cm, but no other cultural materials were discovered, and the floor disappeared.

Following the soil change, an extension was added to the north of Test Pit 1, measuring 1 × 1 m in size. The first layer, 0–15 cm, followed the same pattern as Test Pit 1, the plow stratum extending to 10 cm, then with a slightly compacted, reddish-brown soil (5YR 4/3) underneath. Ninety-seven ceramic sherds (e.g., primarily types 1, 2, 3, 10, and 11a) and 9 lithic fragments were recovered in the fill, tentatively identified as El Vergel style. Another soil change occurred at 19 cm, the soil becoming somewhat redder (5YR 4/6) and slightly more compacted. Two features were detected at the 18-cm level, which were burned soil stains (5YR 3/2), generally similar in size and form to Features 1–4 found in the other sections of the block, but containing burned material and charcoal. At 24 cm, the same tan/beige layer appeared in the southern portion of the section, a probable extension of the soil change noted in Test Pit 1, but not to the degree as before. Also appearing at this level was another burned feature. Several distinct soil colors existed across these levels in the pit, ranging from 7.5YR 4/4 to 2.5YR 3/3 to 7.5YR 3/4. A large thick Pitrén-type sherd appeared at 45 cm depth. On the whole, the area contained the red/tan soil, compacted to the north and looser in the south without artifacts and notable features. Excavations continued in this section to 50 cm, with the soil remaining consistent without any features or artifacts.

Excavations continued, adding other 1 × 1 m sections to the west (section 1) and east (section 2) of the northeast of the prior pit. From the ground surface down to 15 cm, continued the plow stratum in both sections, changing gradually into a light brown/beige layer (7.5YR 5/4) with numerous ceramic sherds (types 2, 3, 5, 7, and 11a) and a few lithic fragments in the fill. Two burned features appeared in section 1, Feature 1 at 18 cm in the southeast corner of the section and Feature 2 in the northern portion, extending to the north. Feature 1 was composed of a loose, dark gray/brown soil (7.5YR 4/4), about 10 × 10 cm in size and 3 cm deep. Feature 2 also contained loose soil, though slightly lighter in color (moderate brown/tan, 7.5YR 5/2) than Feature 1, and was about 10 cm deeper. Excavation revealed that Feature 2 extended north into section 4 for 50 cm, and probably encompassed most of section 1, including Feature 1. The fill became more compacted and brown in color (7.5YR 5/4) at about 24 cm, which continued to 30 cm. This pit yielded 97 ceramics fragments (all types for this site: see Dillehay 2010, pp. 149–152) and nine lithic flakes. Seven of these were Pitrén sherds recorded at the deeper 45-cm level. Post-Pitrén levels appear between approximately 20 and 30 cm, and the features and house floor associated with El Vergel sherds varied between 18 and 28 cm in depth.

In the southwest corner of section 2, Feature 3 appeared at 24 cm, which was the remains of another posthole. The fill contained a grayish/brown soil (2.5YR 3/3), loosely compacted, with no artifacts or other materials present, and was 21 cm wide and 15 cm deep and at the same depth as Feature 8 in the west profile of Test Pit 1. The discovery of this posthole, linked with Feature 8, indicated that Features 1 and 2 were in the interior of a probable *ruka*, accounting for the soil change seen in the northeast portion of Test Pit 1 and in a northeast extension. Features 1 and 2 may have been part of an interior hearth. No other features were unearthed in section 2, though numerous ceramic sherds (mainly types 2, 6, 9, and, 11a) and lithic fragments were found in the fill, tapering off at about 24 cm with none found at about 30 cm. Section 3 was placed to the south of section 2 and followed the same form as the previous sections, i.e., 0–15 cm plow stratum, changing to a brown soil (7.5YR 6/4), with ceramic sherds and lithic fragments scattered throughout. At about 24 cm, Feature 7 appeared, composed of a dark gray/brown soil stain (7.5YR N4/), with charcoal inclusions, measuring approximately 50 cm wide and extending into the south wall of the section. The feature measured about 6 cm thick and may have been part of an exterior fire pit or similar feature. No other features were found in this section or in section 2, both of which were closed at 30 cm. As with other areas of these pits, the features are associated with a compacted soil layer defined by charcoal, ash, artifacts, and stains, all suggesting a compacted domestic surface of the late pre-Hispanic or El Vergel period.

Sections 5, 7, 8, and 9 followed the same general pattern as seen in the other sections: 0–12 cm plow stratum with ceramic and lithic scatters, 12–24 cm light tan/brown (2.5YR 6/4) lightly compacted fill, 24–42 cm red/brown (5YR 5/3) compact fill, and no major artifacts aside from several ceramic sherds (types 2, 3, 4, and 11b) and lithic fragments were discovered, nor were any features identified in any of these sections. Section 6 maintained this pattern to 22 cm, where Feature 4 was discovered, which was composed of a small hole, 16 × 13 cm in size and 2 cm deep. The feature contained soft sand, light brown (7.5YR 7/4), with no distinguishing features. No other features were found in any of these sections.

The distance between Features 3 and 8 (post holes) of about 2.4 m predicted another posthole 2.4 m to the northeast, located in section 10 and at about 22 cm in depth. At about 24 cm, on the line between section 10 and 11, Feature 10 appeared, which was identified as a posthole. The dimensions of this feature were slightly larger than Features 3 and 8. Feature 10 followed the same general pattern of the other two: 15 cm deep, 25 cm wide, and ovoid in shape, with brown loose fill (7.5YR N4/). Artifacts recovered from both sections 10 and 11 were composed of ceramics (types 11a–b) and lithics in a lesser quantity than the rest of the site. A change in soil color and texture appeared in the transition between these two sections as well, from a light tan/brown (10YR 4/3), fine-grained soil to a red/brown (5YR 4/4), coarser fill extending down into section 12.

In section 12, Feature 6 was uncovered in the southern half, beginning at about 17 cm, which was composed of a gray soil (7.5YR N6/), with numerous charcoal inclusions, as well as ceramics (types 2, 9–10, and 11a–b) and lithic inclusions. The feature extended to about 24 cm and into the southern portion of the site. The whole of the section contained very compact, clay-rich soil, very similar to that found in sections 7, 8, and 9. No other artifacts or features were discovered between 24 and 30 cm. A Pitrén house floor, however, appeared at about the 45-cm level across section 12–15.

Stratum 3 (40–60 cm): Following Feature 2 in section 1, excavations in section 1 to the north of section 4 continued, revealing that Feature 2 extended 50 cm to the north and continued the same color pattern of a dark gray soil stain but irregularly shaped. The feature was followed down about 2 cm, whereupon a burned red clay (2.5YR 5/8) was unearthed containing several large clay inclusions and some fragments of

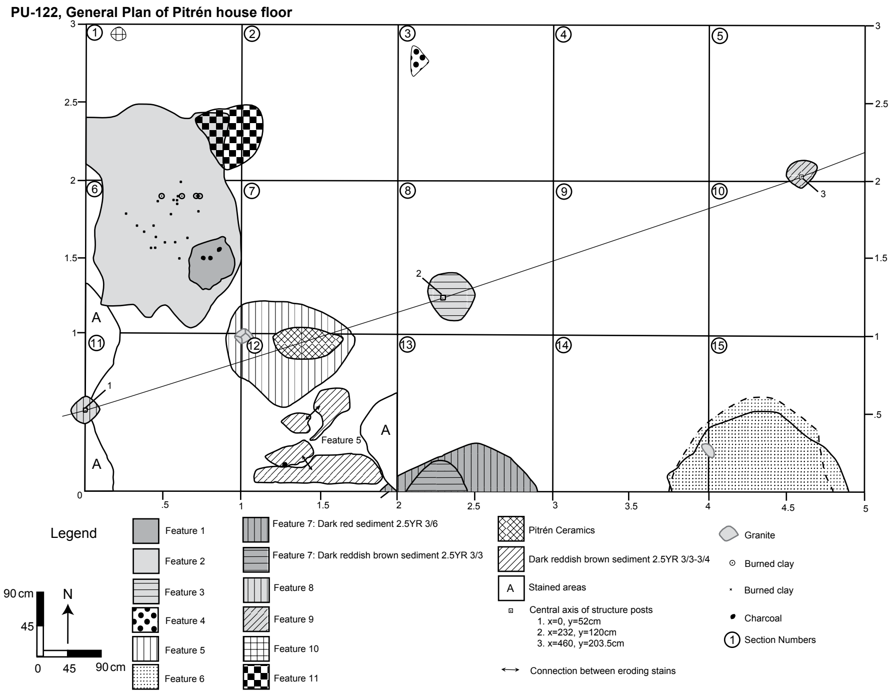


Fig. 7.24 View of the Pitrén floor at site PU-122 showing features and postholes.

charcoal. No other features were discovered until a depth of 43 cm in the northern portion of the section, when Feature 5, a small, dark gray soil stain (2.5YR 4/1) composed of a burned red clay (2.5YR 5/8) was discovered at this level (Fig. 7.24). It was similar in composition to Feature 2 and contained three ceramic sherds (type 2) and pieces of bone, later identified as animal bone but of indeterminate species. The deeper floor layer was identified at 43 cm, and no other artifacts were unearthed beneath this layer. No cultural materials were recovered below the 55-cm level.

On the whole, PU-122 is a dual component domestic site dating to the early to late pre-Hispanic times, as evidenced by the presence of the both El Vergel and Pitrén style ceramics, house floors with features and postholes between ~38 and 43 cm (Pitrén) in depth and by the remains of another set of features and a floor surface between ~ 18 and 28 cm in depth (El Vergel). Both floors and features suggest two superimposed *rukas* and probable associated work areas. The best-defined work areas are in sections 1, 2, 6, 7, 11–13 and are associated with the deeper Pitrén floor (see Fig. 7.24). The features appear to be burned stains or places where ash and charcoal were tossed. There also is a considerable amount of utilitarian debris in the form of ceramics, lithics, and a few metal objects.

The late pre-Hispanic occupation of the PU-122 site can best be described and understood by using the house structures as focal points. Structural evidence and domestic facilities, represented by features, ceramic, bone, and lithic artifacts

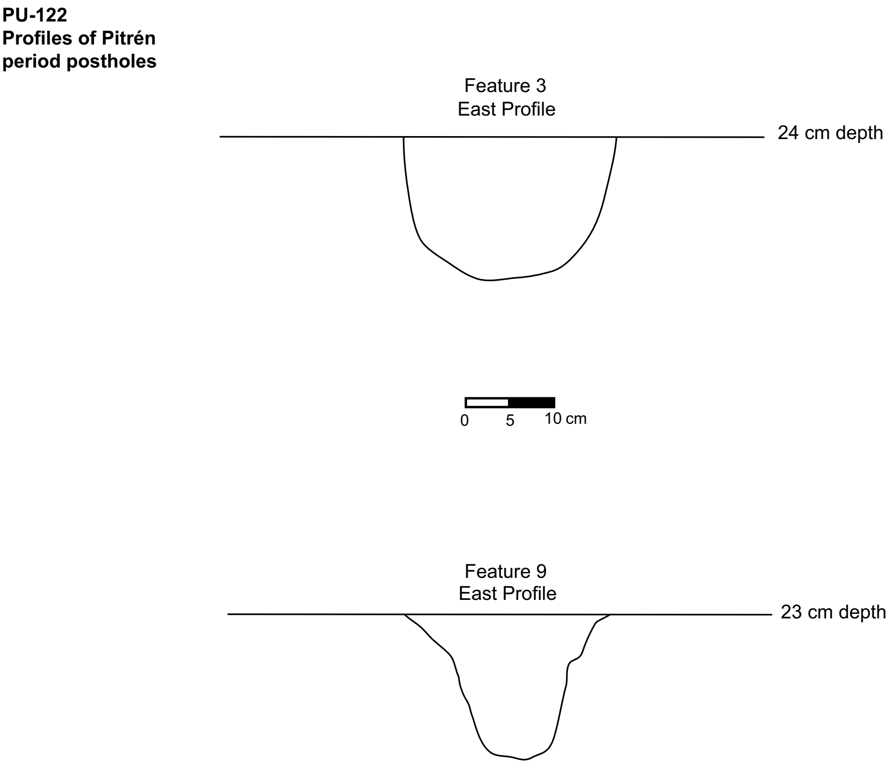


Fig. 7.25 Profiles of posthole features on the Pitrén floor at site PU-122.

and scant faunal and floral materials recovered within strata 2 and 3, are strongly concentrated within these sections. The decrease in the density of archaeological material as one proceeds westward from the structure prompts two hypothetical conclusions. The first is that a small house area was viewed and used as definite foci for activities carried out on the upper level or the El Vergel component of the site. Although the evidence is meager, the size of the house appears to be about 5 × 6 m and semi-rectangular in shape with rounded corners, as suggested by the posthole pattern (Figs. 7.24 and 7.25). Five postholes were recorded and excavated, the spacing between these having a mean of 2.4 m. The elevation of the floor, its features, and the postholes were basal elements preserved between 22 and 28 cm. The three documented wall postholes are straight-sided and flat-bottomed and have a mean diameter of 9.2 cm. They range in depths from 15 to 22 cm. Not enough of the structure was excavated to determine whether there were interior roof supports, though they are not evidenced in the south area of the section. We can only guess that the structure frame is similar to those for *rucas* today with small saplings bent, tensioned, and collectively tied off at the center to form a wall-roof framework. The estimated enclosed floor space suggests that no more than one nuclear family occupied the site dwelling. The size and shape appear similar to the remains of the house structure found at site PU-165, which are about 6 m long and 5 m wide.

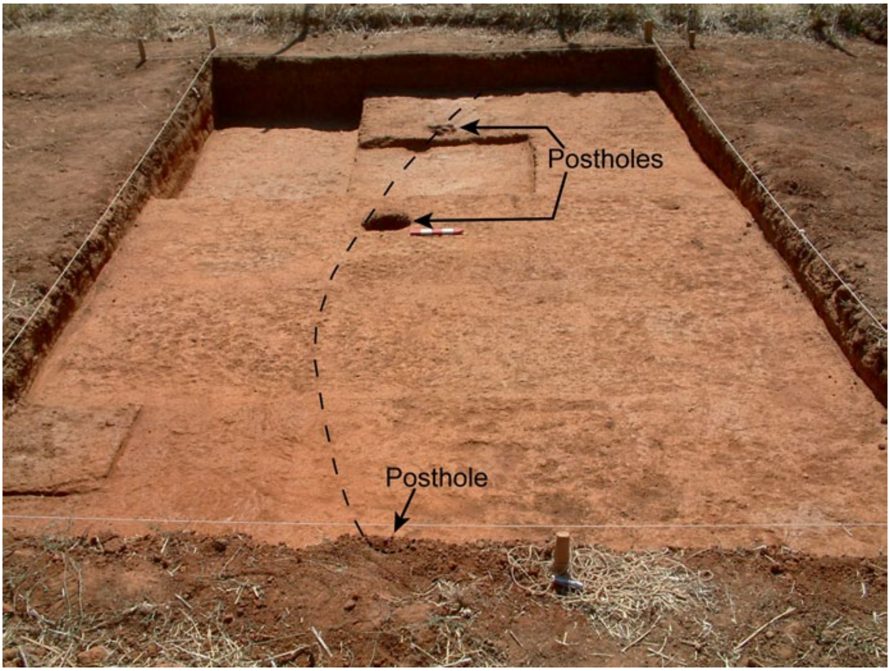


Fig. 7.26 View of the El Vergel floor at site PU-122.

The evidence for the earlier Pitrén structure indicates similar features but perhaps a larger house measuring at least 6 m in length. The presence within and around the structure of several features interpreted as hearths, burned areas, pits, and scatters of artifacts suggests activity areas within and outside the structure (Figs. 7.26 and 7.27). Fired clay fragments recovered from the midden within and immediately outside the structure area represent part of a daub covering for the structure, but the small quantity present and the absence of wattle impressions render this unlikely. The wall-roof framework of saplings was probably cross-stripped with branches and a dense roofing of bark or more likely grass thatch applied over the resulting lattices. No evidence was recovered that this structure was burned, intentionally or unintentionally, or that it was dismantled, although no postholes were documented; after abandonment, it apparently decayed and disintegrated naturally.

Chronology: Feature 1 in the upper house floor was radiocarbon dated to 500–700 cal BP or cal AD 1250–1450 (Beta 169771). This date agrees with the El Vergel ceramics associated with this floor. The presence of Pitrén sherds in the floor of the lower structure indicates an earlier occupation dating at or before circa AD 1000.

Site Type: Domestic

Site Number: PU-132, *Huintranlebukuel*
Map: Purén
Coordinates: 682754E 5786587N
Dimensions: 50 × 160 m

Fig. 7.27 View of a burned feature on the El Vergel floor at site PU-122. Arrow points to a posthole.

Description: The Huintranlebu mound group is situated on a high, flat mesa of a large hill overlooking the Purén River to the north. The hill commands a 360-degree view of the entire valley and toward the Andes mountains to the east. At least six sacred volcanoes can be seen from the summit. The mound group is arranged roughly in an east-to-west line, approximately parallel to and 20–30 m south of the north edge of the hilltop, as it slopes toward the river floodplain (Fig. 7.28). The area between the mounds has undergone rather extensive modification in the form of a dirt road and plowing. There has also been an undetermined amount of soil stripping to build the mounds, as evidenced by the presence of little top soil in these areas and much rock from the underlying gravelly bedrock. The orangish brown topsoil (7.5YR 6/6) varies from ~30 to 60 cm in thickness between and around the mounds and between 50 cm and 1.1 m near the western and eastern extremes of the hilltop, which were unaffected by the removal of sediment to construct them.

Three *kuel* measure about 1.5, 1.8, and 1.9 m high and 11, 15, and 20 m wide, respectively. Informants report that a fourth (D) and smaller mound once existed in line with the other three, but was destroyed several years ago by plowing. Remnants of it are still visible, however. Local Mapuche informants also state that *nguillatun* ceremonies were performed at the site in the early twentieth century and that local

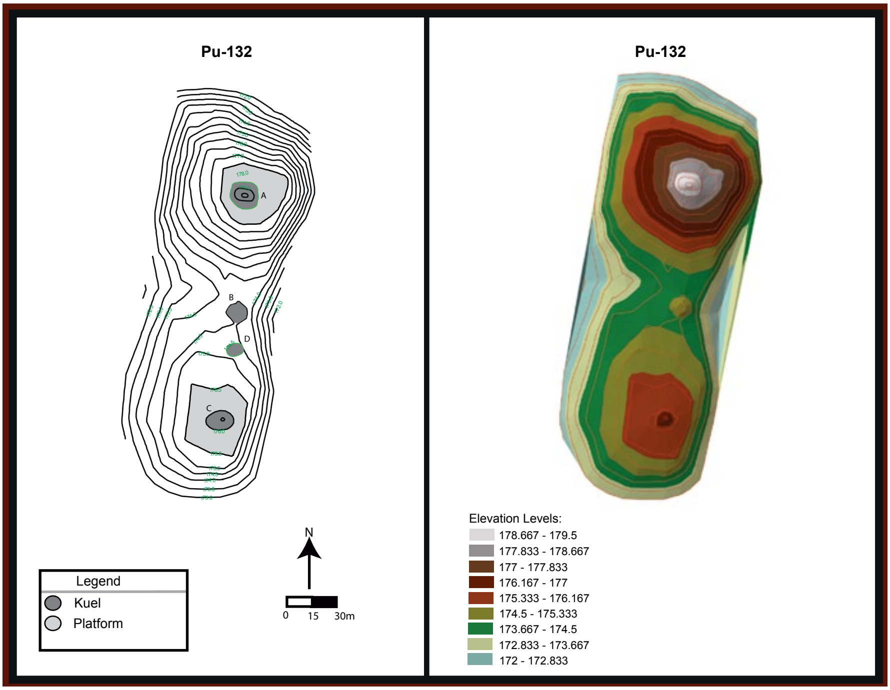


Fig. 7.28 Map of the PU-132 mounds.

machi once used it to communicate with the sacred mountain of *Wenucolla* to the northwest and *TrenTrenkuel* to the east. Nearly all *kuel* and other sacred places in the valley can be seen from *Huitranlebukuel*. Approximately 25 small to large domestic sites, agricultural terraces, cemeteries, and channelized fields are located within 1.5 km of this complex. Diagnostic ceramics suggest that the site dates from the late pre-Hispanic to modern period.

Local informants give the name of the largest *kuel* (A) as *Huachikuel*. The second smallest one is called *Ankakuel* (B), which means second in order. No names were given for the third and fourth *kuel* (C and D). Located lower downslope, below the *ñichi* platform and the three *kuel,* are three smaller ones (80 cm high and 5 m in diameter). These are said to be the feet of the *rehuekuel* that it uses at night to rise from the earth and to walk across the land. These smaller *kuel* are named *Natalkuel*, which means that they are not only lower in elevation but also lower in ranking to the other *kuel*.

Site Number: PU-132A
Map: Lumaco
GPS Coordinates: 0682511E 5786132N
Dimensions: 1.9 m high; 20 m in diameter

Description: PU-132A is the first, the largest, and the westernmost of the three *kuel* mounds. The *kuel* has trees on its summit. An 8-m excavation trench was placed on the mound, comprising four sections of 1 × 2 m each, from the summit

Fig. 7.29 Main trench at PU-132A.

north to the base (Fig. 7.29). The surface of each section contained a plow stratum with tree detritus cover that extended approximately 5 cm in depth. A second layer is about 10 cm deep and contains a loose, brown sediment (7.5YR 5/4) that covers the entire surface as well, though in section 3 and 4 this layer contained more yellow sediment and became a much darker brown soil (7.5YR 4/6). Excavations in each section followed 20-cm artificial layers.

Strata 1–3 (0–60 cm): In section 1, the first level of excavations (0–20 cm) revealed a clay-rich soil compacted by tree roots, which changed in the eastern section to a softer yellow/brown soil (10YR 6/6). No artifacts or features were found in this layer. The following layer (20–40 cm) continued the yellow/brown soil, mixed with red (2.5YR 4/8, 10R 5/3) and white soils (10R 5/3) to about 33 cm, where a layer of dark red (2.5YR 3/6), very soft soil began, which continued into section 2. At 30 cm, large pockets of soft red stains (10YR 5/3) appeared (Fig. 7.30). Several amorphous-shaped charcoal stains also appeared in this level, and continued down to the 47-cm mark, where a compact layer of brown/yellow soil was exposed (7.5YR 6/4). In the southern profile of section 1, at 46 cm, Feature 1 appeared, which contained decomposing granite (fire-cracked) with charcoal scattered throughout a pale olive/yellow soil matrix (10YR 5/4: Figs. 7.30 and 7.31). The feature measured 1.5 m in length and approximately 12 cm deep. No other features or artifacts

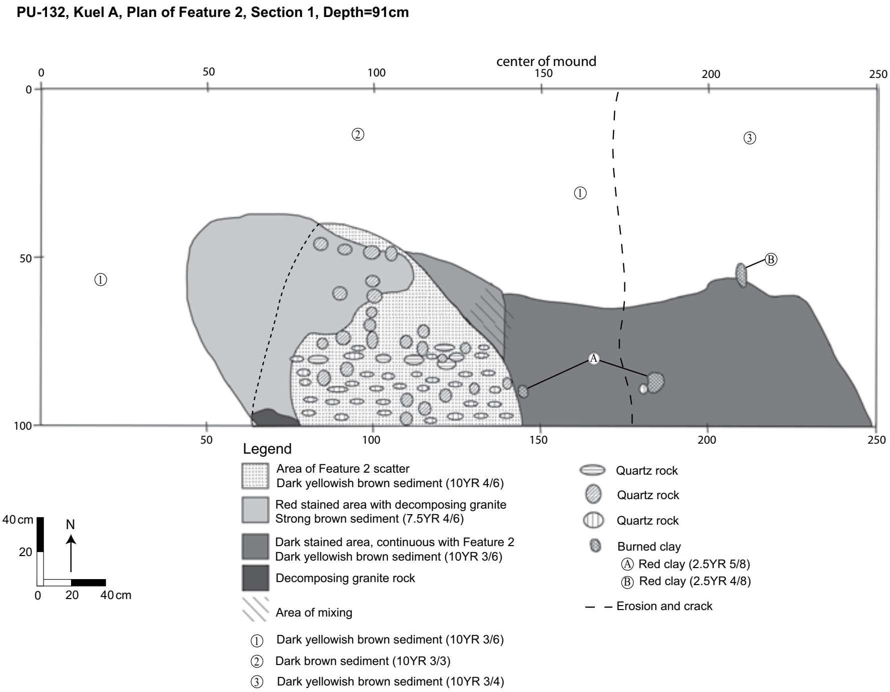


Fig. 7.30 Plan of a gravel feature and stains at site PU-132A.

appeared in this layer. Beginning at about 56 cm, a new level was revealed with a highly organic, dark red/gray soil with orange inclusions (7.5YR 4/).

Section 2 followed the same general pattern as section 1. The first 20 cm of excavation revealed the same yellow/brown soil (10YR 5/4) with no associated artifacts or features. The soil gradually became browner until about 47 cm when a compact layer of yellow/brown soil (7.5YR 6/6) appeared, extending down from section 1. This layer extended about 50 cm into section 2, gradually tapering out into the previous brown layer. This same layer contained charcoal inclusions that also tapered out.

The first 20 cm of sections 3 and 4 continued the same pattern with a surficial stratum changing to a yellow/brown (10YR 5/4) to brown layer (7.5YR 4/4 and 7.5YR 4/) with no features or artifacts present. This layer continued to 35 cm, when another one appeared. In the first 50 cm of section 3, the soil was mixed between the brown and red/brown of the *kuel* wall, gradually shifting to a full red/brown (5YR 4/3) soil continuing into section 4 and to the lower levels of the *kuel*. This same layer continued vertically to 85 cm, giving way to the basal, culturally sterile layer. A ceramic fragment (type 11b) appeared at level 65 cm in the northwest section of sector 3 and was more associated with the red/brown layer in the central portion of the *kuel.* No ceramics were found in section 4. Scattered throughout the layer, however, were burned quartz rocks and other material, as well as charcoal and ash,

Fig. 7.31 Photograph of the gravel feature at site PU-132A.

all suggestive of minor burning episodes. As no artifacts or features were found in the natural layer, the excavations were closed in section 3 at 1 m and in section 4 at 60 cm.

Strata 4–5 (60 cm to 1.0 m): Two pieces of quartz that were cores with flake facets were found at 60 and 65 cm. At 91 cm, Feature 2 appeared, composed of a layer of burned quartz gravel running horizontally between sections 1 and 2, which included fire-cracked rock, charcoal concentrations, and various brown sediments (Fig. 7.32). The most diversified and feature-filled area of the mound was the center portion in sections 1 and 2 between approximately 80 cm and 1.0 m in depth. Although there were several small features and stains above these levels, they generally were set in a homogeneous soil matrix, with less sediment diversity than below 80 cm (Figs. 7.32 and 7.33). Excavations continued to 1.1 m, which found primarily a gravel-filled soil with no associated artifacts, probably a continuation of Feature 2. As no other artifacts were revealed in the course of excavation, section 1 was closed at 1.1 m.

At 60 cm in section 2, the layer of highly organic, dark red/gray soil appeared again and continued with little variation to 110 cm. Two lithic flakes were recovered from the 60- to 80-cm level. The south side of section 2, closest to section 1 of the mound center, was associated with the northern extension of the features shown in Figs. 7.32 and 7.33. With no other features or artifacts, section 2 was closed.

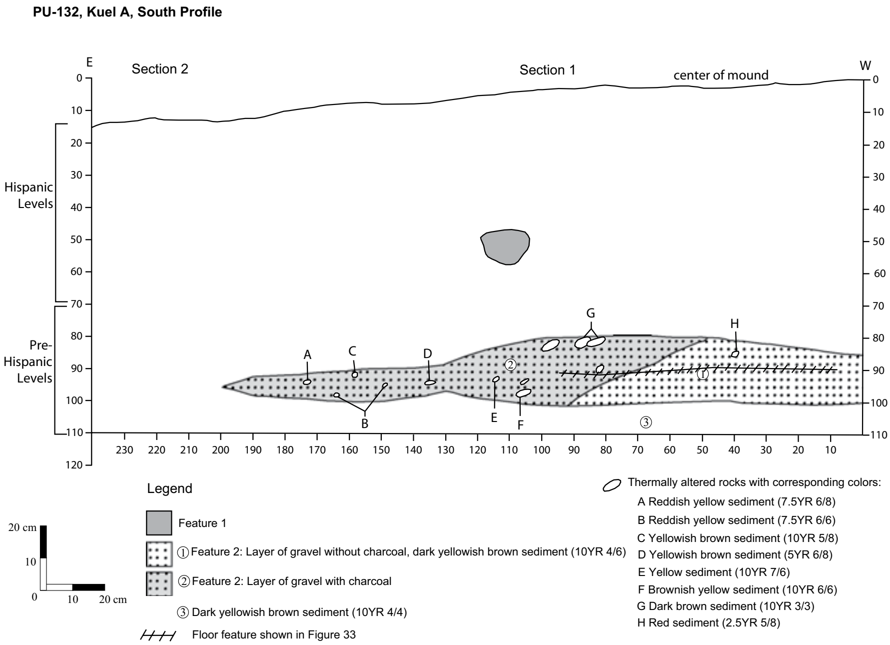


Fig. 7.32 Profile of the excavation trench at site PU-132A.

In sum, the excavations at PU-132A revealed a *kuel* mound that experienced several burning and capping episodes, though not as many as PU-38 or others in the area. Typically, it was the center of the mound, section 1, where the majority of this activity occurred.

Chronology: Excavation in Mound A yielded a radiocarbon date of 670–780 cal BP or cal AD 1170–1280 (Beta 282127) from a burned use surface ~82 cm below the mound surface, which places it in the El Vergel or late pre-Hispanic period. It should be noted that this is also the section of the *kuel* that is characterized by the greatest diversity of activity and sediment deposits, a pattern also seen at LU-13, PU-38 and, as described later, at several other mounds.

Site Number: PU-132B
Map: Lumaco
GPS Coordinates: 0682511E 5786132N
Dimensions: 1.8 m high; 15 m in diameter

Description: The second of the mounds, PU-132B, is located approximately 50 m east of PU-132A. It is a smaller mound than mound A. An 8-m test trench was placed on it, made up of four sections of 1 × 2 m each from the summit north to the base (Fig. 7.34). As at PU-132A, excavations followed 20-cm artificial layers until the base of the *kuel* was reached. Across the whole of the excavation, each section was topped by a plow stratum, extending about 10 cm vertically and composed of a light gray, loose soil (5YR 7/1). PU-132B, unlike similar sites, did not contain an upper humus layer, but immediately revealed *kuel* capping layers.

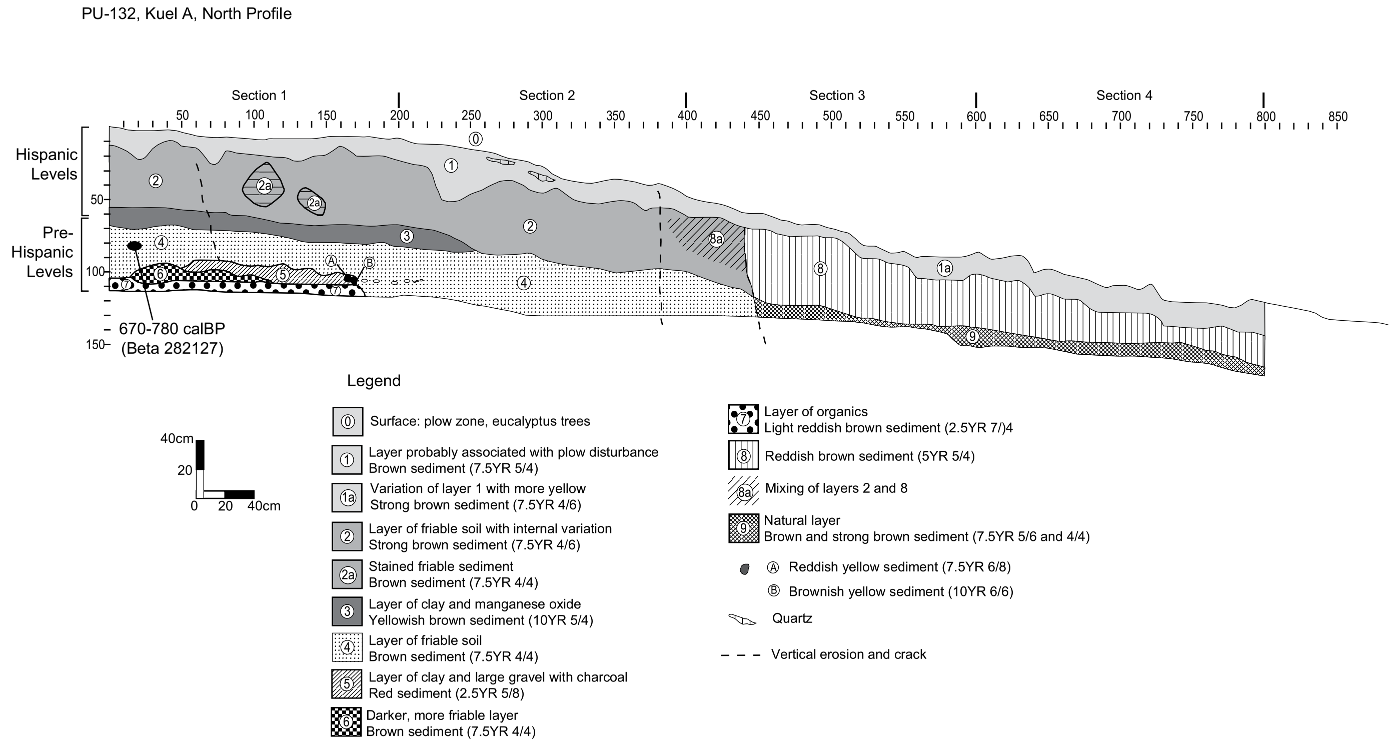


Fig. 7.33 Profile of site PU-132A.

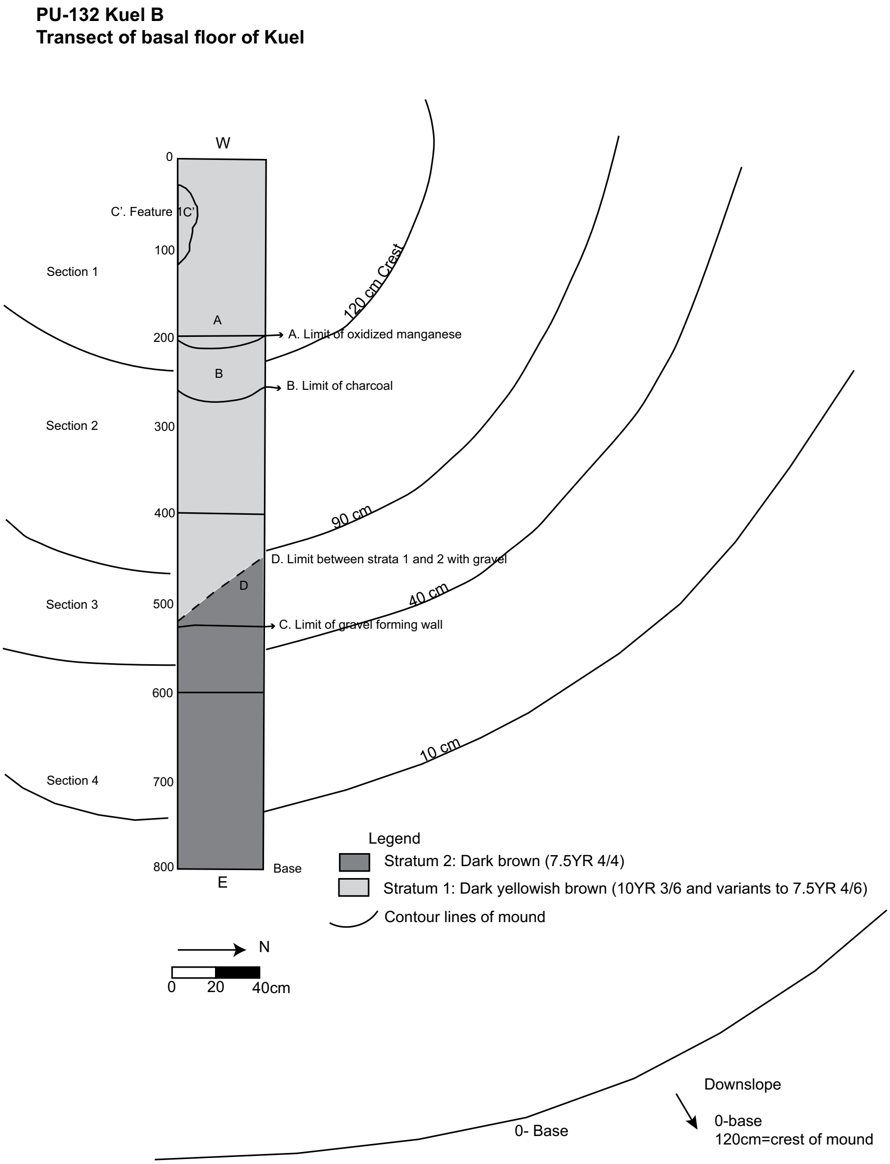


Fig. 7.34 Map of excavated sections at site PU-132B.

Strata 1–2 (0–40 cm): In section 1, two layers appeared within the same area, one composed of a reddish brown compacted soil (5YR 5/4) in the southern half, and a second composed of a grayish brown/tan, loosely compacted soil (10YR 5/2). These were mixed with layers and pockets of other red, gray, and brown soils (e.g., 10YR 5/2, 10YR 5/6, 5YR 5/3). The second layer extended north into section 2. This layer was designated Feature 1. At 16 cm, a large portion of a ceramic vessel (type 4) was uncovered in the southern border of the layer, broken into three pieces. Upon removal, the vessel was of the El Vergel style, incised at the rim. It was interesting to find such a large piece of ceramic intact, as most sherds that come from *kuel* excavations are smaller fragments from deliberate breakage during the ceremony. Both layers continued vertically to 40 cm, where a new layer appeared in the middle of the second one. This layer was composed of a mixture of brown/red/gray soils (10YR 5/2 and 10YR 6/3), with charcoal inclusions, approximately 10 × 15 mm in size, and surrounded by the brown/tan soil of the second floor layer (Figs. 7.35 to 7.37; this second layer is number 4 on Fig. 7.35. Floor 2 plan is shown in Fig. 7.36).

Strata 3–5 (40 cm to 1.0 m): A possible posthole was located at level 45 cm in section 1, which extended to a depth of 68 cm. These layers and the possible posthole were assigned Feature 2. Its base was flat and the diameter was 15 cm. Feature 2 also was a floor surface comprised mainly of burned and unburned quartz rocks, charcoal, and different clays. The third layer only existed for 5 cm vertically before turning back into the second layer. At this same level (~45–50 cm), a new layer appeared in the northeast corner of the section, composed of a gray/brown, loosely compacted soil (10YR 5/2). Layers 2, 3, and 4 all began at 50 cm horizontally in section 1, bordered on the south by the first layer, which continued horizontally to 1 m south. At 60 cm, layer 4 extended south, 15 cm out from the east profile, continuing horizontally to 65 cm, gradually becoming smaller toward the north until changing into a new layer (5) at 75 cm, and then replacing both the second and fourth layers. This new layer was composed of a red/yellow soil (7.5YR 6/8) with no inclusions and features. This layer continued horizontally to 85 cm. At this level, gravel and a red/gray sediment appeared (5YR 5/2), which was the base of the *kuel*. These last layers (6–8) extended to 1 m. No other features or artifacts appeared, and section 1 was closed at this depth.

Section 2 also contained the upper plow stratum to 10 cm, replaced by the second layer continuing from section 1. This layer continued in the section to 40 cm, where the third layer was uncovered at 40 cm. A fragment of burned quartzite was unearthed at 40 cm in the second, although no other artifacts or features were identified. A third layer was composed of a red/brown, loose soil (5YR 4/3), extending north into section 3. At 45 cm, the third layer appeared underneath the first two layers, replacing both at the 50-cm level. The second layer reappeared at 50 cm, along with a fourth layer along the east profile, both extending the full length of the section. The fourth layer diminished to the east, gradually replaced by the second layer, maintaining the same loose soil consistency. Several stains appeared in the fill at 63 cm, composed of a mixture of colors, mostly dark gray (5YR 4/1), with charcoal inclusions but no associated artifacts or fire-cracked rock. All stains and other material were replaced by the second layer at 75 cm, at which depth, a new layer (5) appeared in the northern portion of the section. The new layer was composed of a yellow/brown (10YR 6/6) sediment, which continued to 1 m with only a few small fragments of quartz recovered from the fill. Other than a few red clay (2.5YR 4/8) patches, small concentrations of charcoal and burned rock, and perhaps one posthole at the 45-cm level in section 1, no other features, layers, or artifacts were recovered in this section, which was closed at 1 m.

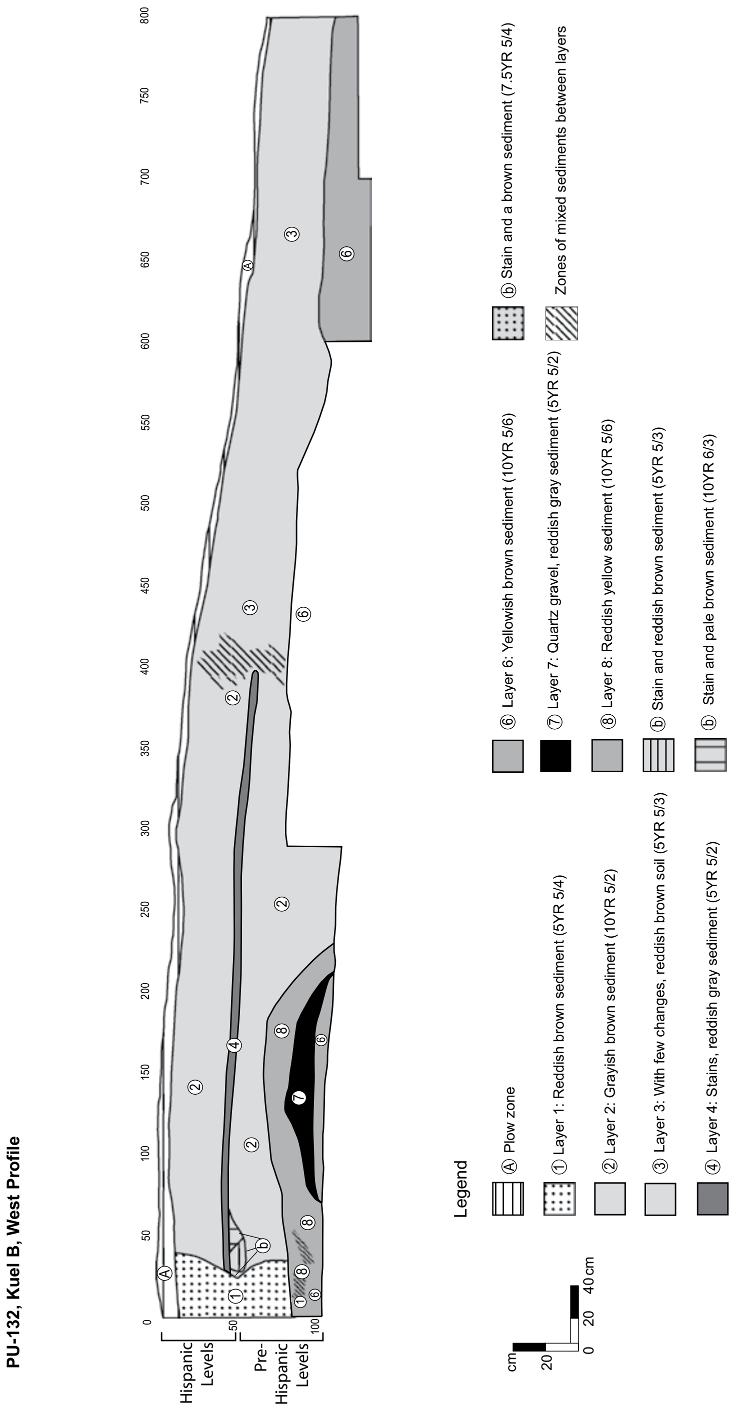


Fig. 7.35 Profile of excavated trench at site PU-132B.

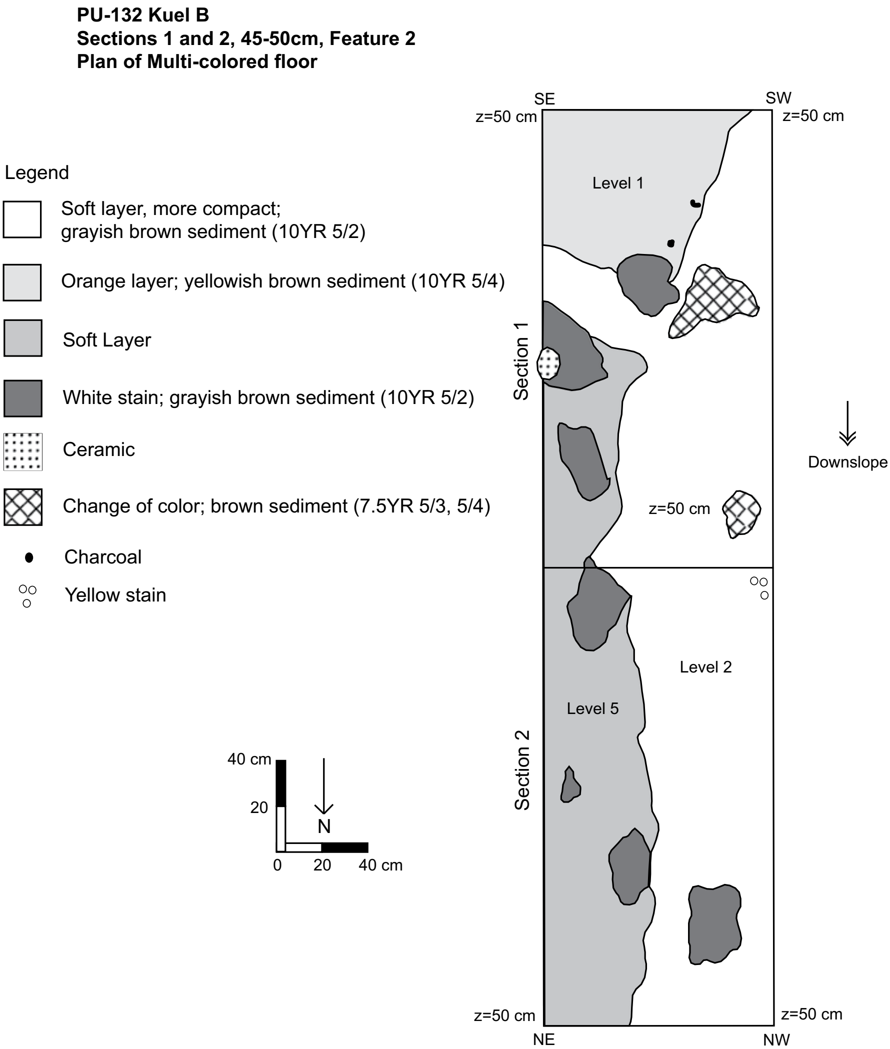


Fig. 7.36 Profiled features at site PU-132B.

As with the other layers, section 3 contained a thin plow stratum in the first 10 cm, which was replaced by the third layer. This layer maintained the same red/brown, lightly (2.5YR 4/4) compacted soil consistency found throughout the section to 75 cm, where a fourth layer appeared. This layer continued to 85 cm, and as no features or artifacts were recovered from this section, it was closed. Section 4 maintained the same pattern, with the exception of a small spot of burned clay uncovered at 38 cm, and the fourth layer appearing at about 45 cm. The fourth layer continued horizontally throughout the section to 65 cm, where the layer was closed after finding no features or artifacts in this section of the *kuel*.

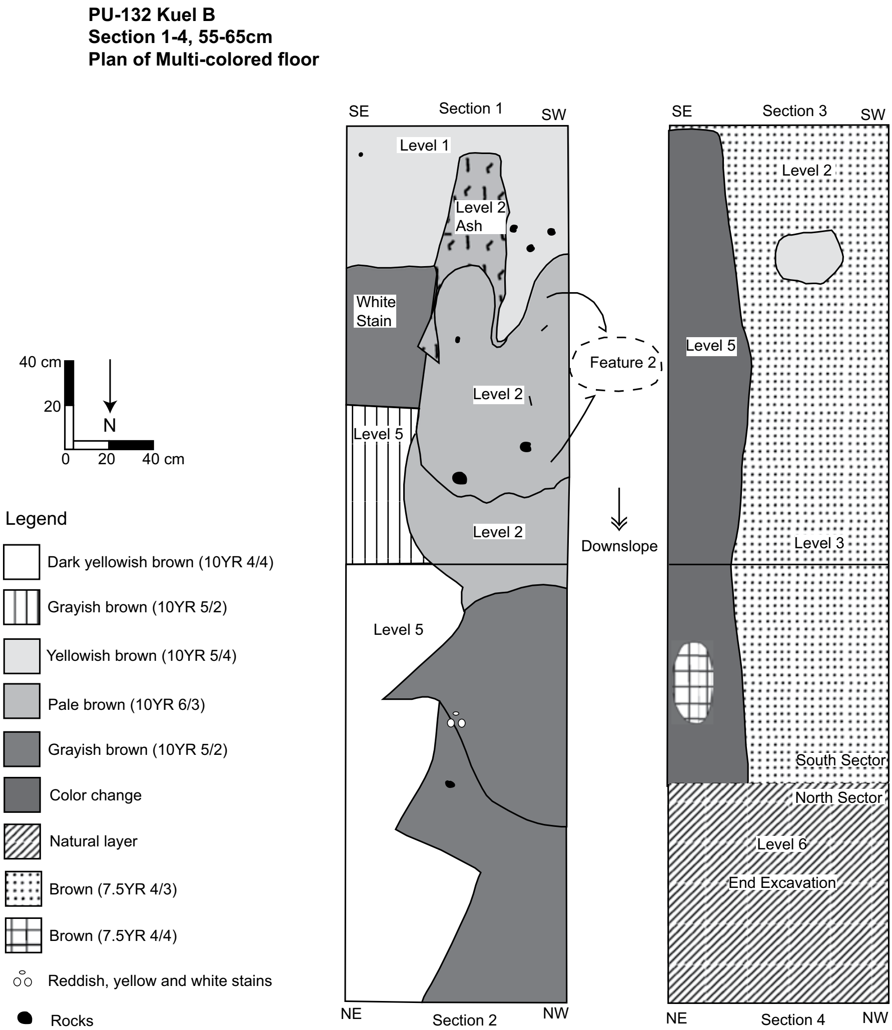


Fig. 7.37 Profiled features at site PU-132B.

Chronology: One radiocarbon date from Feature 2 was processed at 290–330 cal BP or cal AD 1620–1660 (Beta 294190), placing it in the early Hispanic period. The most diverse activity and sediments were located in the center of the mound below the early Hispanic level and dated to the late pre-Hispanic period, the same pattern at other mounds.

Site Number: PU-132C
Map: Lumaco
Dimensions: 1.5 m in height and 11 m in diameter
GPS Coordinates: 0682535E 5786134N

Description: This is the westernmost of the three existing mounds at *Huitranlebu*. Mound B lies some 45 m to the west. Mound A is 90 m to the west. A trench with three 1 × 2-m sections was laid out in an east-to-west configuration from the center of the mound. The mound was excavated in the same fashion as the other two.

Stratum 1 (0–20 cm): In section 1, the first layer (0–10 cm) was a compact reddish brown (5YR 5/4) soil with quartz grains and siltite rocks located in the northern part of the unit. This same soil extends over the other two sections of the trench to the base. No charcoal or other artifacts were recovered.

Stratum 2 (10–20 cm): This was a loose, reddish brown (5YR 5/4) soil with fine manganese oxide gravel. This continued to 40–42 cm in depth in sections 1 and 2. Two pieces of heated quartz were recovered. A very similar pattern to this stratum, from 20 to 42 cm in depth, was noted in PU-132A. No charcoal or burned clay was recovered.

Stratum 3 (20–30 cm): This is a compact soil with areas of loose sediment forming part of this section 1. The color remains a reddish brown, but slightly darker (5YR 4/4). Between 36 and 40 cm, small granules of magnesium oxide precipitate were detected, similar to those seen between 55 and 65 cm in PU-132-A. This soil continues to be clayey and compact with fine angular quartz gravel and coarse sand. At 40 cm, two unworked pieces of quartz, one with cortex, were recovered. There was no evidence of heating or working. No charcoal, burned clay, or artifacts were recovered.

Stratum 4 (30–40 cm): This is a compact, clayey, reddish brown soil (5YR 4/4) with fine quartz gravel. No cultural material was recovered. In stratum 5 (40–50 cm), a compact, clayey, reddish brown soil (5YR 4/4) with fine quartz gravel was excavated. No charcoal, burned clay, or artifacts were recovered. Stratum 6 was a compact, clayey, reddish brown soil (5YR 4/4) with fine quartz gravel, which changed to a light reddish brown weathered soil (5YR 6/4) down to the 80-cm level in all sections. This is the original soil surface. No cultural materials were recovered.

Mound D, located between Mounds B and C, was destroyed and not subsurface tested.

Chronology: circa AD 1300–1700
Site Type: Ritual *kuel*

Site Number: PU-157
Map: Lumaco
GPS Coordinates: 0683619E 5789603N
Dimensions: 150–250 m

Description: This extensive site is defined by three different but related areas: a Spanish/Mapuche "*casa fortificada*" measuring about 80 × 80 m in size, with buried architectural features; an occupational site dated to the late pre-Hispanic and early Hispanic period; and a small *kuel* and associated activity area on a low knoll above both sites (Fig. 7.38). The site location is on a low hill spur between the floodplain on the north bank of the Purén River and a hill above to the north. In order to determine the nature of the site, we placed four test pits in all three areas.

Casa Fortificada: Test Pit 1 was placed against a long narrow rise or mound, which was a buried wall, on the north side of the site. The site was excavated in arbitrary

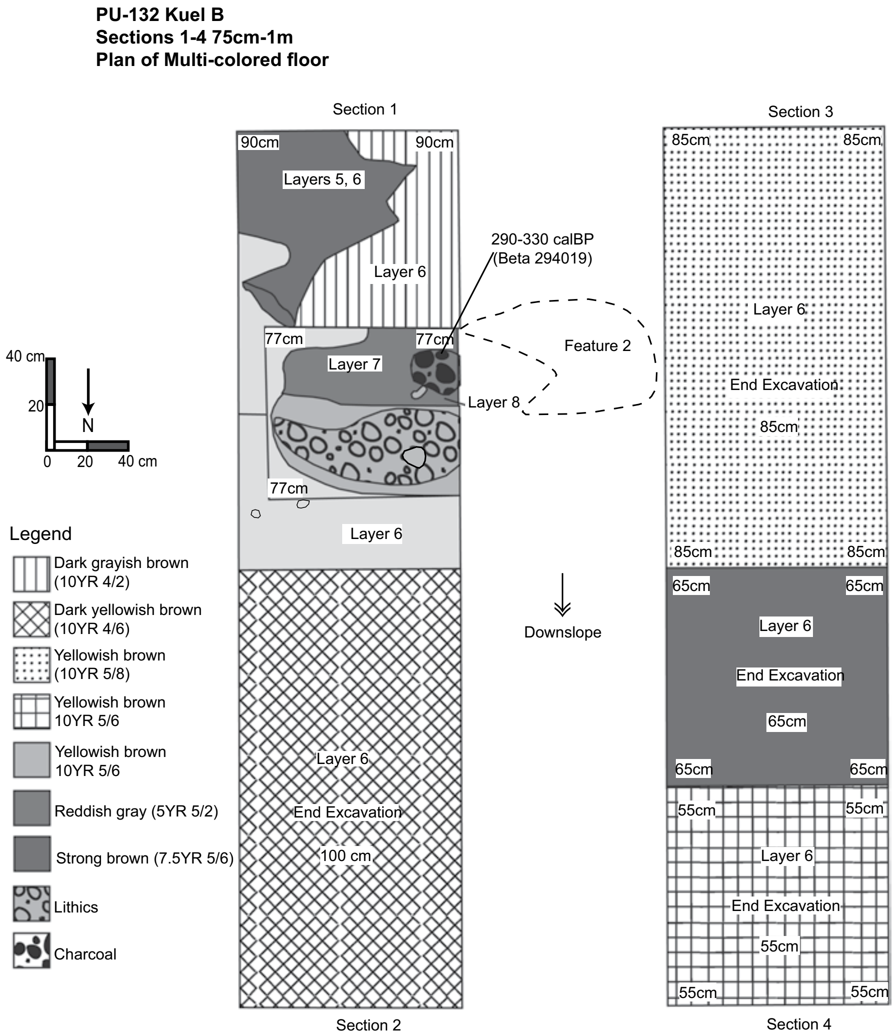


Fig. 7.38 Profiled features at site PU-132B.

levels of 20 cm each. The first level (0–20 cm) yielded numerous ceramics (types 1, 2, 6, 11a–b, and 12), one lithic flake tool, and several chunks of charcoal. Level 2 also produced numerous ceramics (types 2 and 11a–b) and a more compact living surface. A gravel layer was exposed at the 38–40-cm level. Level 3 yielded fewer ceramics (types 10, and 11a–b) between depths 40 and 50 cm, and the gravel increased substantially. Given the absence of cultural refuse at the 60-cm level, the excavation terminated.

Test Pit 2 was placed against the interior north wall of the fortress. The first level was characterized by a reddish yellow, silty clay (2.5YR 5/1). More than 50 ceramic fragments (types 2, 4, 8, and 11a–b) were recovered from this first level, which had been plowed to the 10–12-cm level. A few burned patches and two lithic flakes were also recovered. Due to charcoal and ash, the soil color slightly changed to a reddish gray (2.5YR 5/4). Levels 20–40 also changed in color to a darker yellowish brown (10YR 5/4). Less charcoal and ash were found in the deeper portion of this level, and the sherd count (types 10, and 11a–b) diminished down to the 42-cm depth, where the gravel was encountered and the excavation was terminated. An extension of 1 × 2 m was added to Test Pit 2 to link it closer to the first test pit. This pit yielded burned clay pieces, which might have been part of a wattle-daub wall of a palisaded fortress. Numerous ceramics (types 2 and 11a–b) were found.

Kuel: Test Pit 1 in the mound was placed along an east–west trajectory just off-center of the mound to the west. The pit revealed a homogeneous stratigraphy of a yellowish silty clay (2.5Y 8/6) down to the basal deposits. Although a few pieces of burned clay, charcoal and thin ash lenses (1–2 cm thick), and two ceramic sherds (type 2) were found, no features were present.

Domestic: Test Pit 1 in the occupational stratum showed three distinct strata. The upper level was a slightly burnished yellow clay extending to 18–20 cm in depth. Few ceramics (types 2 and 11a) were recovered. Below this level, to a depth of 38 cm, was a lighter brownish yellow clay (2.5Y 8/8) containing one sherd (type 8). The basal deposits contained no artifacts, and at the 42-cm level, the lower gravel level of the natural surface was encountered.

Chronology: circa AD 1300–1750

Site Type: Domestic, *kuel*, and *casa fortificada*

Site Number: PU-165.

Map: Purén

GPS Coordinates: 686923E 5784569N

Dimensions: 180–250 m

Description: This site is located on the north side of the Purén and Lumaco River where it turns to the south. The locale is on a 6-m-high terrace promontory extending onto the valley floor. To the west and north of the site are numerous *kuel* situated on other promontories and on the ridge crests of low hills (Fig. 7.39). The results of our work at PU-165 yielded the deepest stratigraphic profiles of the project's excavations in the study area, which also represented the longest occupation detected in the study area. Surface remains were less dense to the south and east of the site as the edge of the terrace promontory dropped to the valley floor. To explore these differences, we placed eight 1 × 2 m–2 × 2 m test pits and two 5 × 5 m blocks across the site. Cultural materials and deposits were encountered at depths in excess of 1.2 m at the site. Informants living near the site state that during the worst months of the winter rainy season, they cannot cross the floodplain south of the site because it converts to a *cienega*. In the months that receive the most rain, the lower banks of the promontory are often crested.

Block A: This was a 5 × 5 m block located in the center of the site in an area of high artifact concentration on the surface. Excavation in this section identified several strata, a compacted earth feature (interpreted as a floor), three large, well-prepared,

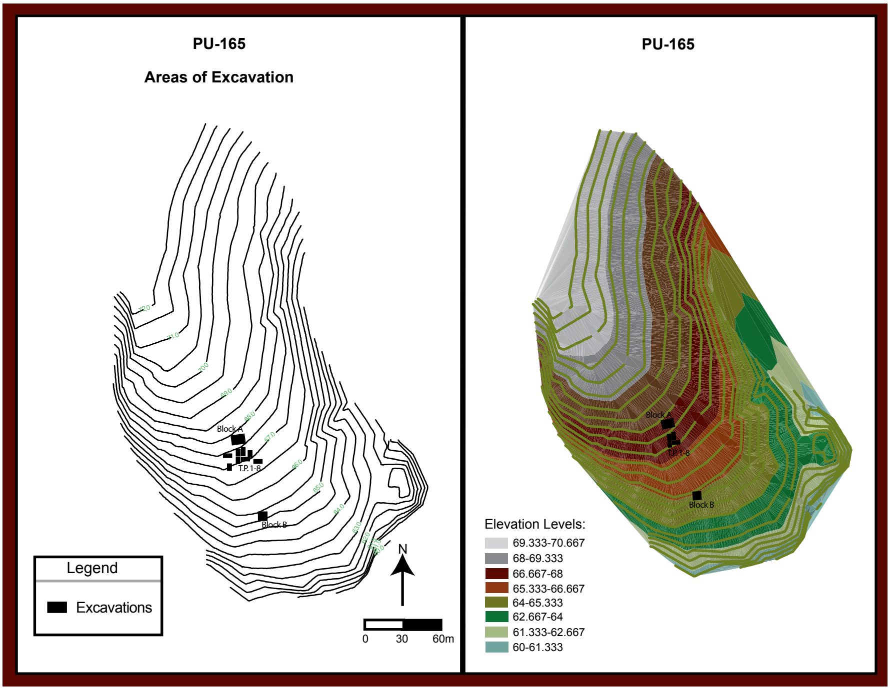


Fig. 7.39 Map of site PU-165.

clay-hardened ovens (Figs. 7.40 and 7.41), and other artifact concentrations primarily within the upper strata, but to a lesser extent in the lower ones. The descriptions of the excavation and stratigraphic elements follow. The surface of this block contained numerous ceramic fragments.

Stratum 1 (0–20 cm): A silty clay soil characterizes the plow stratum from the surface down to the 20-cm level. The soil was a brownish clay (5YR 3/4). Considerable quantities of cultural materials were recovered from this level, which included late pre-Hispanic and early Hispanic diagnostic ceramics (all types); there was also a segment of a house floor, mostly in the southern half of the block. The floor sat at the transition between the plow stratum and stratum 2, from depths of 20 to 22 cm below the ground surface. The plow stratum in this block has a uniform thickness throughout, extending to about 18–22 cm below surface where a subtle texture and color change in the soil occurred (2.5YR 3/4).

Stratum 2 (20–40 cm): This stratum is uniformly distributed throughout the excavation unit. It begins at ~22 cm and extends to 35–40 cm below ground surface. The soil matrix of this stratum contains some clay, but is relatively loose. Its color is a reddish brown (2.5YR 4/4). Abundant ceramics were encountered in this level: they included many late pre-Hispanic diagnostic ceramics (types 1, 2, 3, 6, and 11 a–b) and a few lithic and burned rocks. What appears to be a dark, compacted house floor (2.5YR N3/) begins at the 22-cm level and extends into the next stratum. A

Fig. 7.40 Large clay ovens in Block A at site PU-165.

portion of the floor is associated with a hardened, unburned clay forming a low wall foundation and associated with a hearth (Feature 1) that is about 1 m wide and contains ash, charcoal, burned rock, and a few ceramics (types 1–2), all extending into stratum 2. At the 25-cm level of this stratum, the bottom of Feature 1 was recovered, which consisted of a concentration of burned and unburned corn cob and kernel fragments (Fig. 7.42; see Chapters 6, 8 and 13 for the pollen and macro-botanical evidence for maize). Quartz and quartzite are natural inclusions in the soil of this stratum.

At the 22–41-cm level, three large circular and slightly concave clay ovens measuring about 20–30 cm in depth and 70–80 cm in diameter were excavated and numbered Features 1–3 (albeit only a portion of Feature 3 was excavated in the southeast corner of the block). These features were associated with a well-prepared and compacted floor and several large ceramic fragments. Several grinding stone fragments and manos were also found around the three ovens. There is a considerable amount of burned earth fragments, including daub, throughout the stratum. The hearth ovens clearly formed a food preparation area lying a few meters north of a house structure revealed in the Block B excavation.

Stratum 3 (40–60 cm): This stratum extended between 35 and 50 cm below ground surface. While the soil matrix is a reddish silty clay (2.5YR 2/2), the clay content is higher than that found in stratum 2. In addition, the soil color subtly transitioned to a dark brown soil (7.5YR 3/2) and a very dark gray soil (7.5YR 3/1).

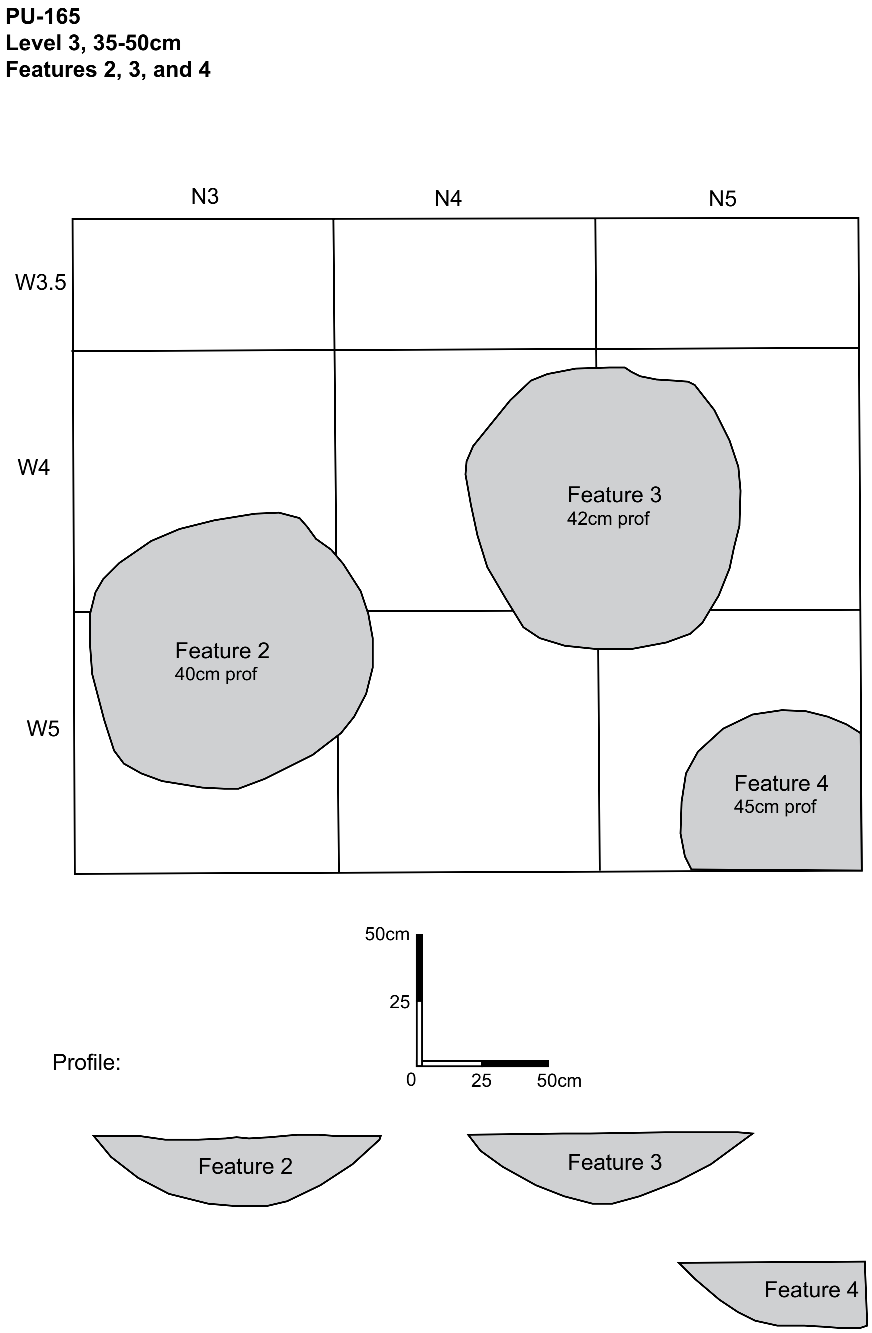


Fig. 7.41 Plan of ovens and associated floor at site PU-165.

Fig. 7.42 Close-up of feature of burned wood and corn at site PU-165.

Stratum 3 also contained considerable ceramics and quartz set in a dark burned yellowish red soil (10YR 4/2), particularly between the depths of 37 and 45 cm. This sample situates stratum 3 firmly in the late pre-Hispanic to early Hispanic period (circa AD 1450–1600). Stratum 3 continues to a depth below surface of 50 cm. Quartz gravel, pockets of clay, and slate are found throughout the matrix of this stratum. Little burned clay and charcoal were recovered from this level even in and around the base of the large ovens that extend down into this stratum.

Stratum 4 (60–80 cm): This stratum is marked by a change in the color and texture of the soil matrix. While there is still some clay, as in strata 2 and 3, this stratum contains less, and the soil is much more gravelly and has numerous quartz rocks. The soil color is a lighter yellowish red (7.5YR 6/6). Other cultural materials recovered from this stratum included a few ceramics (types 2, 4–6). Stratum 4 ended at a depth of approximately 65 cm, though the excavation was taken down to the 75-cm level where a thick gravel stratum and a culturally sterile layer were found.

Block B: This block is 5 m southwest of Block A. As in Block A, we encountered four strata in it, which were excavated to a similar depth. This excavation recovered a burned feature within stratum 1. The deposits described here yielded several samples of charcoal, which dated to the late pre-Hispanic Period or El Vergel period.

Stratum 1 (0–20 cm): The organic-rich soils of this stratum are of the same texture (silt clay) and color (7.5YR 2.5/1) as those that comprise the plow stratum of

Block A. Considerable cultural remains were recovered from this stratum, which included ceramics (types 1, 2, 3, 4, 11a–b, and 12), obsidian, quartz, and burned earth. The plow zone measured approximately ~20 cm in thickness.

Stratum 2 (20–40 cm): From the upper depths of this level, we recovered several heat-treated basalt and quartz cobbles that were accompanied by charcoal and a concentration of burned earth. The deeper level of this stratum was characterized by a pale yellowish brown soil (10YR 6/2). Ceramics (all types) and obsidian, including one arrow point made of obsidian, were found in this concentration. One El Vergel sherd and one oddly slipped sherd (type 3?) were recovered. The base of stratum 2 exhibited an occupational surface. Stratum 2 continued to a depth of approximately 38 cm below datum.

Stratum 3 (40–60 cm): This stratum is clayey in texture like stratum 2, but is more silty in comparison. In addition, the soil color changes to a reddish brown (5YR 5/6). One posthold, inclined to the east, was found in the north wall of the section at a depth of 41–43 cm and may represent the edge of a house. There are considerably fewer ceramic (types 2, 8, 9–10) and lithic materials, but small pieces of burned clay are distributed throughout and the stratum continued to a uniform depth of approximately 50 cm below datum. This is a house floor at the same level as the three ovens to the north in Block A (see Fig. 7.43).

Stratum 4 (60–80 cm): The texture of the soil matrix in this level is a very hard clay with many quartz rocks and basalt gravels throughout. The color reading is a pale brown 10YR 3/6. Very few cultural materials were recovered from this stratum. Stratum 4 continues to a depth below datum of approximately 60 cm, although the transition to Stratum 5 is gradual and not well demarcated.

Stratum 5 (80 cm to 1.0 m): This stratum's soil matrix is clayey with sand particles throughout. The color of the soil matrix is the same as stratum 4 (10YR 3/1, very dark gray). In this level, burned earth is mixed throughout, and like stratum 4, the density of artifacts remains low in comparison with other strata. Besides burned earth, large quartz grains are found throughout the clay and sand matrix. Several small specimens of burned stone also are distributed throughout. Stratum 5 ends at approximately 1.1 m below datum. The soil change to stratum 6 is more easily observed than the transition from strata 4 to 5, although the boundary between strata 5 and 6 below is not clear.

Stratum 6 (1.0–1.2 m): The soil matrix of stratum 6 is clayey with sand particles throughout. It is similar in texture to the overlying stratum 5. The color of the soil is slightly different, however. Soils in stratum 6 are (10YR 3/2) very dark grayish brown. Mottled throughout the western half of mostly stratum 6 (the stains actually begin in stratum 4 and continue to stratum 6) are large stains whose soil textures are the same as those of the surrounding matrix. The stains are only slightly different in color (10YR 3/1, very dark gray), and some may represent root scars or rodent burrows. Stratum 6 terminates at depths that range between 1.4 and 1.6 m below the datum.

Stratum 7 (1.2–1.4 m): This stratum represents the last excavated in Block B. It represents an 18-cm-thick area within the east half of the block where burning occurred—the soil matrix, however, is undifferentiated from stratum 6. Besides

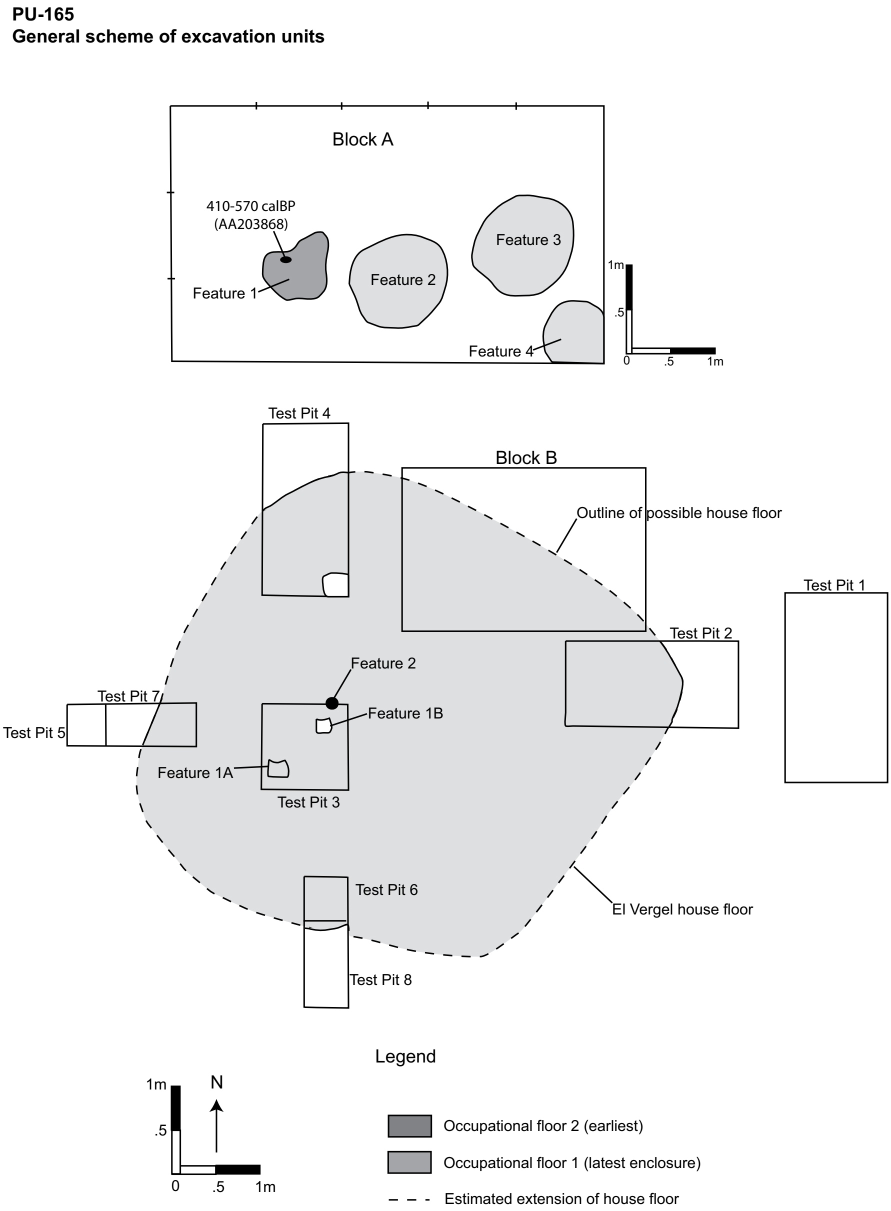


Fig. 7.43 Plan of major excavation areas and the El Vergel house floor in Block B at site PU-165.

charcoal, stratum 7 contained no ceramics. However, several basalt flakes and small cores were found, suggesting an underlying Archaic layer, which is confirmed by a ^{14}C date (see discussion below). The appearance of stratum 7 during excavation was marked by a subtle color change from the overlying very dark gray (7.5YR

3/1) to a dark brown (7.5YR 3/2). We closed this excavation unit at approximately 1.4 m. While a sterile subsoil at this depth was not reached, the frequency of lithics declined significantly. Similar declines also characterized the transition from strata 5 to 6 in Block A.

Test Pit 1: The stratum 1 plow zone had the same soil traits as those of Blocks A and B, with a hard silt clay reddish brown (5YR 5/6) in color. At the base of this stratum in the western part of the section was a dark soil lens that likely formed a house floor and perhaps part of the complex seen in Blocks A and B. Stratum 2 was characterized by the same traits but the house floor was not destroyed by the plow zone and could more clearly be seen. Stratum 3 changed soil color again (10YR 2/2). At the 40–45-cm level, several burned rocks and balls of clay were found, in addition to numerous ceramic sherds (types 3, 6–8, and 11a–b). In stratum 3, from approximately 40 to 55 cm, a dark area appeared in the east side of the pit that measured about 1 m in length and continued across the excavation from the north and south. The presence of ceramics, which appear to be El Vergel like, charcoal, and ash, suggests it is a hearth or part of a burned structure, probably a floor. In the next stratum 4, at the 70–80-cm level, Pitrén ceramics were found with another dark stain that was a burned area. In stratum 5, from 85 to 95 cm, fewer ceramics were recovered of the Pitrén style, and the deeper gravel layer of culturally sterile material was found at 95 cm to 1.0 m.

Test Pit 2: It was placed to the west of Test Pit 1. The plow zone, stratum 1, was similar to that observed in Test Pit 1. In stratum 2, the same dark, hard compacted floor with charcoal, burned clay, ceramics (types 2, 4–10, and 11a–b), and a few lithics covered the entire area of Test Pit 2, suggesting an extension to the west of this floor (see Fig. 7.43). The ceramics are of the El Vergel type. In stratum 3, at the 45-cm level, two small hearths (Features 1a and 1b) and an intact house floor were recovered, which is at the same level as Floor 1 and Feature 1 in Block A to the north. At the 74-cm level, we recovered two postholes that are at the same level as the deeper Pitrén features and materials in Test Pit 1, suggesting the presence of a deeper occupation area. The soil color changed to a grayish brown (10YR 4/2) in this stratum. At the 92-cm level, a culturally sterile stratum (5YR 5/6) was found, and the underlying gravel layer was entered.

Test Pit 3: This 1 × 2 m pit was placed 1 m north of Test Pit 2 to determine whether the dark layer in stratum 2 continued between Block A and Test Pit 3. The plow zone contained much charcoal and ash as well ceramics. Between the base of the plow zone to about 50 cm in depth, there was much burned clay, charcoal, ceramics (types 9–10 and 11a–b) and dark stains (10YR 2/1), but no definable floor. At the 51-cm level, two features (1a and 1b) appeared in association with a dark compacted floor similar to the one excavated in Test Pit 3 and Block A at more or less the same level. This floor disappeared at the 60-cm mark and was underlain by a gray layer with ash (10YR 5/1) and ceramics (types 2 and 11a). At the 75–85-cm level, there was another dark, compact use or habitational surface that was associated with Pitrén ceramics.

Test Pit 4: This pit was excavated to a depth of 45 cm at which point the sterile layer with gravel was encountered. The plow zone was similar to those excavated across the site, but, in this case, containing numerous ceramics (all types). Stratum 2 contained a floor with numerous ceramics and underneath this from levels 40 to 45, the soil was sterile. The materials in this pit were associated with late El Vergel.

Test Pits 5 and 6: They were excavated to a depth of 50 cm and were similar in soil, artifact, and feature description to those of Test Pit 4, except that the 35–45-cm level yielded a dark compacted use surface (10YR 3/2) at the same level as floor in Block A and Test Pits 2–4.

Test Pit 7: This was an extension of Test Pit 5 to the east. Strata 1 and 2 were similar to those described for Test Pits 5 and 6. The exception here is that the east side of Test Pit 7 at the 35–45-cm level yielded a dark pale gray brown (10YR 3/1) compacted floor, with a high density of ceramics, charcoal, and ash, which are at the same depth and have the same traits as those in Block A and Test Pits 2–4. Cultural materials terminated at a depth of 52 cm.

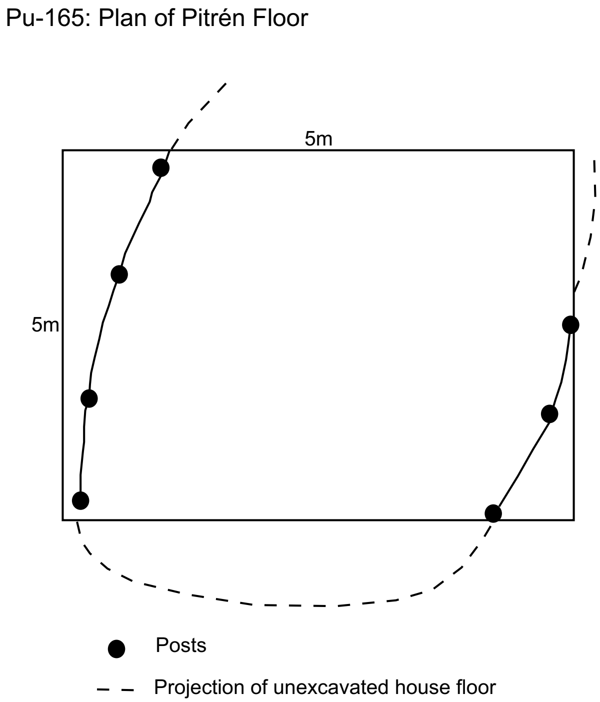
Test Pit 8: This pit was located to detect the extension of the deeper house floor; it yielded no cultural materials below the 35-cm level. No features or floors were excavated. However, at the 90-cm level, several lithics and a burned area were exposed, suggesting an Archaic period site.

The cultural deposits of these blocks and test pits are so close in proximity and so similar in their sedimentological characteristics (soil texture, color, and thickness) and diagnostic artifacts that we can comfortably correlate with most strata. In addition, because of the recovery of radiocarbon dates from strata in Blocks A and B and Test Pit 2 and the presence of diagnostic ceramics in all levels, we can date the correlated strata within the profiles of the excavated units. Based on these data, it appears as though the plow zone dates to the modern-day and late Historic periods, strata 2 and 3 date to the late pre-Hispanic to early Hispanic Period, and stratum 4 dates to the late pre-Hispanic and strata 5–7 date to the Pitrén or early Hispanic period. In Block B and Test 1, stratum 8 dates to the Archaic Phase.

In summary, the areas investigated by these excavation units were occupied from approximately the modern era and Hispanic period back to Pitrén and Archaic times. Late pre-Hispanic deposits account for the majority of the strata in these excavations, but the quantity of materials attributed to the early and late Hispanic period occupations is comparable, perhaps suggesting a shorter, more intensive late pre-Hispanic to early Hispanic settlement of the locality. Detailed discussion of the materials and features from these units is presented in Chapters 8 and 9. There is no clear internal division within the late pre-Hispanic as represented by El Vergel ceramics and the early Hispanic strata, despite the presence of a few Spanish-style diagnostics. But because there are late pre-Hispanic radiocarbon dates from stratum 2, it is possible that the base of stratum 1 also represents the accumulated remains of a general late pre-Hispanic occupation. If there was no distinct break in the occupations, then they would be difficult to distinguish stratigraphically.

Lastly, there are three occupations at the site, an Archaic Phase defined by burned areas and lithics, a Pitrén or early pre-Hispanic Period house floor represented by a round-cornered rectangular house measuring about 5 ×7 m in size (Figs. 7.44 to 7.46), and a late pre-Hispanic El Vergel occupation floor associated with the three ovens and other features (Figs. 7.43 to 7.46).

Fig. 7.44 Plan of the Pitrén house floor underlying El Vergel house floor in Block B.



Chronology: ~5,500 BC to AD 1700

Block A: A burned corn cob associated with the three ovens in Block A produced a ^{14}C date of 410–570 cal BP or cal AD 1380–1540 (Beta 203868). The ceramics associated with this use floor were the red slipped El Vergel style that could date from the late pre-Hispanic period to the early Hispanic period. Thus, the corn could be terminal pre-Hispanic or early Hispanic in age. In stratum 2, 3 cm below the stratum containing the burned corn, a single chunk of charcoal dated to 530–730 cal BP or cal AD 1200–1420 (AA64654). The diagnostic ceramics associated with this stratum are El Vergel and clearly date to the late pre-Hispanic period. Stratum 3 yielded a ^{14}C date of 1150–1350 cal BP or cal AD 600–800 (AA13772). This date was obtained from charcoal retrieved from a hearth in the same context as several classic Pitrén-style sherds. Stratum 4 was dated to 1380–1620 cal BP or cal AD 330–570 (AA64657) and associated with Pitrén sherds as well.

Block B (Fig. 7.46): In stratum 2, a house floor dated to 1500–1740 cal BP or cal AD 210–450 (AA64651). This is the house floor that is connected across Block B and Test Pits 1–5. Pitrén sherds and ceramic types 2 and 11a–b were affiliated with this house context. In stratum 3, charcoal from two hearths were dated to 1560–1760 cal BP or cal AD 190–390 (AA64645) and 1560–1760 cal BP or cal AD 190–390 (AA64655) and again associated with Pitrén sherds. Five ^{14}C dates are in the middle to basal levels of stratum 3 and the upper level of stratum 4: 1500–1780 cal BP or

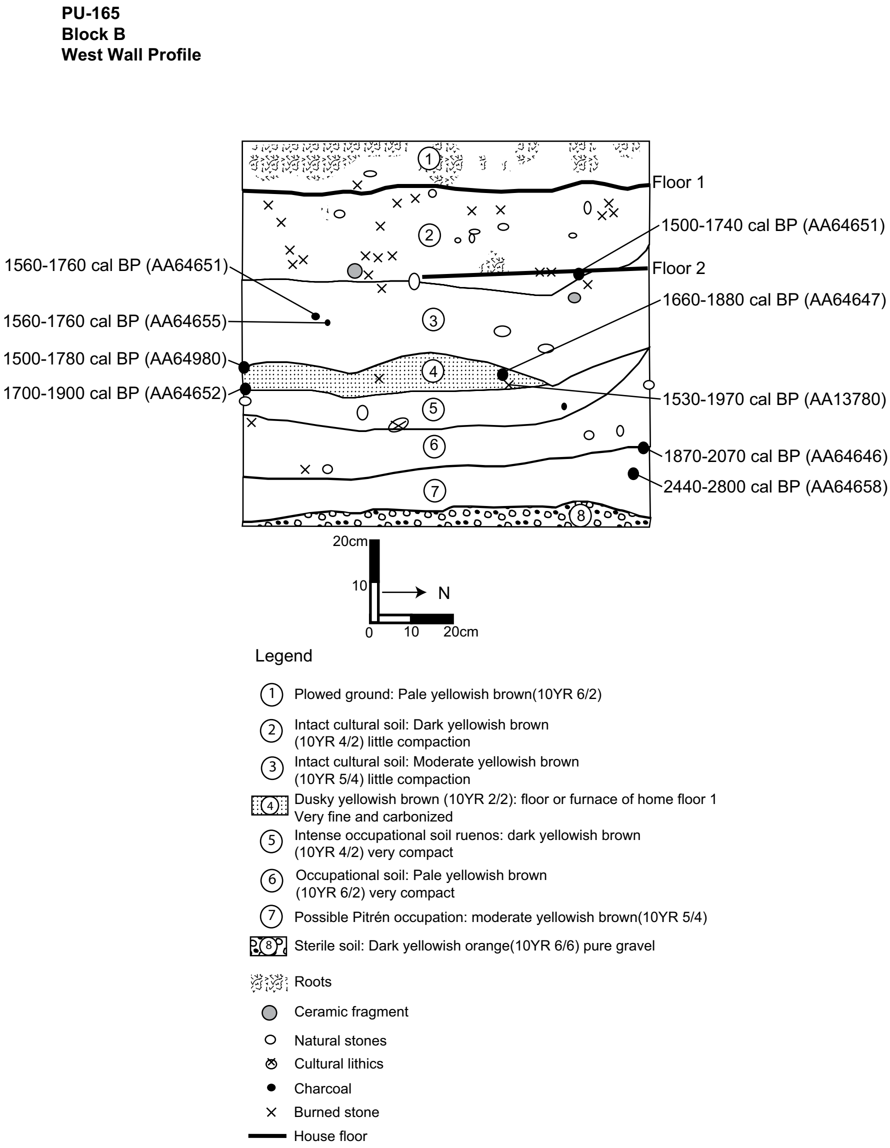


Fig. 7.45 Profile of Block B at site PU-165 showing the El Vergel (*Floor 1*) and Pitrén (*Floor 2*) floors and ^{14}C dates.

cal AD 170–450 (AA64980) and 1580–1860 cal BP or cal AD 90–370 (AA64979) for stratum 3 and 1660–1880 cal BP or cal AD 70–350 (AA64647), 1530–1970 cal BP or 20 cal BC-AD 420 (AA13780), and 1700–1900 cal BP or cal AD 50–250 (AA64652). All of these assays are associated with Pitrén sherds.

In the deeper levels of Block B, at 85–90 cm, there were Archaic layers associated with lithics and charcoal that dated to 1870–2070 cal BP or 120 cal BC-cal AD

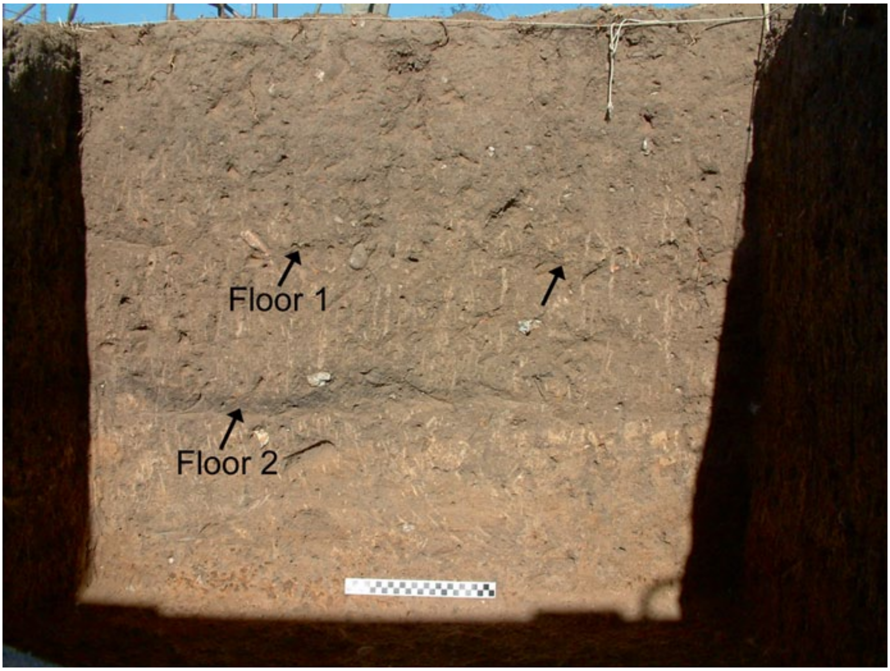


Fig. 7.46 Profile of Floors and 1 and 2 in Block B at site PU-165.

80 (AA64646), and 10 cm below this date is 2440–2800 cal BP or 490–850 cal BC (AA64658). No ceramics were associated with these levels. These latter two dates roughly correspond with the deeper levels of *Kuifilkuel* and *TrenTrenkuel*, where Archaic occupations were also documented.

Site Type: Domestic

Site Number: PU 166, *Kuifilkuel*
Map: Purén
GPS Coordinates: 687079E 5785099N
Dimensions: 50 × 50 m

Description: This site is located 1 km north of the Lumaco River, 1 km east of *Huitranlehue,* and 0.5 km north of PU-165. *Kuifikuel* is on a low terrace spur that overlooks a wetland about 2.5 km north of *TrenTrenkuel* (Fig. 7.47). The site is comprised of eight small mounds, measuring between 0.7 and 1.4 m high and 8 m wide. Three mounds are positioned together on a long, 0.6-m-high *ñichi* platform. Excavations in the largest mound yielded a possible burial chamber and several burned floors and offerings. Ceramics suggest that this mound dates to the late pre-Hispanic to Hispanic period. However, the radiocarbon dates from the mound present an anomalous chronological sequence presenting an interpretative paradox, as discussed below. Informants report that this mound complex was associated with ritual activities that once took place at the *nguillatun* field and artificial lagoon located in the *Huitranlehuekuel* complex about 0.8 km uphill to the northwest. *Kuel* 8 was partially excavated, as described below.

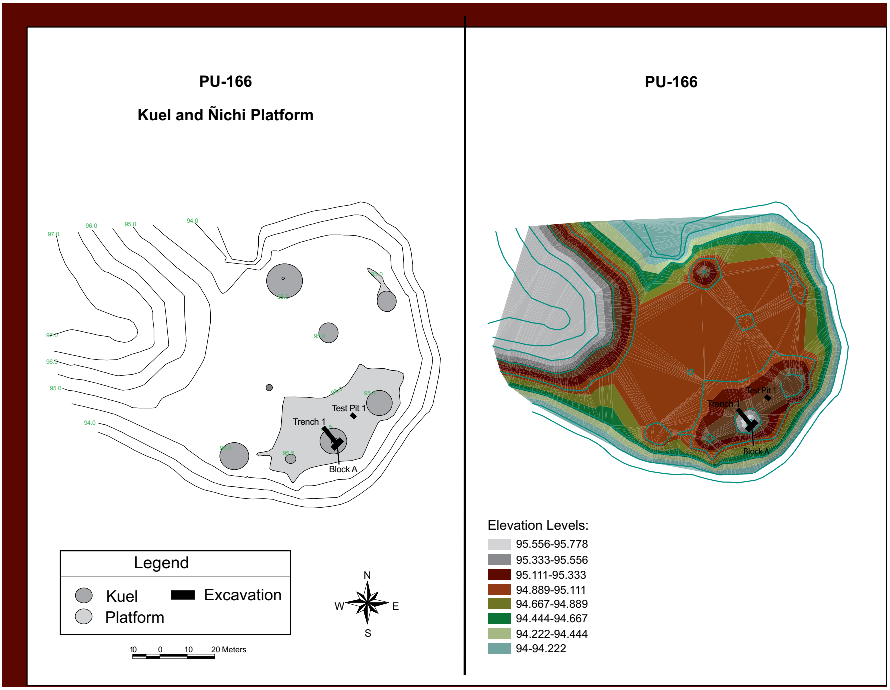


Fig. 7.47 Map of site PU-166.

Block A: A T-shaped trench was placed from the center of the largest mound to its base to the west.

Stratum 1 (1–20 cm): This is a compact soil that was a dark yellowish orange in color (10YR 6/6) that contained much quartzite rock. Two ceramics fragments (type 2) were found in the first stratum, in addition to small, burned lenses of charcoal and ash (10YR 7/4), at the 9- and 13-cm levels of the stratum. Just below the 13-cm mark was an inverted bell-shaped feature that had its aperture located between strata 1 and 2. This feature extended down into strata 2–5.

Stratum 2 (20–40 cm): The soils in stratum 2 changed colors to reddish brown and yellowish brown (5YR 4/4 and 10YR 5/4, respectively). A few lithics and ceramics (types 2 and 4) appeared in this level. At the 27-cm mark in the south section of this trench was a burned red stain with ash (Feature 1: 5YR 4/4). Two other stains were also found in this stratum and designated Features 2 a and b, both of the same color as Feature 1 (Fig. 7.48).

Stratum 3 (40–60 cm): This stratum was extremely compacted like the other strata but had no distinct staining like those. However, the stratum was comprised of a wider variety of soil types ranging in various browns (e.g., 5YR 4/4, 5YR 5/6 to 10YR 6/2, 10YR 5/4 and 10YR 5/6). Two ceramic fragments (types 2 and 11b) were recovered in this stratum.

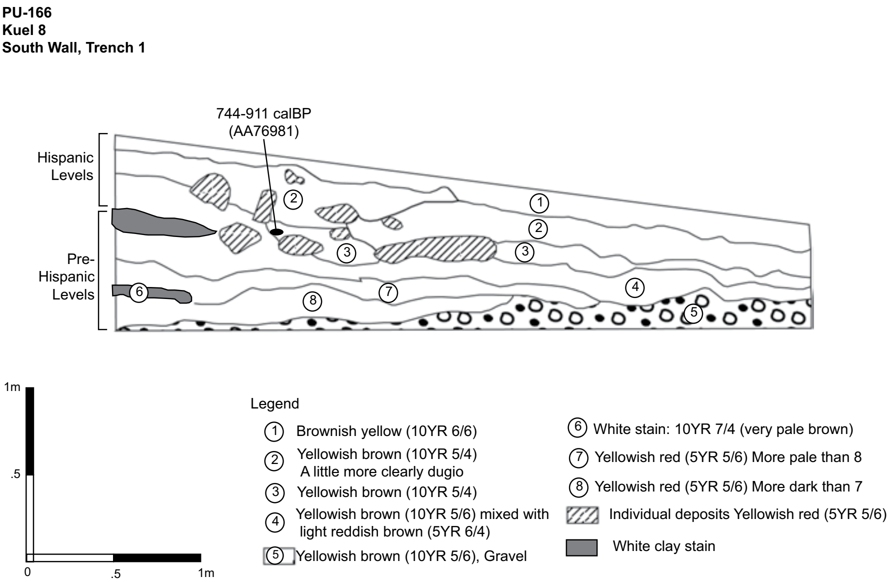


Fig. 7.48 Profile of site PU-166 showing radiocarbon date and pre-Hispanic and early Hispanic levels.

Stratum 4 (60–80 cm): This is a multicolored layer similar to stratum 3, with two distinct, separate soil types abutting each other to produce a clear border. One is a whitish clay (10YR 8/2) and the other an orangish yellow clay (10YR 7/8). The whitish clay is extremely hard and appears to be a use surface or floor. These clays extend from level 68 to 81 cm. Two ceramics (types 11a–b) were recovered from this stratum.

Stratum 5 (80 cm to 1.0 m): In stratum 5, a dark red clay surface (continuation of Feature 2) appears below the white clay floor and has a thickness of 5–8 cm. This floor has been disturbed by a pit in the shape of a tomb, but no burial traits, such as offerings or humans bones, were found inside it. Another white clay floor (10YR 8/2) appears at the 100-cm level (Feature 3). Three ceramic sherds (types 11b) were recovered from this stratum.

Stratum 6 (1.0–1.2 m): This is characterized by a series of red and yellow clay lenses (10YR 6/6), with occasional specks of charcoal and ash, in addition to two ceramic sherds (types 4 and 11a–b). These levels appear to be mound fill rather than prepared floors, such as those encountered in strata 2–5. Less charcoal and ash were found in these levels as well.

Stratum 7 (1.2–1.4 m): This stratum yielded a feature that was oriented northwest by southeast and rectangular in shape. The exposed section of this feature was 1 m wide and at least 1.5 m long and reminiscent of a tomb. The top of this feature was located at the 1.4-m level below the surface of the mound (Feature 4). Due to our agreement with the local Mapuche communities not to excavate tombs, we did not open this area of the mound. Two ceramics (type 11b) were found in the levels immediately above this feature.

Stratum 8 (1.2–1.6 m): This is the soil matrix around the possible tomb that was excavated between levels 1.4 and 1.8 m. Two types of soil were excavated: a dark clayey silt (5YR 6/4) and a lighter clayey silt (5YR 4/4). Four ceramics (types 11 a–b) were recovered in this stratum.

Stratum 9 (1.6–1.8 m): This represents levels 1.6–1.8 m and the interior edges of the possible tomb which was a concavity, placed immediately above a thin mantle of soil overlaying a gravelly layer of quartz. Two ceramics (type 11b?) were recovered from just outside the concavity. The natural soil base was revealed at the 1.8-m level and the excavated terminated.

Test Pit 1: This was a westward extension of Block A. Stratum 1 (0–20 cm) produced a small hearth at the 16-cm level and a few scattered ceramics (type 2) and flakes. The upper soil was light brown (5YR 5/6). Stratum 2 (20–40 cm) was similar to the base of stratum 1 in color and texture. Eleven ceramics (types 2 and 4) were recovered. Stratum 3 (40–60 cm) was a mixture of two soil types (10YR 5/4 and 5YR 5/6). Four ceramic fragments (types 2) were recovered from this level. Stratum 4 (60–80 cm) contained no ceramic material, but had several decomposed quartzite rocks that had been burned. Feature 3, the white clay floor in Block A, appears in the east end of this stratum. Stratum 5 (80–100 cm) is the base of the *kuel*; it contained no artifacts and interfaced with a thin soil mantle and the sterile rocky layer below.

Test Pit 2: The southwest corner of pit 2 (1 × 2 m) was placed 1.7 m south of Trench 1 in an off-mound area. Test Pit 2 appears to have been an area where apparent borrowed soil was piled for use on the mounds. It is characterized primarily by a clayey soil that contained low frequencies of late pre-Hispanic materials, in particular decorated ceramics (types 2, 6, and 11a). Pre-Hispanic materials were found below and above the clayey fill of strata 1 and 2, including the lowest excavated depths of 1.85 m below the mound surface (strata 3 and 4: 60–80 cm).

Strata 1–2 (0 cm to 1.0 m): Overlying the thick fill layer in part of the excavation unit was stratum 1 that contained some cultural materials (type 2 ceramics); stratum 1 may represent an ephemeral use surface associated with mound construction. It is unprepared and unlike the prepared floors in the mounds. Underlying stratum 1 is a thick layer (stratum 2, approximately 80 cm in some parts) of brown clayey silt (10YR 5/3) that is nearly sterile. This stratum is a friable sediment imported to the site from elsewhere and probably represents off-mound activities associated with construction of the *kuel*.

Stratum 3 (1.0–1.2 m): The deposits in this stratum are mostly homogeneous, suggesting that it does not represent disturbed fill. A few diagnostic artifacts (types 2 and 11a–b) were found within this stratum.

This test pit was useful for establishing a possible site function and chronology. It may indicate how the area around the mound was used and suggests that during the early to late pre-Hispanic period, the surfaces of the nearby mound may have been periodically cleared of refuse and/or imported sediments were stockpiled for future use.

Chronology: The radiocarbon chronology for this site presents an anomaly in the valley. The few diagnostics ceramics from the site date to the early and late pre-Hispanic period because they are associated with Pitrén and later wares in other excavated sites, thus placing the possible time range in the circa AD 900–1500-year period. One radiocarbon date from stratum 3 yielded a measure of 744–911 cal BP or cal AD 890–1256 (AA76981), a date that agrees with the El Vergel diagnostic sherds from this level.

On the other hand, the stratigraphically sequenced ^{14}C dates on single chunks of charcoal that are in chronological order place the mound in the BC or Archaic era. Yet, it is difficult to accept the possibility that this site dates more than 2,000 years ago. From top to bottom, the dates are 1920–2200 cal BP or 250 cal BC-cal AD 30 (AA64978), 2050–2370 cal BP or 100–420 cal BC (AA64656), 2090–2370 cal BP or 140–420 cal BC (AA64649), 2730–2970 cal BP or 780–1020 cal BC (AA64648), and 2740–2900 cal BP or 790–950 cal BC (AA64650). Each of these tightly aggregated dates are from charcoal in thin (1–2 cm) clusters (but not lenses) of burned earth that appear to be use surfaces within the mound as it built up. The only other explanation for this sequence of dates is that the mound was built in a single episode and the borrowed sediments were taken from a nearby older intact domestic site, whereby the borrowed soil was sequentially removed from this older site and placed in stratigraphic order in the mound.

Site Type: Ritual *kuel*

Site Number: PU-171
Map: Purén–Lumaco
GPS Coordinates: 683120E 5789883N
Dimensions: 60 × 100 m
Description: The site is located in the hills of a long grassy plain about 400 m west of *Maicoyakuel*. This is a domestic site situated above the wetlands of the confluence of the Guadaba, Purén, and Ipinco drainages.

Two test pits were placed in the site.

Test Pit 1 and 2: The same stratigraphy characterizes both pits.

Stratum 1 (0–10 cm): The soil is very compact, reddish yellow in color (5YR 4/4), and homogeneous throughout the layer. A few small sherds (types 2 and 11a) appeared in this stratum.

Stratum 2 (10–20 cm): The soil is a reddish orange (5YR 6/8), loamy clay. There are dark stains, possibly not cultural in origin. Large (7–8 cm long) sherds (type 2) appear in this stratum, which is below the plow zone. There are no features.

Stratum 3 (20–30 cm): The soil is a loamy clay, reddish orange in color (2.5YR 6/8). There are a few sherds (types 2 and 3) and fragments of grinding stones. There is no cultural material below the 25-cm level. At 25 cm, there is the interface with the layer of gravel and large rocks, which is the natural surface.

Chronology: circa AD 1200–1500
Site Type: Domestic

Site Number: PU-174
Map: Lumaco

GPS Coordinates: 0683572E 5789852N

Dimensions: 200 × 300 m

Description: This site is associated with three small mounds situated on a low knoll overlooking the valley floor. The mounds range in size from 0.7 to 1.4 m high and 8 to 12 m in diameter. They are flanked by a light scatter of ceramics that extend for ~150 m to the east and west of the mounds.

A single 1 × 3 m test trench was placed in the center of the middle mound. The soil matrix throughout the mound was a very compact, hard, homogeneous, light brown silty clay (10YR 8/2). One ceramic (type 2) was recovered from the first level. A thin lens of ash (5YR 7/2) was excavated at the 20-cm level in the northwest corner of the trench, which was associated with a small concentration of burned quartz pebbles. Another ashy lens was found between the 17 and 23-cm levels in the northwest corner of the trench. Levels 2 (20–40 cm) to 4 (60–80 cm) did not produce any artifacts or features. The basal levels were slightly less compact and defined by a yellowish brown sediment (10YR 4/6). One El Vergel sherd was recovered from the surface around the mound.

Chronology: circa AD 1000–1500?

Site Type: Ritual *kuel*

Site Number: PU-211 (previously LU-41 in Dillehay and Saavedra 2010)

Map: Purén

GPS Coordinates: 668613E 5791185N

Dimensions: 300 × 600 m

Description: This is a large domestic site located along the Boyeco Creek in the far northwest corner of the Purén valley about 2 km north of the town of Purén. In comparison to other sites in the valley, there is a relatively high density of broken grinding stones, lithics, and ceramics on the surface of the site, most of which were exposed by plowing. Two test pits were placed in the site. Ceramic types 1, 2, and 3 were recovered from the surface and subsurface levels.

Test Pit 1: This unit measured 1 × 2 m. There are two well-defined strata, the plowzone with a friable, organic soil (7.5YR 3/1, very dark gray), and stratum 2 that contained silt clay soils with a color of mostly a dark grayish brown (10YR 4/2). The plowzone extended to approximately 20 cm below the surface. Stratum 2 extended from ~20 to 50 cm throughout the unit, where it included one El Vergel sherd (type 3) and two discrete burned areas that appeared to be hearth-like in form, with burned clay used to assign TL occupation dates. Three sherds of types 1 and 2 were recovered from this unit.

Test Pit 2*:* This unit also measured 1 × 2 m. Its soils were thin and consisted almost entirely of organic material (7.5YR 2.5/1, black). There were no artifacts or features observed in this pit, though two ceramics (type 1) were found at the 35-cm level.

Chronology: Two TL dates on the burned clay features in Test Pit 1 dated to 405 +/− 35 BP or AD 1595 (UCTL 1558) for the upper one and 665 ± 40 BP or AD 1335 (UCTL 1559) for the lower one, placing the site in the late pre-Hispanic to early Hispanic period. These two dates agree with the sherd types associated with both burned areas, types 1 and 2 with the later date and type 3 with the earliest date.

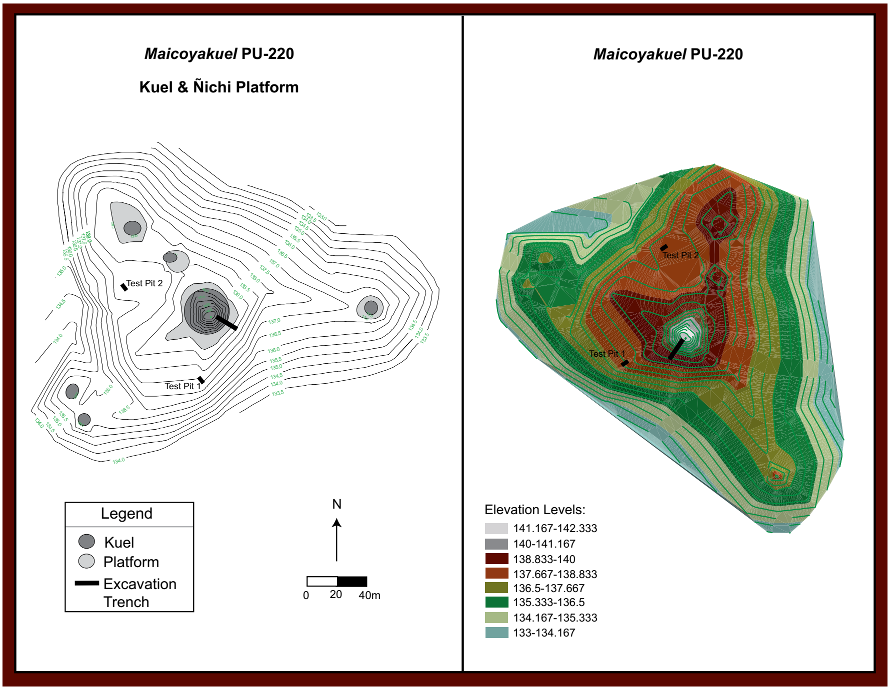


Fig. 7.49 Map of site PU-220.

Site Type: Domestic

Site Number: PU-220, *Maicoyakuel*
Map: Purén
GPS Coordinates: 680032E 5790434N
Dimensions: 10 m high; 22 m in diameter
Description: This is a mound complex defined by a plaza-like area, five *kuel,* and several large domestic sites in its vicinity (Fig. 7.49). The central Mound A is 10 m high and 22 m wide. Four small mounds (B–E) measure between 0.5 and 1 m high and between 4 and 6 m in diameter (Figs. 7.50 and 7.51). *Maicoyakuel* overlooks the ecologically richest wetland in the valley where the Ipinco, Purén, and Guadaba drainages and two chains of hills converge to form a bottleneck basin between the east and west sides of the valley. This area is mentioned frequently by the chroniclers as an important defensive locality, and a place where "*sementeras*" or agricultural fields were located (e.g., Rosales [1674] 1989:583; see Dillehay 2007: Chapter 3). Several agricultural terraces are located about 1 km north of *Maicoyakuel* and *Rapahuekuel* in the headwaters of Guadaba Creek and near *Huitranlebukuel* (Fig. 1.3).

A long central trench was placed in Mound A and three test pits were located in the plaza. Several TL and C^{14} dates obtained from burned floors in the base and on the top of the mound were processed between AD 535 and 1770, respectively

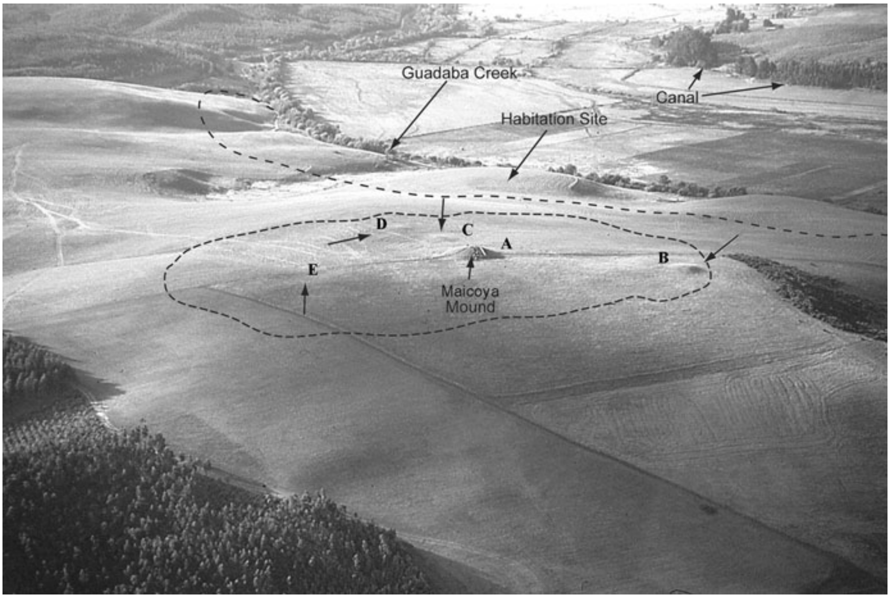


Fig. 7.50 Photo of *Maicoyakuel* showing main mound and outlying mounds.

(see Chapter 12). Around the base of Maicoya hill and on the flat knolls to the west are several domestic sites that contain late pre-Hispanic and late Hispanic materials. Local informants report that *Maicoyakuel* was an important *cahuin* (meeting) locality where leaders from different lineages gathered for political discourse and ceremony. Each leader spoke to the ritual audience from his own designated mound, which was located in an area of the *rehuekuel* complex that corresponded to the cardinal direction of the lands he ruled in the valley. That is, leaders and groups participating in events at the site had designated activity areas. If a leader lived in the northeast end of the valley, he spoke from Mound E; a leader from the southside of the valley orated from Mound D, and so on.

Off-Mound Soil Profile

A test pit was dug to establish the off-mound stratigraphy in *Maicoyakuel*. Layer 1 consisted of a humus soil that was 9–12 cm thick. Layer 2 was 16–23 cm thick and was clayey. Layer 3 was 20–27 cm thick and was homogeneous clay. Very little cultural material was recovered, although two sherds (type 2) in the upper levels were observed. There were no features.

Trench 1: The trench was laid out with six sections, 1 × 12 m, and excavated in 15-cm levels.

Stratum 1 (0–15 cm): In the high part of the trench, close to the center of the mound, a polishing stone and a fragment of a grinding stone were recovered. This

Fig. 7.51 View of burned ritual floor at *Maicoyakuel*.

first layer was a hard and compacted reddish yellow clayey soil (7.5YR 6/6). In the lower units, there was charcoal in the first centimeters. Two postholes were found in the first section at the top of the mound (Fig. 7.52).

Stratum 2 (15–30 cm): The soil was very hard and compact in sections 1 and 2 on the top of the *kuel*. In section 1, the two postholes continued between 10 and 15 cm below stratum 1. There is a concentration of ash and charcoal at 15–20 cm in a hard, burned reddened floor associated with the postholes. These features suggest that there was a ritual floor. This hard floor is not found in sections 3–5. The postholes are 7 and 9 cm in diameter, respectively.

Stratum 3 (30–45 cm): Three grinding stone fragments were excavated in this stratum near the center of the mound.

Stratum 4 (45–60 cm): There were six more fragments of grinding stones in this stratum. There were also five water-worn rocks from the river and three fractured, burned rocks in this stratum, in addition to a large amount of compact, hard, green yellowish brown (2.5Y 5/4), burned clay. There is a depression (6–8 cm in diameter) with a lot of charcoal and burned clay on a semi-compacted surface.

Strata 5–10 (60 cm to 1.3 m): The soil varies from compact to loose. There are concentrations of burned clay balls and clusters of stones with fragments of charcoal, especially in section 1 and 2, including fragments of grinding stones. It appears that several quartzite rocks were deliberately deposited on the top of this use surface or floor.

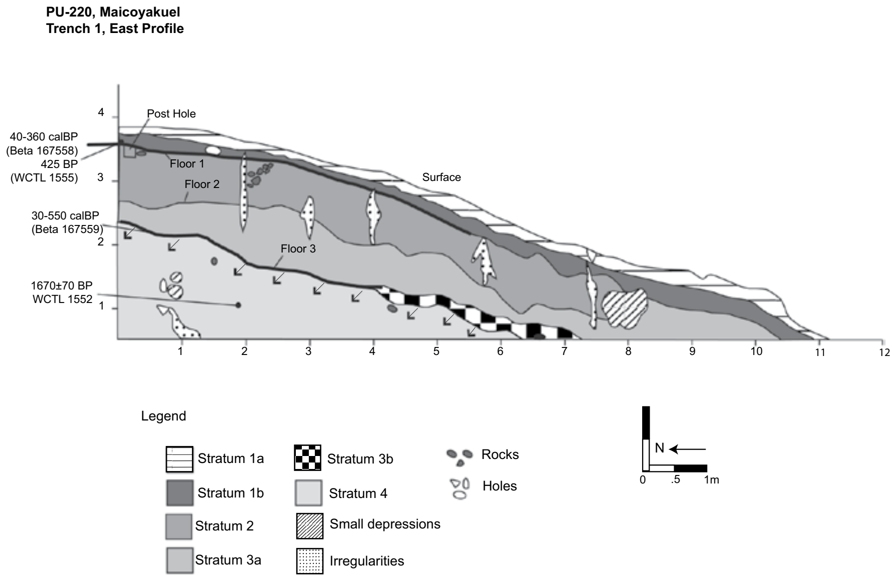


Fig. 7.52 Profile of *Maicoyakuel.*

Strata 11–22 (1.4–3.4 m): These strata are characterized by a semi-hard and clayey mound fill. Several small fragments of charcoal were found, but there was no other cultural material throughout these strata. At a depth of 1.7–1.9 m, a high concentration of charcoal was encountered. A possible posthole was encountered at 2.3 m in section 1 near the center. Concentrations of charcoal were observed at various levels. The most noteworthy aspect of the middle to lower strata is the visibility of individual poncho-loads of soil, which are evident in the profile walls. Each load measures about 15–40 cm in length and 10–5 cm in thickness. The form varies between crescent-shaped to semi-flat loads.

Test Pit 1: The soil is very compact and is dark brown in color (7.5YR 3/4) down to 45 cm. There were naturally occurring quartz fragments. There were pieces of charcoal and two sherds (type 1). There was no plow zone.

Chronology: A single chunk of charcoal from a small hearth in the floor of stratum 2 in the trench, where the two postholes were found, radiocarbon dated to 40–360 cal BP or cal AD 1590–1990 (Beta 167558). A TL date of 425 ± 40 BP or AD (UCTL 1555) was processed on a El Vergel sherd in direct context with this floor and dated charcoal, thus suggesting an age in the sixteenth century AD. A similar hearth-like feature in a prepared floor in stratum 3 yielded a date of 30–550 cal BP or cal AD 1400–1920 (Beta 167559), possibly representing an earlier ritual event in the fifteenth to sixteenth century AD. The few ceramics associated with these strata also suggest a time range in the sixteenth and seventeenth centuries. A burned area or small hearth in the middle levels of the mound was TL dated to 2535 ± 230 BP or 465 BC (UCTL 1554), but this must be incorrect and assayed on an older burned

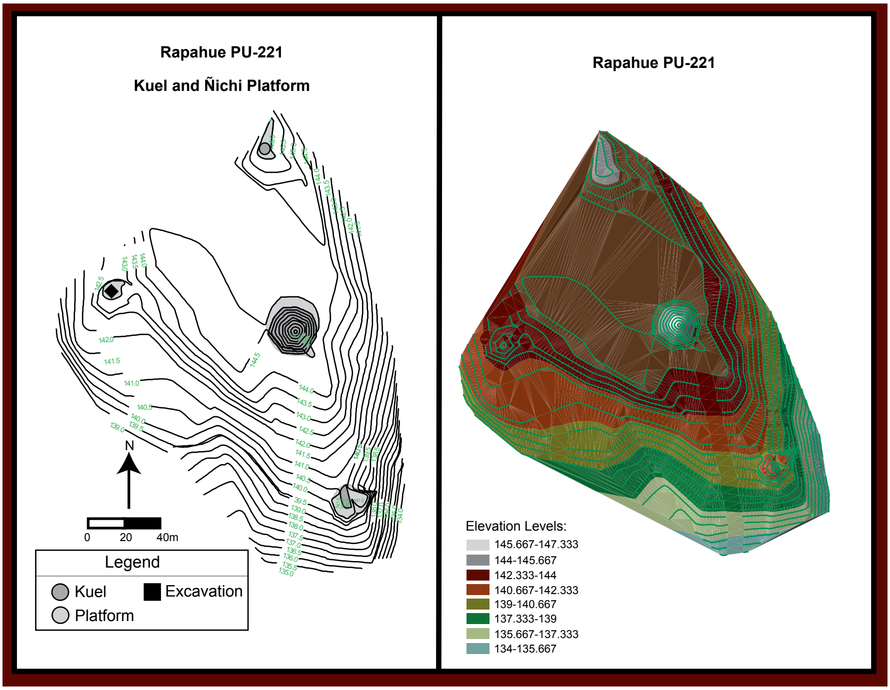


Fig. 7.53 Map of site PU-221.

clay fragment that was imported to the site as mound fill. Clay from a nearby burned area on the same level was processed at 1670±170 BP or AD 330 (UCTL1552), which best correspond to the age of this level. A hearth about 25 cm underneath the mound yielded a TL date of 2065±200 BP or AD 65 (UCTL 1553), which corresponds to an Archaic period of occupation. Approximately 40 cm below the base of the mound was a possible occupational level defined by a few burned stains and by eight basalt flakes. A ^{14}C date of 840–480 cal BC or 2790–2430 cal BP was obtained from a chunk of charcoal in one burned stain (Beta 167557). There must have been some mixing of the surface and subsurface cultural deposits when the mound was initially built to account for the earlier mound dates in the BC or Archaic era. The few ceramics from the middle and lower levels of the mound suggest a chronology of late Pitrén to early El Vergel construction.

Site Type: Ritual *kuel*

Site Number: PU-221-C, *Rapahuekuel*
Map: Purén
GPS Coordinates: 0677890E 5790563N
Dimensions: 1.2 m high and 5 m in diameter
Description: This complex of four *kuel* and a heavily modified and very extensive *ñichi* (Fig. 7.53) is located on a high hill on the north side of the middle valley

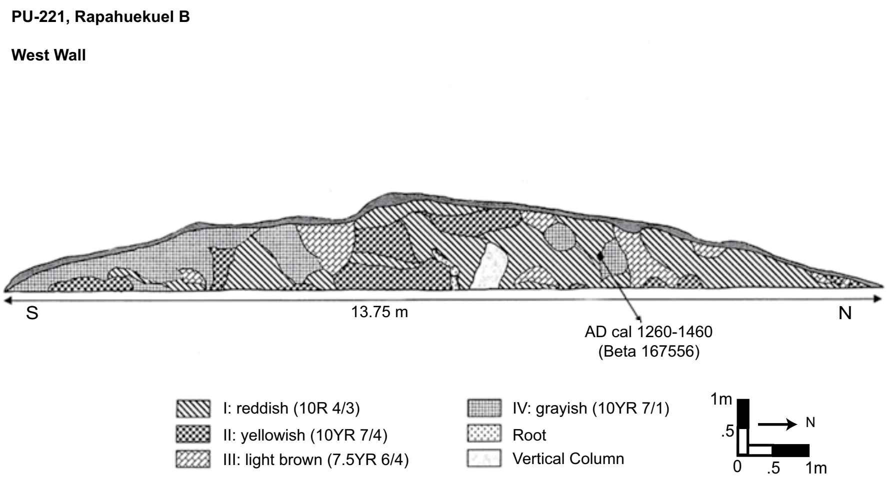


Fig. 7.54 Profile of *Kuel* B at *Rapahuekuel.*

about 2 km west of *Maicoyakuel*. The *ñichi* upon which the mounds sit measures about 300×350 m. Mound A is the largest structure and measures about 8 m high and 22 m wide. Positioned equidistant around the base of the mound are ten large oak trees, which were planted by the Mapuche at least two centuries ago, according to informants and to a count of the tree rings in one cored tree (Juan Eduardo Diaz Vaz, personal communication, 2005). Mound B is located 150 m south of Mound A and has been cut by a logging road. It measures 1.6 m high and 17 m wide. Mounds C and D are small and measure about 1.2 m high and 9 m wide. They are placed about 100 m northwest of Mound A.

Excavations in Mounds B and C revealed intermittent layered floors with burned areas and broken sherds and culturally sterile fills similar to those observed in other excavated mounds. Located immediately east of Mounds A and D are several elongated and flattened (modern or ancient?) earthworks that suggest no obvious function. A large domestic site associated with a deep moat is located 500 m downslope on the southeast side of the hill near a rich wetland. Other large domestic sites and two cemeteries are located west of this complex. Project geologists have trenched the modified surface and hillsides of the *ñichi* at *Rapahuekuel* and have shown that approximately 1 m of top sediment was removed to create its flattened surface.

Mound B

This mound was cut by a timber road, which exposed its stratigraphy. Figure 7.54 presents a profile of the north–south oriented wall, revealing the numerous individual pockets or poncho-loads of soil that formed it. The mound measures ~1.5 m high and 15 m in diameter. No ceramics or other artifacts were recovered from cleaning the profile wall, though three type 4 ceramic sherds were found in the adjacent road cut and were presumed to have eroded from the structure. However, several small ash and charcoal lenses were observed in the profile, which are similar to those recorded in other *kuel*.

Test Pit 1: A 2 × 2 m test pit was placed in Mound C.

Stratum 1 (0–20 cm): The soil is a clayey humus with abundant roots from the trees planted on the top of the *kuel*. In the lower part of the stratum, a heavier soil with a yellow clay appeared (10YR 8/6). No cultural materials were recovered.

Stratum 2 (20–40 cm): The soil was clayey with some loose sectors that are pockets of humus produced by the decomposition of roots; many tree roots were present. There is charcoal in all the levels, but it is not clear whether it is from ancient or modern activity or contemporary with an area of cultural activity off the mound. No features or cultural materials were recovered.

Stratum 3 (40–60 cm): Toward the west wall, there is a lot of fractured quartz and the soil is fine yellow clayey (10YR 7/3). Toward the east wall, the soil is brown (7.5YR 7/4) and there is a large quantity of decomposing roots. At 50 cm, there is a layer with many small charcoal fragments and burned clay. No evidence of cultural activity was recovered.

Stratum 4 (60–80 cm): The soil is light brown loamy clay (7.5YR 7/4), more compact in some areas than in others. Although there are no cultural remains in this stratum, there are fragments of charcoal. Distinct kinds of clay (e.g., 7.5YR 3/4, 7.5YR 7/8, 5YR 3/4) appeared toward the base of the stratum.

Stratum 5 (80 cm to 1.2 m): The soil is largely yellowish brown loamy clay (5YR 6/6), with some areas more compact and others with roots or humus. No cultural material is present. There is a little scattered charcoal and some noncultural fractured quartz. On the northwest side of the pit, there are different kinds of clay (same as stratum 4) used for the building up of the *kuel*.

Stratum 6 (1.2–1.4 m): The soil is loamy dark gray clay (5YR 4/1) and some humus. There were no cultural remains. The soil profile reveals very clear evidence of the individual portions or basketfuls of clay used in building the *kuel*. In general, these portions are 10–15 cm thick and 25–35 cm long. They overlap in an irregular fashion. Generally, also they are of different kinds of soil, including black, dark red, medium dark red, yellow, and dark olive yellow gray (e.g., 5YR 2.5/1, 5YR 5/4, 2.5Y N7/, 5Y 3/2).

Stratum 7 (1.4–1.6 m): The soil is a compact loamy light olive brown clay (2.5Y 6/6). There was no evidence of cultural activity. There were no cultural artifacts. The portions of soil of various types deposited by poncho-loads of soils can be seen clearly.

Chronology: A single chunk of charcoal removed from a thin burned use surface at a depth of 81 cm in Mound B yielded a ^{14}C date of 690–490 cal BP cal AD 1260–1460 (Beta 167556, erroneously reported in Dillehay 2007: 465 as Beta 167559). The ceramics present at site agree with this single date, placing Mound B in the late pre-Hispanic Period.

Site Type: Ritual *kuel*

Site Number: PU-271
Map: Lumaco
GPS Coordinates: 0682511E 5786132N
Dimensions: 0.5 × 0.5 km

Fig. 7.55 View of stone terraces at *Wenucolla.*

Description: This is a site characterized by numerous stone-faced terraces each measuring between 1 × 3 and 2 × 10 m in size and located along the summit and midslopes of the southside of the sacred *Wenucolla* hill on the northwest side of the valley. *Wenucolla* is a sacred place located on top of an inactive volcano that overlooks the Purén and Lumaco Valley and was used by shamans in the immediate past (Dillehay 2007). *Wenucolla* means the great stairway to the upper world of the deities and ancestors (Fig. 7.55). The most conspicuous and centrally located structure on top of *Wenucolla* is called *usnan* in Mapudungun and said to relate to the *miñchemapu* underworld and to imaginary lines that extend from the hill to distant *rehuekuel*. This is a small rectangular stone structure that has a flat elevated platform facing the east. We have recorded more than 400 other stone structures and terraces built around the top of *Wenucolla* and facing in all cardinal directions (see Dillehay 2007). Local *machi* say that the structures are *deumerupu*, meaning a large, built place that has roads or lines radiating in all directions from it. Located along these lines are *kuel*, *rehuekuel*, and other sacred places in the valley. Two test pits were placed in two of the stone-lined structures on the upper south face of the volcano. (It should be noted that among these stone lines and terraces also are stone piles that were produced by the local landowner over the past several years to clear some land for agriculture. Some of these were built on top of the ancient structures.)

Test Pit 1: The first level was characterized by two layers of carbon, burned clay, and ceramic fragments (5YR 4/4). Separating the two burned areas was a light gray ashy lens (5YR 3/2). The center of the pit and thus the terrace consisted of numerous

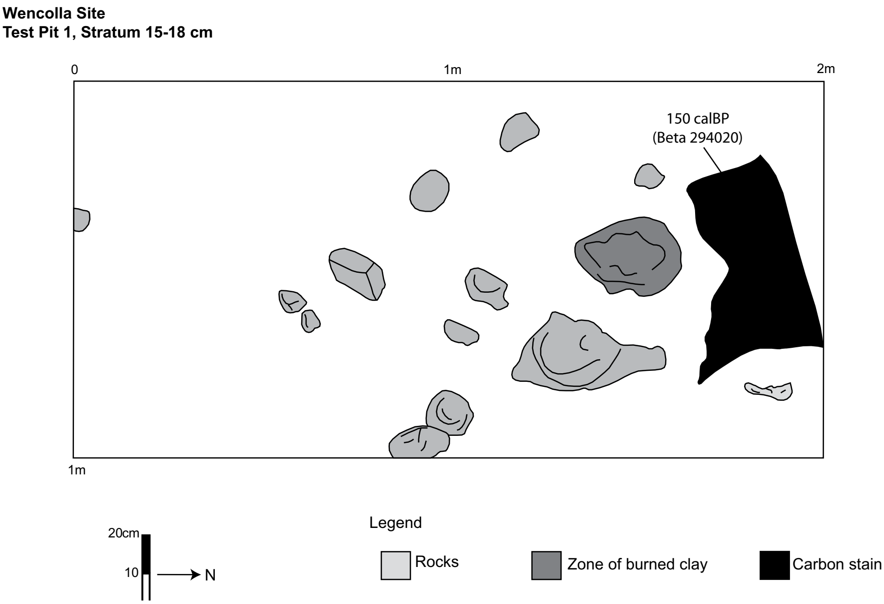


Fig. 7.56 Plan of terraces at *Wenucolla.*

small rocks, some of which were burned. At the 15-cm level, a compacted reddish (2.5YR 4/2) use surface and a small hearth were located, with charcoal and ash in the interior (Fig. 7.56). The excavation terminated at the 45-cm level when sterile soil was reached.

Test Pit 2: The first levels of this pit were defined by a ceramic (type 1) and a lens of ash, charcoal, and quartz rocks, suggesting it was a use surface. Level 2 produced numerous burned clay balls, a compacted reddish gray surface (5YR 3/2), and some ash and charcoal. Bedrock was reached at the 28-cm level.

Both test pits suggest ephemeral burning activities associated with these stone-faced terraces.

Chronology: One ^{14}C date from a single chunk of charcoal in the unplowed lower level of Test Pit 1 was processed at 150 cal BP or cal AD 1660–1890 (Beta 294020), placing it in the historic period.

Site Type: Sacred hill

Lastly, test pits were placed in a few other sites (PU-84, PU-89, Lu-34) but yielded little useful results for this study and thus are not reported here.

Mound Stratigraphy and Construction Sequence

We know from Mapuche ethnography (Dillehay 1985, 1992, 2007) that mound building rites are called *kueltun* (*cueltun*), which is organized by a *machi* shaman, the main mediator between the living and the dead. The organization of corporate-lineage labor (*regua*) in the period construction of a mound is similar to that of the seating arrangement at *nguillatun* fields, which is organized by the cardinal directions of family residency with the local community pattern. With respect to *kuel*, families living to the east of the mound pack dirt on the east side, those to the west on the west side, and so forth. The local lineages gather local sediments and pack in the center (*renin*) and on all sides. Distant or nonlocal lineages bring sediment from other valleys and pack on the edges corresponding to their cardinal directions. Thus, the layers and different soils in the mound are derived from different lineage homelands that represent the social catchment area of the deceased through marriage alliances and the perdurable relationships between consanguinally related lineages; the mounds are, in short, a nucleation of "social soil" (Dillehay 1992, pp. 404–410). Through their construction, the mound layers created new spaces and expressions for a different meaning and type of interaction between the people producing the layers.

The presence of poncho-loads of different types of soil is minimal or nonexistent in the upper or early Hispanic levels of all excavated mound sites. As described throughout the results of site excavations above, these levels generally depict local homogeneous soil deposits. There was no distinctive aesthetics, mixed colors, or decorative embellishment to them, which probably represent decay in the social process of producing mounds during the early Hispanic period. Nearly all of these homogeneous levels appear to date to the early Hispanic period, as indicated by Spanish *tejas*, late Hispanic sherds, and TL or ^{14}C dates. If fictive or new kin from distant areas replaced some local kin during the war years, the former had no local family land in the valley. They probably gathered local soil to pack the mound during public ritual, which would account for the homogeneity or standardization of soil types in the upper levels.

Prior to the radiocarbon dated circa AD 1550 levels in *kuels*, the mound sediments were derived from different soil horizons in the valley and in neighboring depositional basins (Angol, Tirua, Pai Cavi; see Chapter 16). Chapter 16 reports on the geological and sedimentological studies performed by the project geologists in identifying the facies and stratigraphic units from which these sediments came at three mounds, *TrenTrenkuel, Maicoyakuel*, and *Boyoncokuel.* Matches between depositional environments and mound strata were based on color matching (Munsell Color Chart), texture, and friabilty. Detailed study of the deposits also reveals information about the period of deposition of the mound layers, whether the deposits were wet or dry, covered by vegetation, and the internal architectural structure of the techniques employed in building the structure. Below is a schematic sequence of the stages of mound building reconstructed from the geological and cultural stratigraphy at these sites.

Phase 1: This stage involved leveling the hilltop or terrace in order to prepare a relatively flat *ñichi* or *terra plein.* As discussed in Chapter 16, the top center surface of the hill, where LU-69 or *TrenTrenkuel* is located, was heavily modified and indicative of at least 1 m of top soil removed to prepare the surface upon which the mound was constructed. The study performed by Seguel et al. (Chapter 16) show that most of the removed topsoil was placed on the upper side slopes of the hill to deliberately give it a symmetrical beveled appearance. This beveled *terra plein* formed the *ñichi* platform for the mound and thus constitutes a major portion of the monument itself. The largest *ñichi* are those of the *TrenTrenkuel* and *Rehuekuel* in Butarincon, *Loloncokuel* near Purén, and *Huitranlebu*. The removed soil also was used to form the basal platform or lower strata of some mounds.

Phase 2: This is where a haystacking technique begins. That is, a series of relatively thin (50–80 cm) distinct layers of local and nonlocal sediments are laid down in poncho-loads to form a basal ring of deposits or a retention berm. These sediments were probably placed by local *lof* communities, because the basal soils are derived from local deposits. These layers form a relatively flat mound surface and, as evidenced at *TrenTrenkuel*, an outer ring or berm that was built up to 1–1.5 m in height, which subsequently was infilled with sediments from both local and nonlocal sources. This haystacking and fill technique is used to maintain the steep slope of the mound by retaining or holding the fill in the center zone. It is at this point that systematically piled poncho-loads of local or non-local soil are placed around the mound, with the location of each load corresponding to the microcosm of the family community pattern. The study by Seguel et al. indicates that the poncho-loads were placed while the sediment was wet, as evidenced by the sharp lines of demarcation between each load stacked on the other. They also suggest that the sediments in some *kuel* reveal intermittent periods of wetness and dryness, which stands to reason given the periodicity of building the mound layer by layer. A distinct, homogeneous soil layer over the whole area is not laid down. The haystacking technique, with the outer solid layers placed at an ∼45 angle, and the relatively smaller and flat infilling poncho-loads increased the stability of the mound. The stability of the mound also is suggested by the bulk density and stability of individual soil types specifically selected for placement in the individual strata (see Chapter 16).

Phase 3: This is the vertical and horizontal extension of the mound that results from multiple building use episodes. The outer retention walls are continually placed at higher levels and in a smaller circumference as the mound gains height, in order to strengthen the inner fill, yet are placed more toward the central part of the mound as the structure grows in height. This is likely due to the stress load of the upper weight of the mound on the outer rings. Thus, by placing internal retention or haystacking walls, the stress is reduced.

The duration of layer placement and mound building can partially be reconstructed by the radiocarbon dates and by any slope wash detected. The individual basket loads were placed with wet clay and soils, as evidenced by the sharp borders between them (see Chapter 16 and profiles of excavated mounds in this chapter). The surfaces of each major stratum within the mounds also reveal slight to moderate slope wash suggesting a period of exposure to weathering elements and rain. This exposure probably represents a termination phase of the mound construction when the ritual capping layer was finished. The relative absence of bioturbation in each stratum suggests little exposure time and the possibility that capping layers were covered with grass. As noted by Seguel et al. in Chapter 16, the absence of micro-graded bedding and slope wash within the individual strata and between each load suggests rapid construction of each stratum. This observation corresponds well with the ethnographic information that states that the capping episodes usually lasted 2–3 days.

All excavated mounds are characterized by several thin ritual or use floors (~ 1–3 cm) positioned at the top center of the structure. These floors almost always contain small areas (~ 30 × 60 cm) characterized by ash, crushed or trampled wood charcoal, sherd fragments, specks of burned clay, and compacted sediments. Occasionally present are small fragments of burned and unburned animal bones. Not recovered from the floors was evidence for the sacred *canelo* or *foye* tree (*Drymis winteri)* of the Mapuche, although it may be present among the unidentified charcoal remains studied from the floors (see Chapter 14). Instead, another sacred or medicinal tree, *Nothofagus,* was recovered in abundance from these floors and may have been used as a scared plant in ritual in the same manner that the *foye* is used today. The wood charcoal presented in Chapter 14 also indicates trampling of the floors as evidenced by the excessively small fragments of wood charcoal and ash embedded in compacted surfaces.

Although individual strata probably represent short periods of use, the few diagnostic ceramics and ^{14}C and TL recovered from mounds represent a wide time span. The dates for most mounds suggest a use from the early pre-Hispanic to the Hispanic period, especially for *TrenTrenkuel*.

In summary, the above descriptions of the archaeological excavations primarily represent the late pre-Hispanic and early Hispanic periods and the material expression of a patrilineal and patriarchical domestic and public site patterning. The differences in the heterogeneity and homogeneity of the internal soil layers of the mounds suggest a decrease in the aesthetics and social structure of building over time. In line with the hypotheses of this study, which focus on political integration of local and nonlocal groups for defense against outsiders, the loss of soil diversity in the upper or early Hispanic levels of mounds is believed to indicate a greater influx of distant fragmented groups who contributed only local soil to the mound. Homogeneity or standardization of soils likely represents a break down in local family and patrilineage hierarchy, probably designed to integrate distinct groups and possibly break down local hierarchy and inequality.

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Chapter 8
Archaeobotanical Remains

Claudia Silva Díaz

Introduction

Despite the fact that the Araucanian ceremonial mounds are described in a few Spanish chronicles (see Dillehay 1986), are mentioned briefly by Latcham as *túmulos* (1915, 1924), and continue to be remembered and maintained by the members of contemporary Mapuche communities, they were marginalized until recently in social science research. Nevertheless, this situation has been changing slowly, beginning with the ethnoarchaeological reports of Dillehay (1986, 2007), which emphasize the existence of religious architecture, not just *túmulos,* among the Mapuche of the late pre-Hispanic and early Hispanic periods and, as a consequence, the possibility of considering this society as a chiefdom-like polity. This is because the mounds in question, as public political and ceremonial places, were associated with activities of the elite, and, in general, were used as gathering places in which social and political ties were renewed through rituals or ceremonies. All of this indicates the creation and maintenance of societies, which, for different reasons, established differences among their members and, above all, that these distinctions were expressed in their sacred landscape.

The sacred *kuel* architecture was the scene for various types of ceremonies. Some *kuel* also served a funerary purpose, with the inaugural ritual taking place at the moment of burying the deceased and placing the first layers of soil to form a mound. Pineda y Bascuñán ([1673] 1974), in turn, tells us that after the burial was completed, the bereaved gathered around the *kuel* to drink *chicha* (Dillehay 1986). Afterwards, the association between *kuel*, rites, and food continued during occasional visits to the funerary mounds to carry out rituals that maintained the link between the living and their ancestors. Some *kuel* are located within the central plazas of *nguillatun* presently in use, a ceremony in which food and *chicha* also have an important place, either as offerings to the *rehue* or as gifts among the participants (Dillehay 2007).

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One of the objectives of the excavations in Purén and Lumaco was the search for evidence related to the intentional deposition and consumption of plant foods in *kuel* and also in the residential contexts. Thus, sediment samples were systematically collected from the excavation units, with special attention given to the features observed in the matrix, such as combustion or hearth areas. These samples were treated by the flotation technique, which allowed recovery of charred plant remains, particularly seeds, which were the subject of carpological analyses, and the results are shown below. Before proceeding, the agricultural activities of the groups that inhabited the Araucanía or the "*Estado*" (*sensu* Zavala and Dillehay 2010) from about AD 1000 to the early Hispanic period need a brief review (Latcham 1936; Aldunate 1989; Bullock 1958, Dillehay 1990; Bengoa 2003; Sanchez et al. 2004; Silva 2010).

Prior to our knowledge of the raised agricultural fields and drainage canals in the region, archaeobotanical evidence of pre-Hispanic crop management had been mentioned in sixteenth-century documents (e.g., Valdivia [1550–1554] 1929; Bibar [1558] 1966), although there was no certainty about the historical depth of these customs as they related to the Spanish. The chronicles mention orchards adjacent to homes, where crops were already known in more northern areas, such as corn (*Zea mays*), potato (*Solanum tuberosum*), quinoa (*Chenopodium quinoa*), chile pepper (*Capsicum annuum*), squash (*Cucurbita* sp.), and beans (*Phaseolus vulgaris*), along with local Araucanian species like mango (*Bromus mango*), teca (*B. berteroanus*), lanco (*B. catharticus*), and madi (*Madia sativa*). These domestic and productive areas in the valleys were near water sources to ensure the natural irrigation of crops. Water resource management in the study area addressed the abundance of water, which led to the construction of raised agriculture platforms and channel drainages in the wetlands of Purén, Lago Budi, and the Imperial River (Dillehay 2007; Dillehay et al. 2009).

The first archaeobotanical evidence on agriculture associated with the El Vergel culture was generated from carpological analysis during the 1990s, which recovered charred seeds from Mocha Island and near the mountains of Nahuelbuta at sites P5-1 and P31-1 (Figs. 8.1 and 8.2). These sites yielded quinoa, corn, gender-related grasses of *Bromus*, and *Solanum,* which may correspond to the common potato (Rojas and Cardemil 1995, Sanchez et al. 2004). According to the stratigraphic order of these plants in these sites, it was suggested that quinoa was grown before corn and potatoes, as it appears from the deeper layers of the cultural deposits. Along with this evidence, a possible hoe made from a whalebone was also recovered (Fig. 8.3, Sanchez et al. 2004).

Based on these data, we know that crop cultivation was part of the subsistence system in late pre-Hispanic times (Sanchez et al. 2004; Silva 2010). Here lies the importance of the analysis conducted for sites PU-165, PU-166, and LU-69, which are located on the lower eastern slopes of the Nahuelbuta mountain range. This area is thought to have been (Aldunate 1989) the best ecological condition for the development of agriculture. The data from Purén and Lumaco represent the first time that carpological evidence of ceremonial sites have been studied, so our knowledge

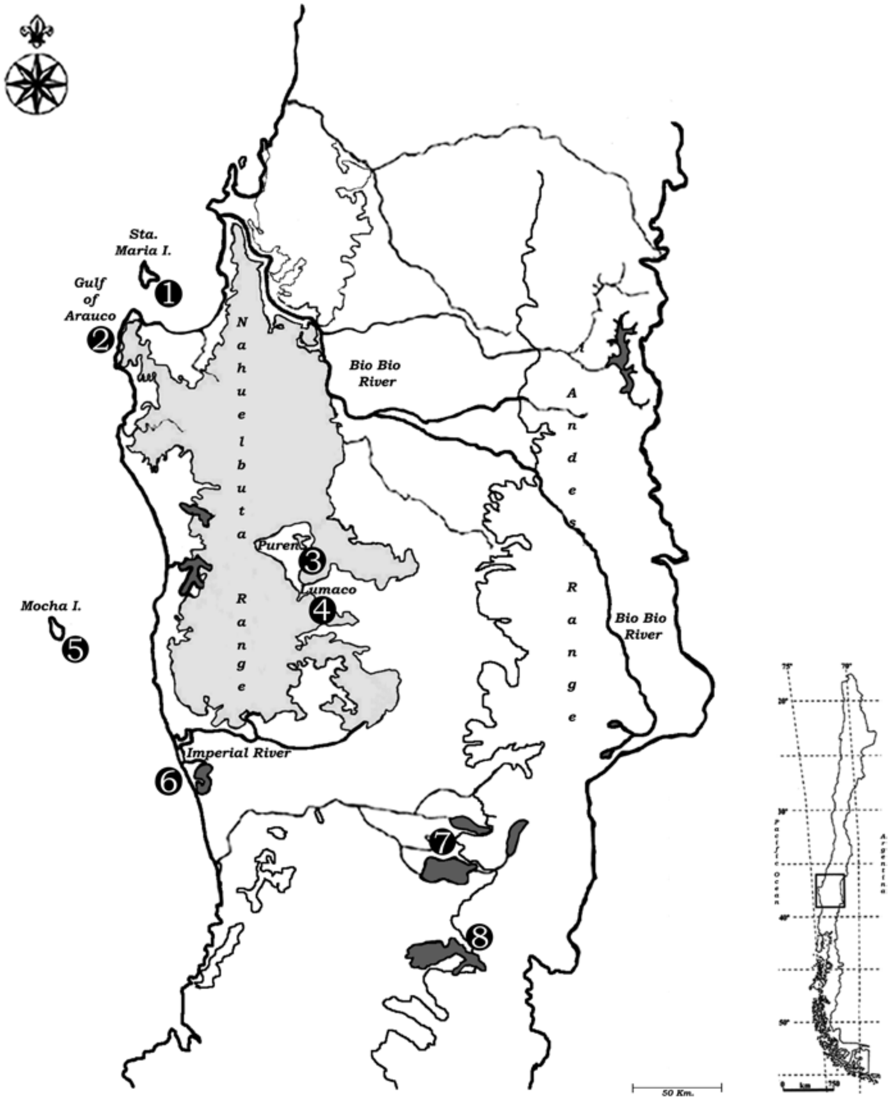

Fig. 8.1 Archaeological sites mentioned in the text. (Graphic: J. P. Castro).

of plant resources exploited in pre-Hispanic times expands not only in spatial terms but also in contextual terms.

Finally, although located in the Andean zone of south-central Chile, the archaeobotanical findings of the Calafquén and Villarrica Lakes should also be mentioned (Adán and Mera 2011). They also reveal that both wild and domestic plants were part of the pre-Hispanic economy. At the Marifilo-1 site, *B. mango*/*unioloides* seeds, along with *Aristotelia chilensis* (maqui), *Gevuina avellana* (hazelnut), Podo-

Fig. 8.2 View of the Nahuelbuta range where the predominant Nahuelbuta Montane Araucaria (*foreground*) are found. (Photo: L. Abello).

carpaceae (conifers), and *Peumus boldus* (boldo) were found in ceramic period levels. Chenopodiaceae (*Chenopodium sp.*) dated around AD 350 at the Los Chilcos site; and at Villarrica W10, maize (*Z. mays*) dated to the ninth century AD.

Method and Carpological Results

Sites PU-165, PU-166, and LU-69 are located on the lower eastern slope of the Nahuelbuta range in the Purén and Lumaco Valley (lat 38°, long 72°). PU-165 is a domestic site where 23 sediment samples were collected (Table 8.1); PU-166 is a *kuel* site where two samples were retrieved from the same feature: Block A / Level 8 / Feature 2B and Block A / Level 9 / Feature 2B. Finally, LU-69 is a ceremonial mound where seven sediment samples were taken (Table 8.2).

Regarding the recovery of material from the sediments of the archaeobotanical samples, the technique used was an assisted flotation machine in order to collect debris, that is, fruits and seeds, as well as fragments of charcoal. Flotation involved subjecting the sediments to a constant flow of water into a container, allowing them to segregate a light fraction (material floating as plant residues) and a heavy fraction (ceramics, lithic, bone, malacological, vegetables, etc.; Watson 1976; Greig 1989). The light fraction was segregated by size ranging from 500 μm to 2 mm.

Fig. 8.3 A possible whalebone hoe from the P25-1 site at Mocha Island. (Natural History Museum Collection of Concepción). Similar results have occurred in other coastal sites: Quinoa and corn were associated with hearths in the residential site of El Arenal 1, located south of the Gulf of Arauco (Contreras et al. 2005). Also on the Santa María Island, four sites (SM-6, SM-29, SM-30, and SM-44) (Massone et al. 2007; Silva 2010) yielded wild plants that were economically important, including *Fragaria chiloensis* (wild strawberry or miñe-miñe), *Cryptocarya alba* (peumo), *Cyperus* sp. (ñocha or lleivún), *Muehlenbeckia hastulata* (quilo), and *Typha angustifolia* (batro or totora). Harvesting plants was clearly part of a broad economic strategy that included hunting, fishing, and gathering marine and terrestrial resources, together with the management of domestic animals and plants. Concerning the latter, quinoa grains found on site SM-30 were dated directly to 570 ± 40 years BP, which corresponds to the latter part of the El Vergel culture. Recently, new results from Mocha Island at sites P31-1 and P29-1 (Roa et al. 2012) have provided new information on the coexistence of wild and domestic plants. Most interesting was the finding of a bean seed (*P. vulgaris*) from carpi P29-1, and other types of quinoa (*C. quinoa* and *Chenopodium sp.*) dated around AD 1,000.

The carpal remains recovered were analyzed under a binocular microscope at 20x and 10x. Also used were a specialized bibliography (Martin and Barkley 1973, Matthei 1995, Hoffman 1997, Mösbach 1999), a reference collection, and expert advice on grasses[1] (origin, endemic or native and *adventicio,*[2] and conservation, charred and uncharred). The last variable is important, because the study area is characterized by a high fluctuation of humidity and temperature, which does not allow for good conservation of plant material. Thus, the charred state of carpal remains should be a test of its anthropic pre- or post-Hispanic origin.

Site PU-165

The seeds from this domestic site are abundant and in good condition. We counted and identified 4,007 carpal remains, of which 95 % were grouped into 18 plant taxa (Table 8.1). The most abundant was quinoa (*C. quinoa*) in all excavation units. A large number (*n* = 3,364) of these remains were seeds (84 %), which were retrieved from a hearth in Block A (Feature 1/sublevel 1). This feature alone contained 3,280

[1] Carol Peña. Biologist and Master in Botany, Universidad de Concepción.

[2] Endemic refers to plant species that are unique to a territory, while the native category refers to those plants more widely dispersed incorporated into the local flora before the arrival of Europeans. In contrast, the taxa that are recorded from the historical era are considered *adventicios* or adventitious.

Table 8.1 Source of site sediment samples at PU-165.

Excavation unit	Layer	Feature	Level
Pit 2	3		42–43 cm
	5		65 cm
	6		70–80 cm
Pit 3	2		28–30 cm
	3		65 cm
	4		45–60 cm
			48–50 cm
	5		70–72 cm
Pit 4	2		18–20 cm
	3		30–45 cm
	5		63–65 cm
	6		73–75 cm
Block A	2		28–30 cm
	3		35–80 cm
	4		
Trench A		1 (stove)	sublevel 1
		2	3 (40–42 cm)
			3 (46–47 cm)
			4 (58–61 cm)
		3	54–65 cm
			4 (59–61 cm)
		4	3 (47–48 cm)
			5 (70–72 cm)

Table 8.2 Source of sediment samples at mound LU-69.

Excavation unit	Layer	Feature	Level
1	7		
	8		200–250 cm
	10		310–315 cm
		1	310–315 cm
	11		385 cm
3			15–30 cm
	4		80 cm

carbonized quinoa grains, with a density of 2.5 seeds per 1 cm^2. A significant number of grasses (Poaceae) were also recovered, although they were less abundant. Corn and carpi was also identified (*Z. mays*; see Chapter 6 and Appendix 2) ($n=111$ and 12, respectively), all charred. Feature 1 dates to the fifteenth century and is located spatially with the three large clay ovens (see Chapter 7).

These data evidence the preparation and consumption of food at the site, two high-quality domestic species, maize and quinoa, that provide much nutrition along with the grasses. The grasses could be *B. mango.* Unfortunately, the lack of a good reference collection for *B. mango* (magu or mango), due to its extinction today and its similarity with the seeds of other grasses in the region, makes it taxonomic identification difficult.

Despite this limitation, it is important to mention that the Poaceae remains appear in all excavation units, it being the dominant taxon along with quinoa-*adventitia,* including *Silene gallica* and an unidentified type B. Feature 2 in Block A included 19 grains of quinoa and 8 grains of grasses, along with charred wild plants such as peumo (*C. alba*), wild strawberry (*F. chiloensis*), madi (*M. sativa*), and quilo (*M. hastulata*), all of which have edible fruits and which, in the case of quilo and peumo, also can be used as a raw material. *Madi,* although wild, was also possibly cultivated for its oil. Feature 2 dates to AD 1,300–1,500 (see Chapter 7).

A similar association was in Text Pits 2, 3, and Block A, although the latter two did not have *quilo* and *peumo* seeds. *Peumo* is a tree that was not *found* in Pit 3. The frequency of these wild species is very low, so that the entry of these fruits in this context could have multiple causes, ranging from accidental burning, from being part of the vegetation cover of the site in earlier centuries, to being imported with firewood, and to being intentionally thrown into the fire for disposal.

Site PU-166

Thirty-seven seeds were recovered from PU-166, identifying eight taxa, with adventitious species *C. album* (quinguilla), *S. gallica* (calabacillo), and *Portulaca oleracea* (verdolaga), along with gender Polygonaceae, which was the most frequent. Based on their adventitious character and charred state, these remains are probably recent and intrusive and should not be included in the interpretation of the archaeological context.

Unlike the case of charred grains of quinoa that were identified at other sites, the low frequency of these species cannot be easily explained in the mound where they were found. It also is possible that they were imported to the site as mound fill. On the other hand, charred grass seeds of Poaceae and *Cyperus* sp. were found in the mound, suggesting they do belong to the carpological record of this site.

Site LU-69

Mound LU-69 yielded 67 carpal remains representing four taxa and three unidentified types. Excavation unit 1 at the top of the mound is the most interesting context. Quinoa was the dominant plant along with a few grasses, some of which were recovered from fairly deep levels (about from 2.0 to 3.85 m). No adventitious species were found at this site (Table 8.2). The carpi number is less than six for each plant type, so, despite evidence for the early management of these plant resources, they do not imply an intensive area of activity as in PU-165, probably because it is a ceremonial site and not a domestic one.

Summary: Facts and Assumptions on Plants and Agriculture in Nahuelbuta

The carpological studies of plant remains from these sites located on the eastern El Vergel area show how important agricultural activity was in the late pre-Hispanic period, which included the management of quinoa (*C. quinoa*) and corn (*Z. mays*), and judging by the continued presence of charred grasses, also the endemic cereals of mango, teca, and lanco. The same situation is observed at the coastal sites cited earlier, which also appeared with different wild species, indicating the use of both wild and domestic resources (Sanchez et al. 2004, Silva 2010).

While the wild plants identified at PU-165, PU-166, and LU-69 were possibly used as raw materials, food, and/or fuel (Hoffman 1997, Mosbach 1999), the low frequency of their seeds in the samples analyzed can also indicate accidental or unintentional acts of deposition, rather than direct participation of these resources in any of the activities at these sites, in particular the preparation and consumption of food and *chicha*. For example, since peumo (*C. alba*), wild strawberry (*F. chiloensis*), quilo (*M. hastulata*), and madi (*M. sativa*) are widely represented in the local flora of the past, the carbonization of their seeds could occur during burning of the forest and scrub clearance of the area for productive purposes, residential or ceremonial. On the other hand, we must keep in mind that we would not expect too many charred seeds of these plants in the ceremonial contexts on top of *kuel,* as opposed to domestic sites where more people and more food preparation and consumption occurred.

In any case, the seed shortage carbonized in these and other wild species is not sufficient reason to eliminate the collection of wild plants in the eastern areas of the Nahuelbuta mountains. Such a perspective can restrict our study of the daily life of the inhabitants of the Lumaco and Purén Valley. On the other hand, the ways in which these fruits were consumed also affect their representation in archaeological sites, such as endemic berries (wild strawberry), the quilo, the maqui (*A. chilensis*), and murtilla (*Ugni molinae*), which could have eaten in an uncooked state even while being collected, so it would not be uncommon for them to unintentionally be deposited in a hearth. *Chicha* manufacture also is done with other plants such as maize and quinoa. They may be crushed and lack carbonization, and consequently no macroscopic components are conserved.

Although subject to similar taphonomic processes, evidence of archaeobotanical food production is conclusive for the plant remains studied here. As noted above, the taxa most represented by frequency and ubiquity were the *C. quinoa* (quinoa) and the Poaceae (grasses), which are associated in most of the sampling units, especially in the hearths and ovens in Block A at site PU-165, where 3,280 quinoa grains were found, along with 12 grasses and 12 maize seeds.

After nearly two decades of archaeo-carpological studies, the importance of pre-Hispanic quinoa in central and south-central Chile is widely documented, demonstrating the harvesting of this pseudocereal from 5,400 to 4,900 years BP. The evidence is *C. quinoa* and other Chenopodiaceae with domestication traits (likely

C. pallidicaule or cañihua) in hunter–gatherer contexts of the Andes in central Chile (Planella et al. 2005 and 2011). Regarding the El Vergel sites, quinoa appears from the early to the late pre-Hispanic layers in sites, showing its long-term role in the Nahuelbuta horticulture. It is possible to identify quinoa in several settlements of El Vergel culture, suggesting it may be the result of a local management of this species. The presence of smaller seed sizes in comparison to the quinoa grown in the central Andes (about 2 mm in diameter in its raw state) suggests this interpretation. These sizes are the same as the currently produced quinoa grains of *lafkenche* (1.2–2 mm) in the study area. The diameter of the quinoa seeds we studied from the Purén and Lumaco sites is 1.5–2 mm, a size likely managed by the deliberate selection of larger grains, evidently parenting them with those found on the islands of Santa María and Mocha, which had the same dimensions (Massone et al. 2007 Roa et al. 2012). Also in the Purén and Lumaco sites is the recurrent *Chenopodium* association with a smaller unidentified Chenopodiaceae seed (1 mm d), which also leads to the idea of local manipulation of the species. This makes the discovery of wild quinoa in ceramic vessels at the site of Los Chilcos, 160 km southeast Lumaco, more important. This site was dated to ~AD 350 (Adán and Mera 2011).

Regarding the grasses, although we are not certain whether they correspond to the cultivated species, they appear frequently in pre-Hispanic sites of central and south-central Chile. Spanish soldiers have been mentioned and described them in detail: "They [the Araucanians] give us much wheat and barley and they have natural corn and potatoes, beans and oat grass, so it's a good service for them; they are very hard workers and they have cultivated farm land well" (Bibar [1558] 1966, p. 320). Bibar refers to the vegetables grown around the city of Concepción, teca being the oat grass. Meanwhile, Molina (1795) stated that mango or magu was a kind of rye, and teca or tuca resembled barley that had been cultivated there since before the Spanish arrival. The last mango crop in the region was reported by Gay in 1865, and this was found in the fields on the Island of Chiloe. More than a century later, the botanist Oscar Matthei (1986) conducted a synthesis of the genus *Bromus* found in Chile; he noted that by not having herbarium material for mango and teca, it is not possible to clearly identify such species in the archaeological record. However, based on the above descriptions, *B. mango* was the only plant cultivated in a biannual regime in pre-Hispanic times. The teca, on the other hand, would have had very similar traits to the species *B. berteroanus,* being an annual plant with a very short life cycle, which was harvested still green to dry the beans in the sun and to consume them as toasted flour, like the mango. Finally, Matthei states that the teca grains have a central groove and are long and narrow, features also observed in the grasses recovered from the sites of Purén and Lumaco, which have an average length of 4 mm and a width of 1.5 mm, and also present is the central groove.

The extinction of these grains and the gradual loss of quinoa could have occurred as a result of adopting more productive European species. It should be noted that the causes of these changes should be investigated with respect to the horticultural techniques of pre-Hispanic south-central Chile and the adaptations of such practices to the conditions of war and military tactics by the Spanish (Torrejón and Cisternas 2002). For instance, it seems that the native cultivators planted in flat, humid areas, which facilitated their discovery by Spanish troops who sought indigenous crops to stock up on and then to burn and destroy them, leaving the local population without subsistence resources:

> such as corn which was once the main source of their livelihood, their fruit quality is the result and needs to be planted on land not only low and flat, but also moist and fresh (as well as in valleys and ravines), the indians recognized these qualities, and these were the reasons our people expanded each summer their campaigns waiting on these plants they had in the field for the of the long term nourishment of our cavalry, yet they always kept the indians from reaching these lands at a time in which they were to take their corn, and it also required flat land I said, it was easy to find them, not only for the sustenance of the field, but for logging and the field, and we destroyed as many of them as there were for we needed them to have peace…. (González de Nájera [1614] 1971, in Torrejón and Cisternas 2002, p. 733)

Other cereals such as wheat, oats, and barley tolerated a wider range of soil and moisture levels, and a shorter growing season than quinoa and maize, which, when adopted, allowed the Araucanians to hide their crops in the hills and to harvest them quicker, thus facilitating a mobility that was vital for them during the war against the Spanish: "… these crops mature earlier, as I said, than their late corn, when our country goes to war with them, they cut everything and collect the harvest and hide and bury it in their silos, where the Indians tend to keep it, to maintain it year-round" (González de Nájera [1614] 1971, p. 734).

Finally, we must refer to the other domestic plants identified at PU-165. One is corn (*Z. mays*), a cereal that appears in late and low frequencies in Araucanian sites, as shown by the grains found in the P31-1 site Mocha Island, which dated between AD 1,200 and 1,400 (Roa et al. 2012), in El Arenal 1 dated to AD 1390 + 55 (Contreras et al. 2005), and the thirteenth- to fourteenth-century dates from the sites analyzed here (Dillehay et al. 2007). These dates are consistent with the character of exogenous corn, arriving in these areas already domesticated, and where it was apparently adopted quickly, as with the European cultigens (see Chapter 6 for maize pollen dated around 4,000 years ago in the Purén and Lumaco Valley). The preexisting agricultural practices in El Vergel facilitated its adoption, and judging from the appearance of raised fields dated between AD 1,200 and 1,300 in Budi, Imperial, and Purén (Figs. 8.4 and 8.5; Dillehay et al. 2007), the arrival of corn would coincide with a major shift in local farming techniques.

As suggested from other cases, the adoption of corn can be related not only to its economic and symbolic importance but also especially to the *chicha* beer made from it, all of which must have promoted its spread throughout the continent (Castro 2010; Staller and Thompson 2000). As presented in the chronicles, the Spanish were witness to the importance of maize in the Araucanian diet at the time of contact, although in this respect, it is still curious that little mention is made of quinoa, taking into account the results of studies that also show this as an important component of the pre-Hispanic diet in this region.

From these results and the above background material, we can see how gradually the intertwining of historical sources and archaeological evidence is leaving a more complete record of the region's ancient agriculture practices. For example, plant food production was carried out under several different technological strategies,

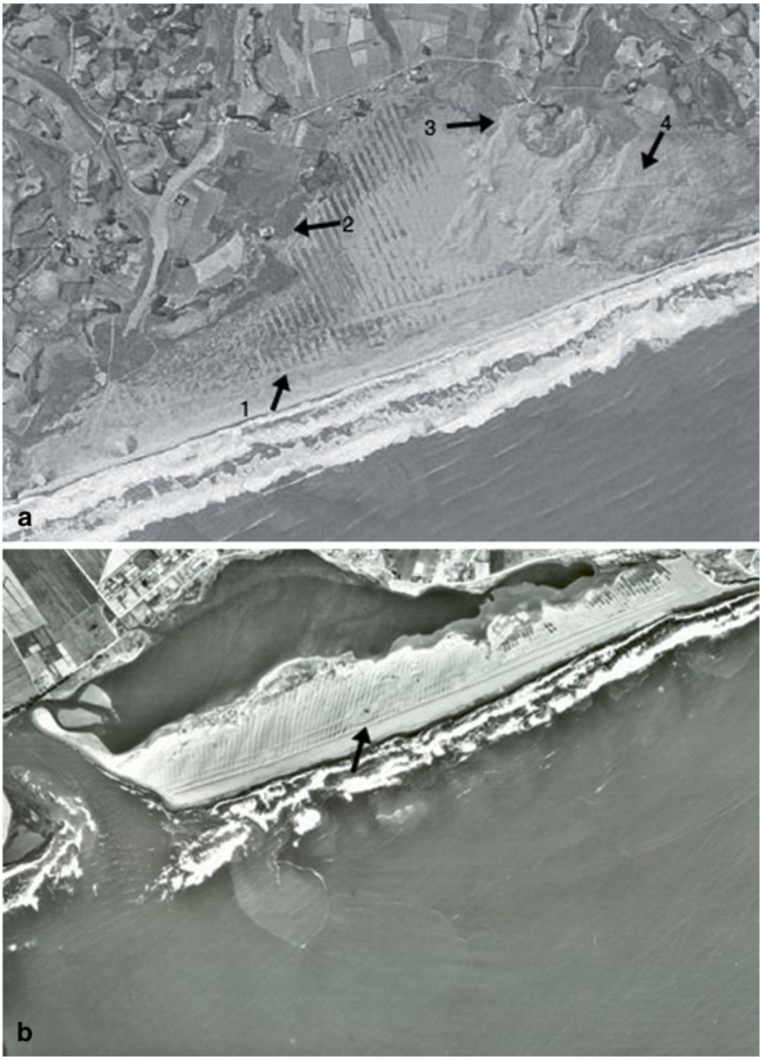

Fig. 8.4 Aerial photographs of raised crop platforms near shores of Lake Budi and Imperial River estuary. (Source: Dillehay et al. 2007).

including the raised platforms and channels in Purén Valley, the Imperial River, and Lake Budi, and the use of other media in the western and northern sectors of Araucanía, where tools like whalebone shovels and carved stones[3] have been found (Figs. 8.6 and 8.7), together with the consumption of cultivated plants. Besides the

[3] Bone blades have been found in several places on the island Mocha, and P21-1, P25-1, and P31-1 (Sanchez et al. 2004). In both, carved stones are used as weight in agricultural instruments ethnographic origin, whose function is to dig, strike, and grind.

Fig. 8.5 Wetland exploitation of the floodplain in the Purén Valley with modern-day farmlands and raised agricultural platforms. (Source: www.mapuexpress.cl).

Fig. 8.6 Pierced stone possibly used as agricultural tools and for splintering wood. (Collection Museo Mapuche de Cañete).

formation of an agrarian landscape that was widespread, as assumed in the early European descriptions of the environment south of the Bio Bio River, the landscape was wide open with spaces of woody vegetation, roads, and places of habitation and food production (Bengoa 2003). The plant foods recovered from the *kuel* sites in Purén and Lumaco now add some of these activities to a ceremonial context.

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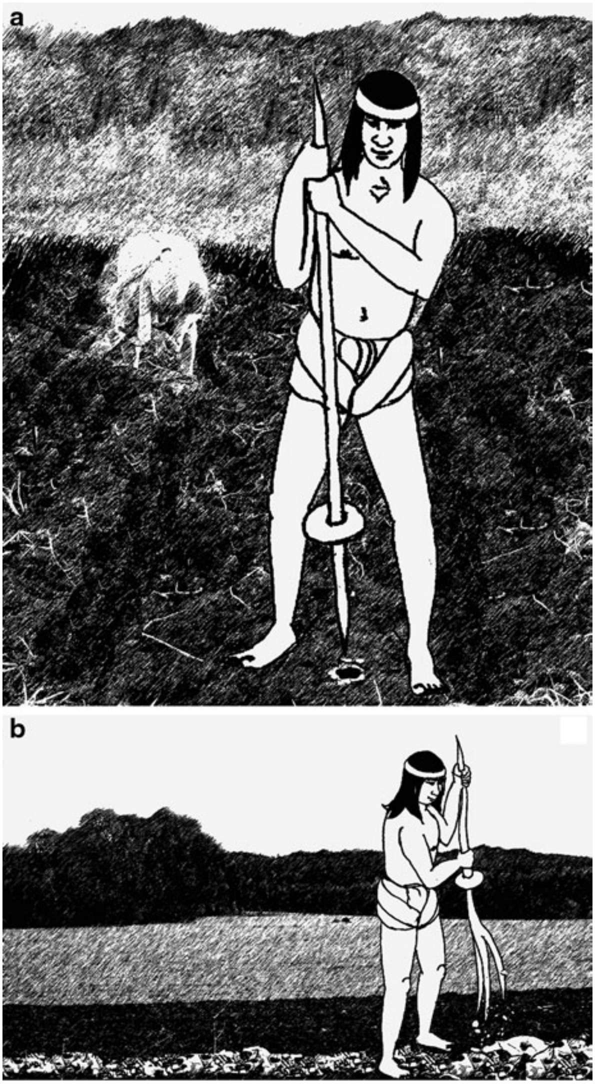

Fig. 8.7 Use of ethnographic agricultural tools shown in the Museo Mapuche de Cañete. (Graphic: J.P. Castro).

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Chapter 9
Ceramics and Other Artifacts

Tom D. Dillehay

Introduction

This chapter describes the ceramic and artifact typology defined for the project, which is employed to demonstrate both the variability and simplicity in style and form during the period of warfare, stress, demographic fragmentation, and intergroup co-residency at some sites. The following is a brief synopsis of a published ceramic typology (Dillehay 2010). The typology used during the project was developed through a modal analysis that recorded attributes of form, surface treatment, surface color, decoration, temper, and paste. This typology generally followed the type-variety system to classify the pottery (e.g., Arnold 1999; Gibson and Woods 1997; Sabloff and Smith 1969; Smith and Gifford 1965; Smith et al. 1960), with a primary focus on surface treatment, vessel form, and paste attributes. It is important to note that the typology also was based on instrumental neutron activation analysis (INAA) and petrographic analyses (see Dillehay 2010).

In following regional naming guidelines, new types were given local topographic titles, such as Purén, Lumaco, Trauma, and so forth. Identification of known types also is used (i.e., Pitrén, El Vergel, Valdivia (e.g., Adan and Alvarado 1999; Adan et al. 2004, 2007, 2010; Adan and Mera 1997a, b, 2011; Aldunate 1989; Bahamondes 2010; Correa 2010; Menghin 1962; Dillehay 1990a, b, c, 2010; Donoso 2010; Quiroz 2010). Varieties are further subdivisions within types, based primarily on surface treatment and secondarily on paste characteristics.

No diagnostic or elaborate stone, shell, wood, or bone artifacts were recovered from the excavations other than one small, subtriangular projectile point, a few animal bone and shell fragments and several grinding stone fragments. Only the stone tool industry is discussed briefly at the end of this chapter.

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Research Area, Questions, and General Approach

We have established a preliminary ^{14}C- and thermoluminescence (TL)-dated ceramic typology and site typology (e.g., site size, mounds, defensive and agricultural features, domestic areas, stratigraphy, proximity to natural resources) and linked some archaeological sites to events and named localities in the written texts (Dillehay 2007). However, as discussed previously (Dillehay 2010), much more work needs to be done in this area of study before more conclusive interpretations can be offered.

Our research has also indicated continuous occupation of some domestic sites and discontinuous or multiple, ephemeral occupations of others during the sixteenth and seventeenth centuries. Several of the latter sites are associated with a few diagnostic Spanish goods and late pre-Hispanic (LPH) and early Hispanic (EH) Araucanian ceramics with European inclusions (e.g., glaze ceramics and temper, glass beads), suggesting that occupational disruption in a few sites might be related to a sporadic, but always brief, Spanish presence or influence. Many domestic sites also exhibit continuous and relatively thick deposits (~30–80 cm) containing a sequence of early pre-Hispanic (EPH; ~AD 400–1000), LPH (~AD 1000–1550), Valdivia polychrome (an Inca-influenced style (?) roughly dating between AD 1500 and 1700?), EH (AD 1550–1700), late Hispanic (~AD 1700–1810), and Chilean Republic (>AD 1810) ceramics. Also documented are a wide variety of local and probably nonlocal ceramic wares from several domestic sites, as determined by surface treatment, temper, decoration, vessel form, and petrographic and INAA analyses (see Dillehay 2010), which suggests the co-residence of local and nonlocal populations. Co-residency probably reflects the recruitment of nonlocal groups fragmented by conflict elsewhere with the Spanish or annexation of neighboring groups affected by conflict. Although most Araucanian decorative styles and vessel forms are similar in *kuel* and domestic sites, different technological styles have been detected at the local level and are useful for estimating local community boundaries associated with different areas of the valley. Below is a brief description of the 15 types and varieties recorded in the Purén and Lumaco Valley. A brief chronological scheme for ^{14}C and TL dates (Chapter 12) and the ceramic chronology is presented in Chapter 4.

Decoration Tools and Techniques

Araucanian potters used four groups of techniques when decorating pottery: grooving, appliqué, burnishing and smoothing, and polishing. Grooving or incision (shallow cutting into the wet clay surface) is a cutting technique, appliqué (applying clay to surface) is a joining technique, and burnishing, smoothing and polishing (smoothing the surface using an implement) are surface-finishing techniques. Regardless of which technique is used, a burnishing, smoothing, or polishing occurred after decorations were completed before firing. Red and orange slips were also applied to some ceramics.

Fig. 9.1 Late pre-Hispanic (LPH) punctated, incised, and corrugated ceramics from sites in the Purén and Lumaco Valley.

Fig. 9.2 Valdivia pottery vessel from the Araucania region.

The types of motifs and their layouts on vessels are not very different in each archaeological site. In Purén and Lumaco, parallel line designs, appliquéd lentils, and punctations predominate (Fig. 9.1). More complex designs, such as cross-hatching on Valdivia painted pottery (Fig. 9.2), are the result of potters first demarcating the design field by marking a horizontal or vertical line around the pot. Motifs are then added between, below, or above this line. Incised motifs are normally arranged in horizontal zones on vessels. After decoration is completed, pots are burnished, smoothed, or polished again. Prior to the Spanish contact period and several decades into it, the local ceramics were a combination of nondecorative, slipped, negative resists (i.e., Pitrén), and painted polychrome types (e.g., El Vergel and possibly Tirua styles).

Figures 9.3, 9.4, 9.5 and 9.6 show the Pitrén and El Vergel polychrome styles dating in the LPH period.

Ceramic Typology

Type 1, Purén Included within this group are specimens that are tempered primarily with homogenous, fine to moderate granite particles. Syenite appears less frequently. This type is divided into two varieties (Dillehay 2010). The paste occasionally contains inclusions of granite, mica, schist, muscovite, and other materials. The paste also is homogeneous in structure and has a chalky, fine, but slightly gritty

Fig. 9.3 Pitrén pottery vessel from the Araucania region (Museo de Arte PreColombino, Santiago de Chile).

Fig. 9.4 Various pre-Hispanic sherds from the Purén and Lumaco Valley.

Fig. 9.5 Late pre-Hispanic (LPH) pottery vessel from the Purén and Lumaco Valley (note the overlapping incised chevron designs around the vessel mouth and the serrated applique on the body. This vessel was looted from a pre-Hispanic cemetery in the El Valle sector of the study area. It is of an unknown type and origin, but appears to be from the Andean region to the east).

Fig. 9.6 Sherds of the red- and orange-slipped El Vergel type from the Purén and Lumaco Valley (number 13 is of the Valdivia type).

surface. Exterior surfaces are smoothed to well smoothed, with tiny sinuous root-like surface marks and often a fine to medium gritty grit. The interior surfaces are either smoothed or well smoothed. Vessels occasionally have parallel incised lines or rows of parallel horizontal punctations on the rim just below the lip. Rims are slightly excurvate, forming jars with short everted necks. Lips are rounded and sometimes slightly tapered. A few flat lips also are present. Bases are flat.

Chronology: LPH and EH periods.

Spatial Distribution: Sites containing type 1 sherds are evenly distributed across the Purén and Lumaco Valley. There are no clear areas of concentration; however, the southwestern portion of the valley is noticeably free of this type for reasons not known at present. Another notable pattern is that all sites are located at elevations above the valley floor, with the exception of PU-96, a small domestic site.

Type 2, Lumaco This type is similar to type 1, but the temper consists of coarser and denser granite particles. Temper particles range from medium to large rounded to subangular granite, feldspar, and other materials (e.g., shell, grog). Syenite appears less frequently. Paste texture is laminated and blocky; surface is often orange in color and irregularly, but sometimes completely, oxidized. Surface treatment is smooth with occasional rough surfaces caused by medium to large temper particles. Rims and necks are long with everted and straight rims. Lips are rounded to slightly tapered.

Chronology: EPH to EH periods.

Spatial Distribution: While it is not ubiquitous, this type is found at a large number of sites of various types, in relatively large numbers, and is distributed evenly across the entire survey area.

Type 3, El Vergel Most of these specimens are tempered with fine to medium granite particles, although mica and sometimes feldspar occur in small amounts. The physical characteristics of the temper particles are the same as those described primarily for type 1 and infrequently for type 2. The petrographic study shows primarily granite and mica schist tempers. The paste ranges in texture from medium to fine, with most specimens being of medium texture. Exterior surfaces are well smoothed and exhibit a thin to thick red or occasionally orange slip. Interior surfaces usually are less smoothed and show evidence of wiping. Although the exterior and interior surfaces vary from semi-bright red to an eroded dull, matte red to an orange slip (Figs. 9.4 and 9.6), a few are slightly eroded and show an underlying medium brown to dark red clay body. Rims are tapered and both incurvated and excurvated. Lips are mainly pointed, though a few flat lips are present.

Chronology: LPH to possibly the EH periods.

Spatial Distribution: This type was recovered from the surface of most sites in the survey area.

Type 4, Ipinco Most of the specimens assigned to this type are tempered with fine to medium granite, mainly feldspar particles. The physical characteristics of this type are generally similar to those described for type 1, with a fine homogeneous friable paste structure. Paste texture ranges from fine to medium coarse, with most specimens exhibiting a fine to medium paste. Exterior and interior surfaces are chalky and though exterior surfaces are smoothed, they are also slightly gritty. Interior surfaces are smoothed to poorly smoothed. Rims generally are straight, with slightly curved and tapered lips. Bases are flat.

Chronology: LPH to EH periods.

Spatial Distribution: Type 4 ceramics were located in the eastern portion of the study area, except for PU-38, a medium-sized *kuel* located at the southwestern end of the Purén Valley.

Type 5, Pitrén Generally, this is a moderately thick ware, with fine to medium temper. Temper particles present within these specimens are similar to those described for types 1, 2, and 4. A small percentage of specimens assigned to this type exhibit mixed temper, consisting of gritty particles; granite and feldspar constitute more than 50 % of the temper. Characteristics of the paste are similar to those described for types 1 and 4, although the paste has more inclusions and generally is very densely tempered. Paste texture is most often medium coarse to coarse. Exterior surfaces are either smoothed, with a matte finish (perhaps purposely produced to present a mottled, birch-tree-surface appearance), to well smoothed or occasionally slightly eroded. Interior surfaces are predominately smooth, with a matte finish, but do not have a deliberate mottled appearance like the exterior. The matte appearance in many ceramics results from negative resist surface treatment (Figs. 9.3 and 9.4). The exterior and interior surface color is dark to medium gray to dark brown to medium beige. The exterior surface is always mottled and patchy, with at least two different colors. Both neckless and necked jars are represented. Rims are straight with slightly everted and gently tapered lips. A few lips are flat. Bases are flat.

Chronology: EPH to LPH periods. This type is one of the earliest in the collection.

Spatial Distribution: This type was not concentrated in any region, but well distributed across the entire study area.

Type 6, Trauma Temper and paste texture for this type are similar to types 1 and 4, but these specimens are thicker, have smoother surfaces, and are lighter in color than these two types. Type 6 sherds also are less gritty than types 1 and 4 specimens because the temper is larger and much less dense. This type is characterized by large, angular, and heterogeneous temper particles, which are generally made up of granite particles. Paste often has tiny, plate-like holes indicating that some temper particles have leached out. Paste texture is fine to medium coarse, with a moderate number of inclusions; it is also blocky. The paste is moderately to densely compact. Most specimens exhibit smooth to moderately smoothed, light gritty exterior surfaces, with a slight matte-like finish on a few. Interior surfaces are generally very smooth, more so than types 1 and 4. These vessels may have been large storage or cooking vessels. Vessels are generally neckless, though a few specimens have direct necks with rounded lips. Lips are generally tapered. Bases are flat.

Chronology: LPH to EH periods.

Spatial Distribution: This ceramic type was recovered from the surface of a minority of sites across the entire study area.

Type 7, Angol These are thin, very smooth sherds with slightly gritty exterior and interior surfaces. A few thicker sherds, however, were assigned to this type. Exterior surfaces are Pitrén like, with a slightly mottled surface treatment. Type 7 sherds, however, are a light tan or beige color, unlike the dark to medium grays and browns of the classic Pitrén type.

Temper and paste texture are similar to those described for type 5, except that there are fewer inclusions and the temper particles of granite, feldspar, and quartz are smaller. The paste is characterized by a fine to medium coarse structure. Exterior surfaces are very smooth to well smoothed, with a slightly mottled and matte finish. Interior walls infrequently reveal a mottled appearance, though they are well smoothed and occasionally have a slight matte-like finish. Rims are long and everted with tapered lips. Bases are flat.

Chronology: EPH to LPH periods.

Spatial Distribution: This ceramic type is evenly distributed throughout the study area.

Type 8, Elicura Temper particles present within these specimens are identical to those described for types 1, 2, and 3. Characteristics of the paste are similar to type 3, with the exception that type 8 specimens have more inclusions and slightly larger particles of granite and feldspar. In terms of surface treatment, this ware differs from types 1 and 2 and is more similar to type 3. Exterior surfaces are well smoothed to smoothed. Interior surfaces are slightly smoothed to smoothed. Rims are straight or everted. Lips are rounded. Lips are slightly tapered.

Chronology: LPH to EH periods.

Spatial Distribution: This type was recovered from the surface of most sites throughout the study area.

Type 9, Quitrahue The temper and paste texture of this type are similar to those described for types 1 and 7. Most specimens were tempered with slightly fine to medium coarse particles, especially granite and feldspar, and sometimes mica. Exterior and interior surfaces are slightly gritty to gritty. Tiny, rounded empty holes are present on the surface, indicating some erosion of the surface and degradation of temper. Decoration takes the form of punctations and incised lines that are found on the exterior surface. Punctations may occur as parallel rows and/or in groups bounded by incised lines (Fig. 9.7). Rims are associated with necked jars with straight to slightly excurvate rims and slightly tapered to tapered lips. Rims assigned to this type are generally longer and thicker than other types.

Chronology: LPH to EH periods.

Spatial Distribution: This type is evenly distributed across the entire survey area, with no clear concentrations.

Type 10, Guadaba This type resembles type 9, but sherds are slightly thicker and darker in color with a pitted, matte exterior surface. Most specimens have granite and mica particles as temper. Interior surfaces are rougher than the exteriors. Paste texture ranges from slightly coarse to moderately coarse. Exterior surfaces generally are a medium dark gray. Interior surfaces are smooth but less so than the exterior. Rims are slightly everted and lips are rounded. Some straight short rims and everted rims with tapered lips also occur.

Chronology: LPH to EH periods.

Spatial Distribution: This type was recovered from only a few sites in the central part of the valley.

Type 11, Futa This type has temper and paste texture characteristics similar to those described for type 2, but the paste is rougher because the temper particles are much larger, denser, and coarse. The paste is more homogeneously oxidized than type 2. Color of the exterior and interior walls is medium to dark gray to brown. Lips vary widely from flat to round to tapered. Bases are flat.

Chronology: LPH to EH periods.

Spatial Distribution: This type was recovered from the surface of only three sites.

Type 12, Huitran This is a Spanish colonial type. It is a fine terracotta ware that is often glazed in green, cream, or beige. These are ceramic sherds, not roof tiles or *tejas*. The temper is sand grit, although a few inclusions of granite, feldspar, and mica also appear. Both the exterior and interior surfaces are very polished and smoothed. Rims are short and excurvated though slightly straight examples also occur. Lips are slightly rounded or tapered.

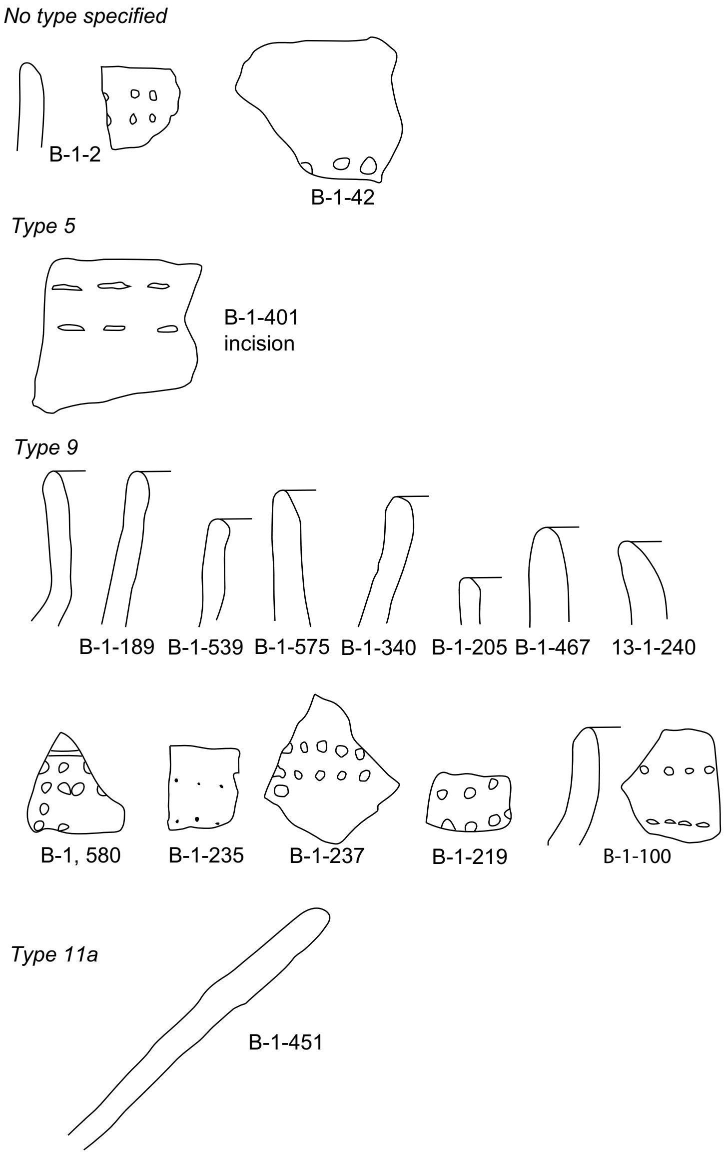

Fig. 9.7 Sherds of the punctated type in the Purén and Lumaco Valley.

Chronology: EH period.

Spatial Distributions: This type was recovered from the surface of several sites scattered across the study area. Most of these are located in the western part of the Purén Valley near the present-day town of Purén, although a few are located near the town of Lumaco.

Fig. 9.8 Types of Valdivia-type sherds from the Purén and Lumaco Valley (follows Sauer 2012).

Type 13, Valdivia This is a classic painted pottery style derived from outside of the valley (Fig. 9.8). The paste is fine to moderately fine, with fine to coarse inclusions of granite, feldspar, and other particles. Paste structure is homogeneous and compact. Paste color ranges from an off-white to light gray color. Exterior surfaces and, sometimes, interior surfaces have a thick white slip often painted in various designs that are possibly Inca inspired. Painted designs are in faded reds, browns, and dark grays. Rims are short to long and excurvate; a few slightly straight examples also occur. Lips are slightly rounded or tapered.

Chronology: Terminal LPH to EH periods?

Spatial Distribution: This type was recovered from the surface of only two sites in the study area. Both are domestic sites located in the central and eastern portions of the Purén and Lumaco Valley.

Type 14, Spanish Tejas These are terracota roof tiles or *tejas* dating to the EH period. These were recovered from 21 sites, mostly near the present-day towns of Purén and Lumaco and a few fortresses lying between these two localities. They were often found with type 12 sherds.

Chronology: EH Period

Spatial Distribution: This type was recovered from excavations at only a few sites in the valley, primarily fortresses and *casas fortificadas*. The surface appearance of the *tejas* is not always a reliable chronological indicator because they could date anytime in the historic period.

Type 15, Exotics A few sherds exhibited exotic slips (e.g., maroon, black), decoration (Fig. 9.5), and paste types, and were tempered with grog, shell, and/or volcanic ash temper. These specimens were so infrequent that no formal type name was assigned to them. In total, 52 of these sherds were recovered from the surface or from excavated areas at 16 sites, with the majority found within excavation levels at sites PU-165 and PU-122.

Chronology: LPH and EH.

Spatial Distribution: These were recovered from very few sites in the valley, but mainly at PU-165, which was extensively excavated and yielded the highest sherd count in the project.

Unassigned Specimens The petrographic analysis identified several sherds, rough exteriors with incised decoration (see Fig. 9.8), not possessing temper material of the Purén and Lumaco geological formations and classified them as exotics. The INAA study also classified several sherds as exotics that could not be statistically assigned to any of the three chemical composition groups revealed in the Purén and Lumaco sherd collection (see Dillehay 2010).

Chronological Consideration of Diagnostic Wares

In order to identify ceramic attributes that reflect internal diachronic trends, some further understanding of the pre-Hispanic ceramics is needed. Based on limited analyses of several sites in the region, we can identify wares that are distributed across the region and thus represent the region prior to the arrival of the Spanish and how they changed over time. The polychrome and red or orange slipwares of the El Vergel style and perhaps some incised wares are the more relevant ones to this discussion. The El Vergel style is not well dated in the region. Most archaeologists place it in the LPH period sometime between AD 1000 and 1500, although it probably extended into the EH period (see Quiroz 2010; Dillehay 2010). There also is a later red slipware that developed in the seventeenth and eighteenth centuries, which seems to be most prevalent farther south in the Tolten and Valdivia River basins, but the chronology and affinity of these wares are not conclusive either. Not known is whether these two different red slipwares are related. The incised wares are believed to be terminal pre-Hispanic but mainly EH in age, as evidenced at several excavated sites in the valley, but this may differ across the Araucania region. Regardless of the time span of these ware styles, it is clear in the excavated sites of the Purén and Lumaco Valley, and especially from the surface and excavated units in various *kuel*, that the classic El Vergel style is infrequent in sites radiocarbon dated to the post AD 1550 era and/or containing diagnostic Spanish wares, which also are rare occurrences. On the other hand, most of the incised wares appeared during this latter period and are primarily associated with the upper 25 cm in all excavated sites. Most non-slipped, decorative wares are punctated, incised, corrugated, and appliquéd with lentils. All of these traits are common throughout the Araucania region. How do we explain the decrease in El Vergel wares and the appearance and increase incised wares? We currently do not have an answer to this question, but we believe it is important to understanding the demography of the indigenous population of the sixteenth and seventeenth centuries and especially to the co-residency of different groups.

Although rare, a few polychrome Valdivia sherds are present but in only two domestic sites in the valley. These are believed to date in the terminal LPH but most likely the EH. These temporal changes in diagnostic wares occur primarily during the sixteenth century AD and more likely in the early seventeenth century AD. Perhaps the most cogent explanation for the rarity of the Valdivia and other slipped or painted wares is the demise of the need for prestige objects and decoration at a time when the role of material culture yielded to intangible attributes such as warriorhood and wartime leadership and religious roles.

Artifact Simplicity and Standardization

Clearly, the study of ceramics from archaeological sites in the Purén and Lumaco Valley provides just a single material perspective on local and regional "style zones" (Jolles 2005) and encourages us to think about the causes and motives of the homogeneous nature of the ceramic assemblage. The few differences in ceramic production, design, and style can probably be found in the history of different regional groups and the consequent social networks to which potters belonged, because these networks probably differently influenced and constrained the design and style choices potters made during production.

However, it also is clear that potters working during the EH period were not very open to decorative innovations in general. In a few cases, these involved the rearrangement and combination of traditional motifs (i.e., design layout but not the location of decoration on pots), and in others, the development of a few new techniques and motifs (i.e., incorporation of fragments of glass as decorative motifs, one of which was from the Spanish). Other innovations such as highly polished gray wares, which were rare and numbered no more than three sherds in the entire collection, were probably derived from new potters coming into the communities or from trade.

We found that, as we have hypothesized, vessels produced during the period of warfare and thus a certain degree of increased social stratification (i.e., *guentoqui* war leaders, ritual priests, warriors) and political organization (i.e., *regua*, *ayllaregua*, *butanmapu*) had less complex designs, less enclosed designs, less polychrome styles, less polishing, burnishing and slipping, and more empty space. This finding is different from most other ceramic studies that suggest that the complexity of ceramic design is significantly correlated with social stratification, while complexity of ceramic style is significantly correlated with political integration in some past societies (e.g., Dressler and Robbins 1975). In other words, design became more complex as society became more complex, with greater levels of hierarchy and more diverse roles and statuses (Fischer 1961, pp. 82–83). But this seems not to be the case with the Araucanians in the Purén and Lumaco Valley.

We do not know if decorative simplicity and increased standardization were products of domestic routinization, repetitious behaviors over time, skill levels, or attempts of familiarity and egalitarianism. We cannot say how concerns over design and decoration, as they related to social status and prestige, were replaced by those for other activities in the wartime Araucanian society, such as increased food production and the buildup of agricultural, ceremonial, and defensive infrastructures. Yet, we do know that potters deliberately produced vessels that their consumers expected in terms of size and shape, and that the more experienced potters were best able to meet the expectations of the society at large, which evidently created more standardization in form and style (cf. Stark 1999). This, in turn, must have made the pottery more legible, that is, more familiar to local and nonlocal groups co-residing as a result of demographic fragmentation. Thus, we suggest that the shared stylistic features in ceramics and architecture, features that apparently underwent coordinated change through time, reflect the sanctioning by Araucanian leaders' efforts to downplay differences and divisions between patrilineages. Araucanian leaders evidently used their influence to promote an emphasis on common bonds of relationship among patrilineages through shared stylistic patterns, ritual practices, and the like.

What were the possible social meanings of the new corpus of simple and more homogeneous designs and motifs on the ceramics that is less slipped wares and more plain and simple incised wares? Our findings of the petrographic and INAA analyses of ceramics from several sites in the valley provide tentative confirmation that external ceramics, possibly representing outsiders or war refugees, were integrated into several EH domestic sites in the valley (Dillehay 2010). The early chroniclers also identify specific social practices such as residential incorporation of outside males and females at domestic sites in the valley (e.g., Bengoa 2003; Zavala 2008; Dillehay 2007). People must have struggled with these new social arrangements of co-residency. We thus view the increased use of incised wares and the decreased use of polychromes and red and orange slips as intentional acts of symbolic legibility that facilitated social integration and reinforced a more homogeneous Araucanian identity in the early contact period. The ideological role of both the external ceramics and the standardized wares signified a social mosaic in the construction of the new warring society. This also suggests a standardizing behavior through repeated production and use of these ceramics. These changes in ceramics are not necessarily considered to be active or overt modes of resistance or defiance of Spanish influences but intentional acts of social integration, which perhaps could be considered as forms of covert or passive resistance. Lastly, because of the small sample size from across surface and excavated sites in the valley ($n = \sim 15{,}000$), the results of our analyses must be viewed with caution and continue to be tested under varying conditions of intergroup stability, mobility, and possible co-residency throughout the Araucania region.

Stone Pipe from *TrenTrenkuel*

The pipe in Fig. 9.9 has a very well-developed trapezoidal-shaped bowl with a semi-rectangular base. It measures 10.2 cm long, 5.6 cm wide, and 3.7 cm high. It is light beige brown in color and made of serpentinite. This pipe was excavated from stratum 5, dated to about AD 1000–1500 or the El Vergel period, in the *TrenTrenkuel* mound.

In the El Vergel period, very stylized and individualistic pipes began to appear. It also could have been made in the transitional times to the EH period as it shows incised decorative traits of LPH to EH incised ceramics. The pipe is not

Fig. 9.9 Serpentinite-decorated pipe excavated at *TrenTrenkuel.*

highly finished and does not display a deep luster. In part because its material is not as conducive to fine polish, and its squared body with incised markings does not lend itself to universal surface polish, hence areas near surface discontinuities are still rough.

The pipe contained residues inside the bowl that were removed for analysis. Examination of this material by Rene Bonzani reveals it is tobacco of the species *Nicotiana rustica*.

Stone Artifacts

Chert nodules, quartz and quartzite pebbles, granite, basalt, and andesite were the primary raw materials for flaking and grinding available in the immediate vicinity. Several hundred modified and unmodified flakes, nodules, and grinding stone fragments were recovered in the excavations. Of the total lithic collection, quartz, and quartzite flakes were of the highest frequency (~76%). Approximately 15% of the collection is lithic debris from flaking or accidental breakage. The remaining artifacts are broken grinding stones and manos, in addition to a three small subtriangular projectile point fragments made of obsidian.

Because the stone tool collection adds no direct knowledge to the specific objectives of this study, there is no further analysis of it here, though it will appear in later publications. The only information derived from the collection that might be of interest to understanding the archaeological record of the *Estado* and specifically of the organizational attributes of Purén and Lumaco population is the presence of obsidian, which probably represents long-distance exchange with groups further to the south or east in the Andean mountains where the raw material is located. There also are some exotic green, yellowish, and beige cherts that may have been procured through exchange or transported to sites by outside groups that migrated or recruited into the valley. Furthermore, the presence of grinding slabs and manos of a moderate to large size (~35–42 cm and 15–24 cm in length, respectively) suggests considerable plant food processing, which collaborates the macrobotanical and microbotanical findings (see Chapters 8, 13 and 15). No major quantitative or qualitative differences in the stone assemblage were observed across the valley except for the presence of fragments of grinding stones from surface collected sites and this was due primarily to plowing conditions that exposed and broke these materials.

Conclusion

Diagnostic ceramic characteristics (the presence of certain types and individual attributes) were found to be good temporal and geographic source indicators: the occurrence of negative resists Pitrén sherds, certain red and orange slips of the El Vergel type, the polychrome Valdivia ware, and Spanish glazed wares and roof *tejas* (see Dillehay 2010). Although not studied above, vessel handle, base and rim shapes provided no discernible information regarding the geographic affiliation of groups, co-residency of different groups, elite versus nonelite wares, ritual versus nonritual activities, and so forth. Perhaps a less fragmented and larger ceramic assemblage from more sites would provide information on these and other issues, but this calls for much more research. Particularly useful was the reconciliation of the ^{14}C and TL dates with specific ceramic types in excavated sites. These data were significant for revealing the presence and absence of such diagnostic attributes as slipping, incision and painting, and the degree of homogeneity and simplicity of the overall assemblage. As discussed above, information was obtained from the spatial distribution of ceramic types with respect to their presence and absence at different sites across the valley. Perhaps the most useful information from the temporal and spatial frequency of types are differences in the variability and standardization, which we have hypothesized to be related to the socioeconomic integration of different local and nonlocal groups for the purpose of cohesiveness to defend themselves against the Spanish. Also significant is the rare to infrequent presence of Spanish ceramics and other artifacts at domestic and ceremonial sites, indicating the very sporadic and short-term presence of the Spanish in the valley. If we had excavated more extensively in the Spanish *casas fortificadas* and forts, we certainly would have recovered more Spanish material, but it has a very weak presence elsewhere. However, most significant is the rather abrupt change from more elaborate polychrome and slipped wares to more simple incised, corrugated, appliqué, and poorly slipped wares from the LPH to EH period.

The site distribution data were examined for the information they contained regarding how the indigenous population reconstructed social, political, and economic relationship following the intrusion of the Spanish. Particular attention was paid to identifying whether intravalley variation in ceramic types, ceramic decoration, and the use of ceramic vessels could be identified that might reflect cultural or ethnic differences within the valley and how the functions of the different settlement types varied across the region at large.

The comparisons by subareas within the valley of diagnostic ceramic types and attributes, Pitrén and El Vergel primarily because very few Valdivia and Spanish sherds were collected, documented east–west spatial variation in the distribution of a few characteristics, particularly the kind of decoration placed on vessels. The most notable pattern was the simplicity and standardization of sherds in and around the *kuel,* with the rare presence of red slipped and incised wares. Most sherds recovered from the mounds were simple, thin walled, mica-tempered brown wares (types 1, 2, and 7) representing small, short jars, and drinking vessels.

The intraregional distribution of ceramic types and attributes within the valley suggests that households or lineages living in certain subareas interacted socially and economically with nonlocal groups more frequently than others, as evidenced by the INAA, stylistic, and petrographic analyses (see Dillehay 2010). Much of the observed variation is related to the local geography and to places with more interaction with outside areas such as the pass to Contulmo and the coast near Purén and the passes leading to and from Lumaco on the east side of the valley. Sites appearing to have had the most interaction or co-residency with nonlocal groups were the areas around Purén and the Boyeco subareas, the Tranaman, Ipinco, and Guadaba subareas in the central sector, and the Butarincon subarea where the Purén River turns south and takes the name Lumaco (see Fig. 1.3 in Chapter 1).

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Chapter 10
Site Distribution and Settlement Pattern

Tom D. Dillehay, J. Paige Silcox and Carlos Ocampo E.

Introduction

What do the settlement patterns of the valley indicate about the history of place use, social organization, and political behavior of the Purén domain and the *Estado*? Sites in the valley have complex and cumulative use histories. The occupational history of many locations appears to be discontinuous (~57 %), but many domestic sites (~72 %) were reoccupied or continuously occupied following Spanish intrusion into the region, including 12 of the 22 excavated sites (see Chapter 7). The regular reuse of formerly occupied settlements during this period may have been an important means by which displaced indigenous populations maintained access to and social claims over their ethnic homelands or perhaps new groups moved in and took over previously used places on the landscape. On the other hand, the intermittent use of several domestic sites is consistent with occupational instability throughout the period. Many of these settlements perhaps included individual or multiple households who had been residents at other locations. While social fluidity and residential mobility may have been long standing elements in the early Hispanic, and perhaps the later pre-Hispanic, Araucanian world, the tempo of mobility and co-residency and the constraints upon them are likely to have increased after AD 1550.

Based on our archaeological work in Purén and Lumaco and unsystematic, opportunistic survey in Pai Cavi and other places throughout the region (Dillehay 1976), mobility and changing co-residency appears to have been widespread and certainly would have entailed significant contestation, negotiation, and adjustment as households, individuals, and other scales of social action coalesced into new communities. As populations continued to decline in heavily conflicted areas, the

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loss of individuals, households, and the collapse of even larger scales of social organizations must have ramified through the web of interconnected social systems that made up the *Estado,* as the chroniclers and later historians discuss (e.g., Rosales [1674] 1989; Valdivia [1606] 1887; Bengoa 2003; Zavala 2008; Villalobos et. al. 1982). Furthermore, many of the sites recorded in the valley exhibit mound and defensive architecture. These architectural remains are well-suited to analyses of social structure, defined as an analytical conceptualization of the arrangements that linked the elements of social life together into a functioning, cohesive unit. Architectural and depositional patterns in these contexts are strongly influenced by the historically documented demographic variables as well as duration of occupation, periodicity of reoccupation, and post-occupational modification.

Flexible social mechanisms that mediated migration and integration of disparate populations would have been crucial to communities in the making of new settlements or their incorporation into established ones. Whether, continuously or discontinuously occupied, residential locales served as the raw material for social memory, new social arrangements, and place-making in the continuously transforming landscape. Residential abandonment and reoccupation does not necessarily denote a loss of place, but rather a reconfiguration of its role and historical associations. For the sixteenth and seventeenth century residents of Purén and Lumaco, their association with specific places may have shifted from collective to historical, as former residential locations became new landmarks in an ongoing cultural geography. The collective and historical identities invoked as expressions of community are often integrally tied to the history of place and may cross-cut communities defined by both coresidency. For archaeology, there is a considerable challenge in understanding the changing roles of these places within the sacred, domestic and political geographies of the valley (cf., Galloway 2002; Oatis 2004; Anschuetz et al. 2002; Billman and Feinman 1999).

With respect to the database, the sites shown on the settlement pattern maps for the cultural time periods do not represent all sites recorded during the project. Given the absence of diagnostic ceramics at several sites, particularly unexcavated fortresses, *kuel*, agricultural terraces, and cemeteries and the small number of diagnostic and nondiagnostic wares at other sites, we decided to include only sites with a minimum of 20 diagnostic sherds. Furthermore, by using sites that were primarily surface collected, shovel tested or excavated, means the database base is biased toward later occupations and ceramics because they are most likely to be exposed due to erosion and plowing (based on our subsurface probes, plowing at the majority of sites disturbed only the upper 15–20 cm.). Surface collection and shovel testing at most sites also implies a bias toward larger sites, particularly late sites. We believe this accounts for the low number of Pitrén or early pre-Hispanic Period sites (>20 diagnostic sherds) discussed below, and most of these were revealed through site excavation rather than surface survey. Those sites without the presence of ceramics could occasionally be affiliated with a cultural period based on the presence of defensive moats or oral traditions among informants.

Not presented in the discussion are the Archaic period sites, which are PU-23, PU-69, LU-69, PU-165, PU-166, and PU-220. With the exception of PU-165, which is located on a low terrace of the Purén and Lumaco River, all of these sites are situated on high hillcrests lines between 50 and 90 m above the valley floor.

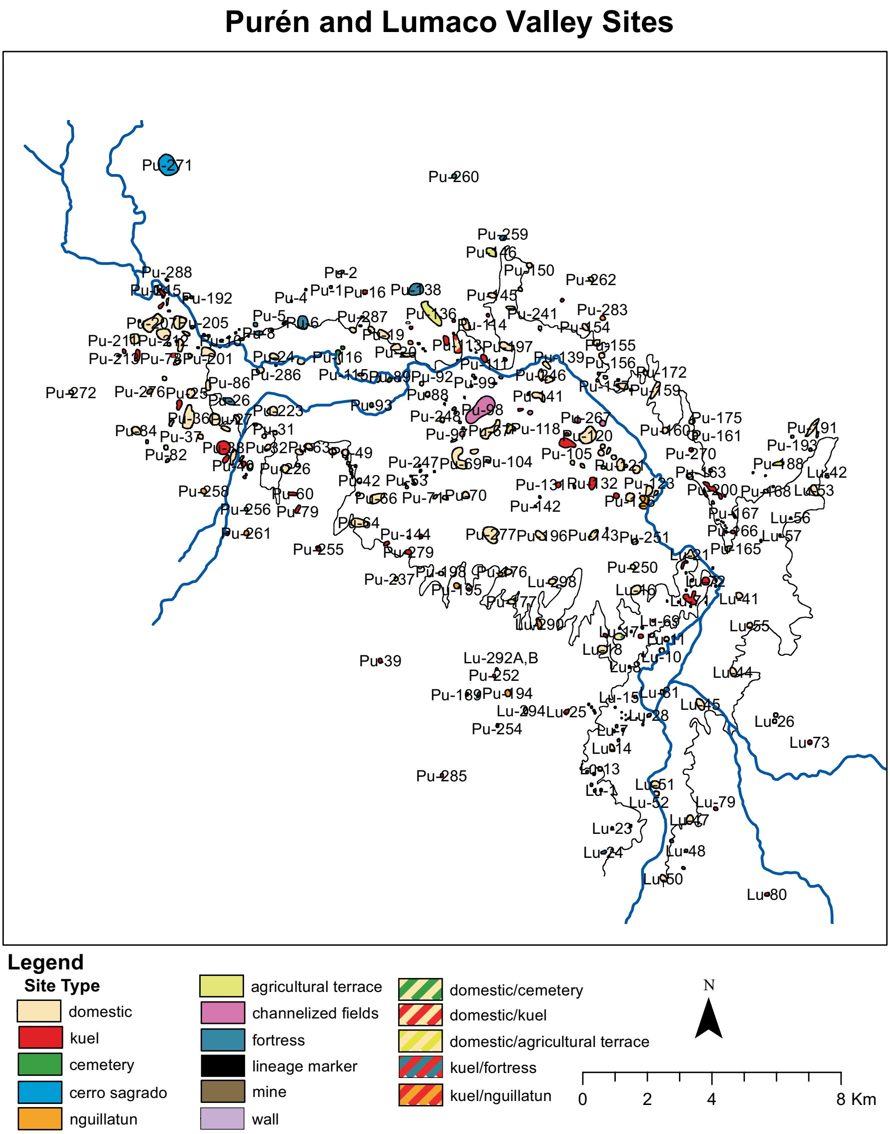

Fig. 10.1 Location map of all sites in the Purén and Lumaco Valley.

Settlement Patterns

From a strictly geographic perspective, the 376 recorded sites in the Purén and Lumaco Valley are primarily organized with regard to elevation, and secondarily with regard to proximity to rivers and streams (Dillehay 2007; Dillehay and Saavedra 2010). Several site types have been defined in the valley, ranging from domestic locales, cemeteries and defensive places to *Cerros Sagrados* or sacred hilltops, ancient *nguillatun* fields, and *kuel* mounds (Fig. 10.1; see Dillehay 2007). When the various site types are taken into account, several patterns emerge. Domestic and cemetery sites tend to occur on or just above the valley floor at elevations ranging between 20 and 70 m above sea level (masl), while ceremonial sites such as *kuel*, *nguillatun*, and *Cerro Sagrado* are most commonly found at higher elevations of 50–125 masl where they are the more visible features on the landscape. When viewed through time, a trend of decreasing number and increasing size of sites is evident, especially in regard to domestic sites.

Discussed below are the distribution patterns for each site type and then a valley-wide comparison between these distributions through time. Survey methods and techniques are presented in Chapter 3.

Domestic

Domestic sites are mainly located on the terrace or the base of hills just above the valley floor, above 20 masl and sometimes at lower elevations along the many smaller tributaries of the Purén and Lumaco Rivers. There are two exceptions. One is a concentration of small domestic sites (< 1 ha) located near the large agricultural fields situated between the Purén River and the Ipinco Creek (see discussion of agricultural concentrations below). The other is located on the banks of the Purén and Lumaco River.

A number of domestic sites are located on the valley floor directly along the banks of the Purén River. For reasons unknown at this time, this pattern does not occur as often along the Lumaco River. This could be attributed to more frequent flooding on the Lumaco side of the valley, or that the Lumaco Valley is narrower than the Purén Valley, and that the population was able to settle on the terraces above the river without being farther away from water, food, and transportation. Further evidence is that the section of the Purén River most densely occupied (near the present-day town of Purén in the western part of the valley) is the stretch that is farthest from the higher river terraces. In some places such as Tranaman and Quilaco this distance is up to 2 km between the river channel and the nearest terrace. These patterns seem to represent both, the late pre-Hispanic and early Hispanic periods.

Lastly, the majority of the large (> 10 ha) to intermediate size (~ 2–10 ha) domestic sites are positioned along the lower elevated terraces and hills of the large *rehuekuel* complexes (Fig. 10.2), suggesting the relatively direct and easy access to these sacred places by the resident population. All of these sites date to the late pre-Hispanic to early Hispanic period and probably reflect the strong political and religious relationship between these sacred places and their domestic support population.

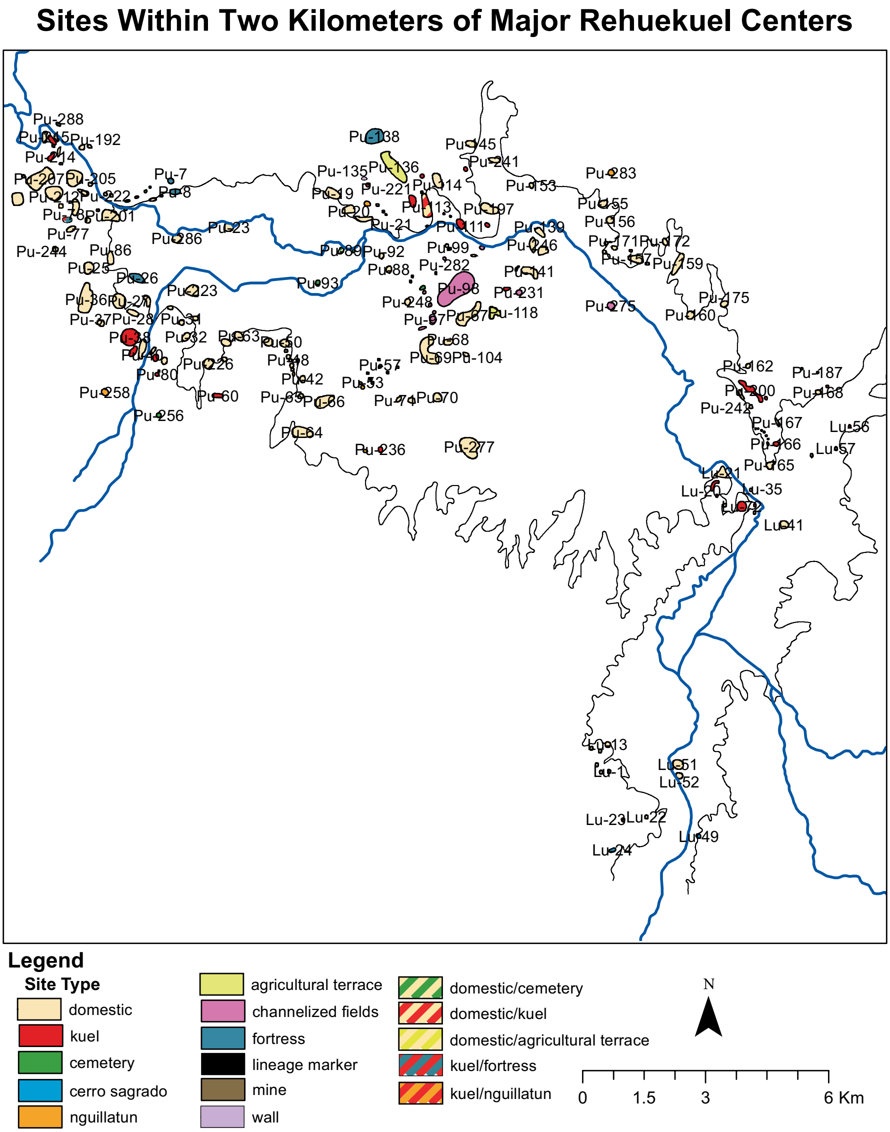

Fig. 10.2 All site types located within a 2 km radius of the major *rehuekuel* centers.

Kuel

The majority of the *kuel* mounds are located on low, flat hilltops at the base of the steeper terrain, at least 50 masl. There are no *kuel* on the valley floor or, if there were any, they are not preserved today. This pattern includes the smaller cluster of low hills in the middle of the valley near *Maicoyakuel* and El Valle, located roughly midway between the Purén and Lumaco sections of the river. There are a few exceptions where *kuel* are higher in the hills rather than at the lower elevation slopes, including sites PU-257, PU-254, and PU-253 in the low knolls overlooking the Purén Valley from the south and LU-73, LU-79, and LU-80 overlooking the Lumaco Valley from the east.

The position of the *kuel* at the center of several large domestic settlements and higher elevations is likely related to their use as political and religious nodes (Fig. 10.1). They are located in positions where they are more visible, especially from distances across the valley. Many *kuel* appear to be situated to create a line of sight connecting them with each of the sacred sites (Dillehay 2007). This is also what local elderly informants report today. Several *kuel* also appear to form a boundary within which the domestic sites lie, particularly along the southern limits of the survey area. They are located mainly at the edges of clusters of domestic sites, slightly to moderately higher upslope than the domestic sites. These places are *Loloncokuel, Hualoncokuel, Scheelkuel, Rapahueluel, and Maicoyakuel*, for instance. An exception is Butarincon along the western bank of the Lumaco River where the highest density of *kuel* are located in the study area; most of which are small and clustered together in small groups with domestic sites scattered immediately throughout.

This pattern appears across all three time periods from the EPH to the EH, suggesting that rather than indicating a change in *kuel* building practices over time, there may be a differentiation in the social and community patterns of *kuel* between those populations living in the Purén Valley and those in the Lumaco Valley. This also could be due to a difference in population size between the two valley sections. The domestic sites in the Purén River are larger and more numerous than those in the Lumaco River Valley, also suggesting a larger population.

With respect to the varying sizes of *kuel,* they are built ritually by descendants of the leaders either associated with or buried in them (Dillehay 1985, 1995, 1999, 2007). The size of individual *kuel* is dependent on the number of descendants the leader has and the length of time his successor is in power. If there was a smaller population in the Lumaco Valley, it should follow that the *kuel* are smaller, but this is not always the case. Another factor would be political stability. If the leadership in this valley was less stable than that of the Purén Valley, it also might imply that new *kuel* were built more frequently because the leadership turnover would be more frequent.

Nguillatun Fields

Nguillatun ceremonial sites follow the same pattern as the *kuel*, in that they are located on the low slopes at the base of steeper often isolated hills. Also like the *kuel*, *nguillatun* fields are surrounded by other sites (domestic, agricultural, cemetery, defensive). They generally are not found on the valley floor, with the exception of two sites, PU-124 and PU-125, located on the eastern edge of the terrace of low hills between the two river sections. These are also the only *nguillatun* sites that are centrally located.

Cemeteries

Cemetery sites are closer and nearer to the domestic sites than other sacred sites such as *kuel* and *nguillatun*. They are more identified along the Purén River than the Lumaco River. For the most part they are situated on the valley floor or on the first terrace above it at 15–30 masl and are primarily concentrated in the western end of the Purén valley, along the river. One exception is PU-260, which is located relatively far outside the main settlement area, to the north, along a small tributary. It is more than 2 km from the nearest neighboring site PU-259, a *Cerro Sagrado*. It is also in a steeper terrain and higher elevation than other cemetery sites at ~70 masl. There is at least one cemetery site associated with each large cluster of domestic sites. They are generally located at least 200 m from the nearest domestic site, with the exception of sites that are both domestic and cemetery sites.

Five sites are identified as both domestic and cemetery sites. The largest is LU-17 at 4.6 ha; it is located just above the valley floor on the western side of a low peninsula that runs to the west of and parallel to the Lumaco River. The other four domestic/cemetery sites are concentrated within a 2 km area in the central Purén Valley. These include PU-116, PU-89, PU-90, and PU-91. PU-116 is a medium-sized site at 4.5 ha, while the other three are relatively small, ranging from 0.4 to 1.5 ha.

Cerros Sagrados

Cerros Sagrados (sacred hills) sites are on the outskirts of the survey area high in the hills above the valley floor. Exceptions are PU-259 north of Guadaba Creek, just above the 80 masl valley floor elevation contour; and LU-49 on the southern end of the Lumaco River, just below the 50 masl valley floor elevation contour and in close proximity to sites LU-48 and LU-54 (two other *Cerros Sagrados*). Most of these sites are small (<2 ha) with the exception of PU-259 at 2.5 ha and the largest, PU-271, at 29 ha. PU-271 is isolated, situated more than 3 km to the northwest of the nearest site in the settlement area.

Cerros Sagrados appear to be arranged in almost regular pattern approximately at 10 km intervals surrounding the valley floor. PU-271 is located at the northwest end of the valley. Approximately 10 km southeast to east is PU-259. PU-186 and PU-187 cluster about 10 km farther southeast. About 12 km south to southwest is a cluster of three sacred hills (LU-49, LU-48, LU-54), with LU-24 located across the river from these three. PU-189 is located 8 km to the east. At this point, the pattern breaks down and it is another ~20 km northwest back to PU-271. However, approximately 10 km east and parallel to the Purén River, there is a hilltop near PU-257 (a *kuel*) and PU-258 (a *nguillatun* field). These two sites also may be *Cerros Sagrados*. They fit the pattern, in that they are 10 km from PU-189 and from PU-271, respectively, and would complete the "circle" of *Cerros Sagrados* surrounding the valley.

Fortresses

There are several fortress sites on the slopes above and to the north of the Purén River. Three of these, PU-7, PU-8, and PU-73, are located within 1 km area of each other and are situated on a large tributary running parallel to the river. In addition, there is PU-6, a large fort (10.5 ha) about 1 km to the east of these clustered forts and PU-138 (13.2 ha) situated approximately 4.5 km east of this cluster. Also, there is the reconstructed late nineteenth century fort on the hill situated in the eastern part of the modern day town of Purén (Guarda 1984; Saavedra 2000).

Also in the western portion of the Purén Valley is PU-216, probably a Spanish fort and also identified as a *kuel*, located on the slopes above and to the west of the headwaters of the Purén River. PU-26 may be a contact period fort, located on the valley floor to the south of the Purén River at the confluence of two small tributaries. There is one fortress identified on the Lumaco side of the valley, LU-28, and it is placed on a hilltop at the southern confluence of two branches of the Lumaco River. This is also likely a Spanish and later a Chilean fort, given the surface artifacts recovered there. The concentration of sites in the northwestern portion of the Purén Valley as well as the absence of forts in most other areas of the valley suggests that the Spanish primarily entered the valley from the northwest perhaps through the pass from Purén to Contulmo to the coast or from the headwaters of the Elicura River to the northwest.

Agricultural Fields

Channelized fields are located on the valley floor, whereas, terraced fields are at higher elevations on hill slopes. The terraced fields tend to be on the lower, less steep slopes, not high in the hills. Exceptions are LU-81, an agricultural terrace situated on the valley floor between two branches of the Lumaco River, and PU-231, a small, channelized field located at ~60 masl on a raised terrace overlooking the Ipinco Creek from the south.

The channelized fields are concentrated in the central Purén River Valley, mostly between the Purén River and the Ipinco and Guadaba creeks; however, there are two medium-sized (~20–30 ha) channelized fields to the east of this area, PU-275 and PU-267. Other than these two fields, all of the channelized sites are categorized as small (<2 ha). PU-98 is the largest site identified in the survey area at 41 ha. The location of all of these sites on the valley floor between two waterways is likely due to the specific environmental conditions of the *cienega* on the valley floor (see Chapter 6) required to create and maintain these specialized fields.

The agricultural terraces are more widely distributed. There are two terraced fields near this central agricultural concentration: PU-118 and PU-133, both in the low hills between the two rivers. There are also small terraced fields located in various places around the valleys. These include PU-13, located in the northwestern headwaters of the Purén River near a large concentration of domestic sites; PU-237 in the south-central portion of the valley; LU-81 in the southern Lumaco Valley; PU-188, a terrace/domestic site, in the far eastern portion of the survey area overlooking a tributary to the Lumaco; PU-262 in the northeastern portion of the Purén Valley, and PU-146 and PU-136 in the hills to the north of the Purén Valley.

Site Concentrations

Agricultural Concentrations

The South-Central Area: South of the Purén River and the Ipinco Creek there is a concentration of various types of sites. Eight of these sites have been identified as channelized fields, one of which, PU-98, is the largest site in the valley at ~41 ha. In addition, there are eight small domestic sites and one small cemetery nearby. In some cases, these sites are more than a kilometer from the nearest tributary. The size of the domestic sites, their distance from water, and their proximity to the large agricultural field may indicate that they were temporary residences used by those working in the fields. Another possibility is that only remnants of sites remain in this area because, due to its position between two waterways, it is subject to flooding and to sites covered by sediments. This could explain the number of small domestic sites, though not their distance from a water source.

Only two of the channelized fields in this concentration yielded diagnostic ceramic types: PU-98 and PU-81. Both are dated to the late pre-Hispanic period. Only two of the ten small domestic sites are included in this time period: PU-92 and PU-96. There are, however, two large domestic sites just across Ipinco Creek to the south on a low hilly terrace: PU-67 (14 ha) and PU-69 (17.8 ha). These large domestic sites are more likely to have supported the large population that would have been required to maintain this large agricultural field. Also on this hilly terrace is the only terraced field included in the late pre-Hispanic and early Hispanic periods. Possibly this area between the two waterways was an agricultural center from which food was distributed to the rest of the valley during these periods.

The Northwest Area: Another concentration of sites is located in the northwestern headwaters of the Purén River. Many of these sites are large. Three of the 25 domestic sites in this concentration are larger than 10 ha (PU-212, PU-205, and PU-207 at slightly over 20 ha). Also included in this concentration are eight *kuel* sites (PU-76, PU-75, PU-74, PU-204, PU-214, PU-210, PU-213, and PU-216). PU-216 is both a *kuel* and a fortress, likely an early Spanish fortress. Other fortresses in this concentration include PU-73, PU-7, and PU-8. These three fortresses are concentrated within about 1 km area of each other and are located along a large tributary running parallel to the Purén River. There is also one agricultural terrace (PU-13) and two small cemeteries (PU-11 and PU-15). The field and two cemeteries are relatively small given the large size of the domestic sites in the area, perhaps indicating that the sites were not contemporaneous.

The temporal data that is available, places two small domestic sites and one fortress in this northwest concentration during the earliest time period. The domestic sites, PU-51 and PU-10, are near the main river channel, rather than farther into the headwaters and both are in close proximity to the fortress, PU-8. PU-10 is only 300 m west of the fortress. The same sites are found in this area during the late pre-Hispanic period, with the addition of only one small domestic site, PU-192. This site is located farther up the headwaters, slightly more than 2 km to the northwest of the fortress, possibly an indication of a decreased need for protection during a period of peace. There are no identified sites located in this area during the early Hispanic period. It also is possible the area was abandoned, though the presence of a Spanish fort (PU-216) belies this apparent lack of settlement during this time. It seems more likely that the lack of sites in this area during this time period is more related to the lack of diagnostic ceramic data available on most of the sites, although there may have been occasional abandonment due to armed conflict.

The Southwest Area: Another concentration of sites is located south of the Purén River, in the southwest portion of the valley. There are two large sites here, one of which is PU-38, a large *kuel*. This *kuel* covers 13.8 ha, and is located in the southwestern portion of the Purén Valley on the terrace just above the valley floor. It is approximately 1 km to the southeast of the other large site in this concentration, PU-36, and is one of the largest domestic sites in the survey area at 19 ha. Also in this concentration, are five small to medium *kuel*, most of which are concentrated around PU-38, a large *kuel*, PU-26, an early Hispanic period fortress, PU-276, the only mine identified in the survey area, and PU-258, a *nguillatun* site.

Temporal comparison maps show that PU-38 and PU-36 are occupied through all three time periods. During these periods, a concentration of sites can be seen in this location, all centered around these two sites. These two sites may reflect one possible centralized area of occupation that survived through all periods.

The Central Area: Another concentration of sites is centrally located on a small hilly area west of the Lumaco River and south of the confluence of the Purén and Lumaco Rivers. There is an elevated, hilly terrace in Huitranlebu with 29 sites on it, particularly a cluster of 17 domestic sites on the east side of the hills, most of which are situated along the slope overlooking the wetlands toward the Lumaco River. These sites are small to medium in size, with one large site, PU-120 at 19 ha. Also included in this concentration is one large *kuel*, PU-105, and seven small to medium-sized *kuel*. There are two channelized fields, PU-267 and PU-275, on the valley floor at the base of the slope and one terraced field, PU-133 at 65 masl. Two *lof* or stone lineage markers (PU-240, PU-274) and two *nguillatun* fields (PU-124, PU-125) are included in this concentration.

PU-120, a large domestic site, and PU-122 are the only sites in this concentration that were occupied through all time periods. One *kuel*, PU-132, is present in from the late pre-Hispanic to the early Hispanic period. This *kuel* is located on the highest point of this hilly terrace at 92 masl. During the earliest time period this *kuel* overlooked the eight domestic sites arranged along the northeast side of the terrace along the Lumaco River. Other than the two continuously occupied sites, there are six small domestic sites in this concentration during the late pre-Hispanic

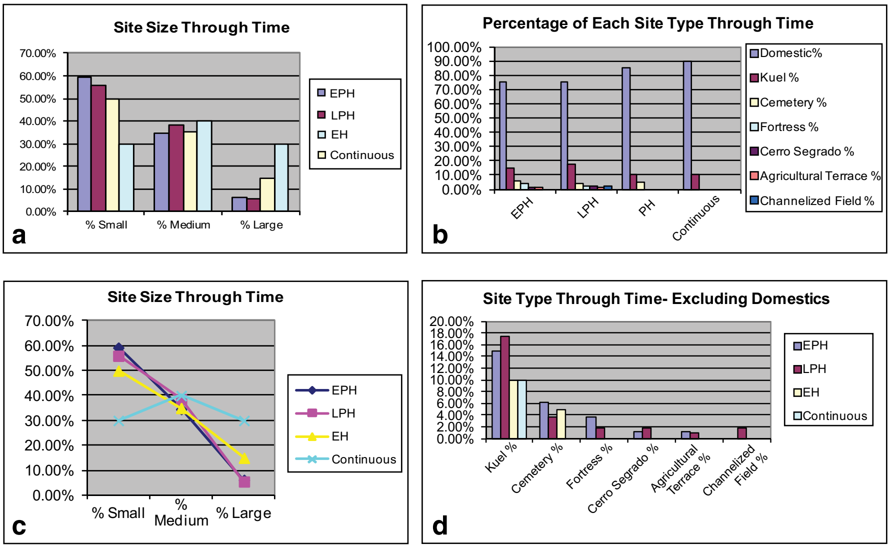

Fig. 10.3 a-d Frequencies of sizes of different types of sites through time.

period. During the early Hispanic period there are fewer domestic sites, but they are slightly larger, with the one large site, three medium sites and three small ones. The early Hispanic period has the least amount of sites, with only the two continuously occupied sites and one other small domestic site, PU-249.

Temporal Comparisons

A trend of increasing site size can be seen through time for all categories except cemeteries. Their horizontal extent could not be accurately estimated because we did not place shovel probes and test pits in them. The early pre-Hispanic period has the highest percentage of small sites (<2 ha, Fig. 10.3 a–c), the late pre-Hispanic period has the highest percentage of medium sized sites (between 2 and 10 ha), and the early Hispanic period has the highest percentage of large sites (>10 ha). Although, the late pre-Hispanic period has the greatest number of sites, the overall pattern indicates that through time the settlement shifted from a large number of smaller sites, distributed throughout the valley to a small number of larger sites concentrated in a few key locations in the valleys.

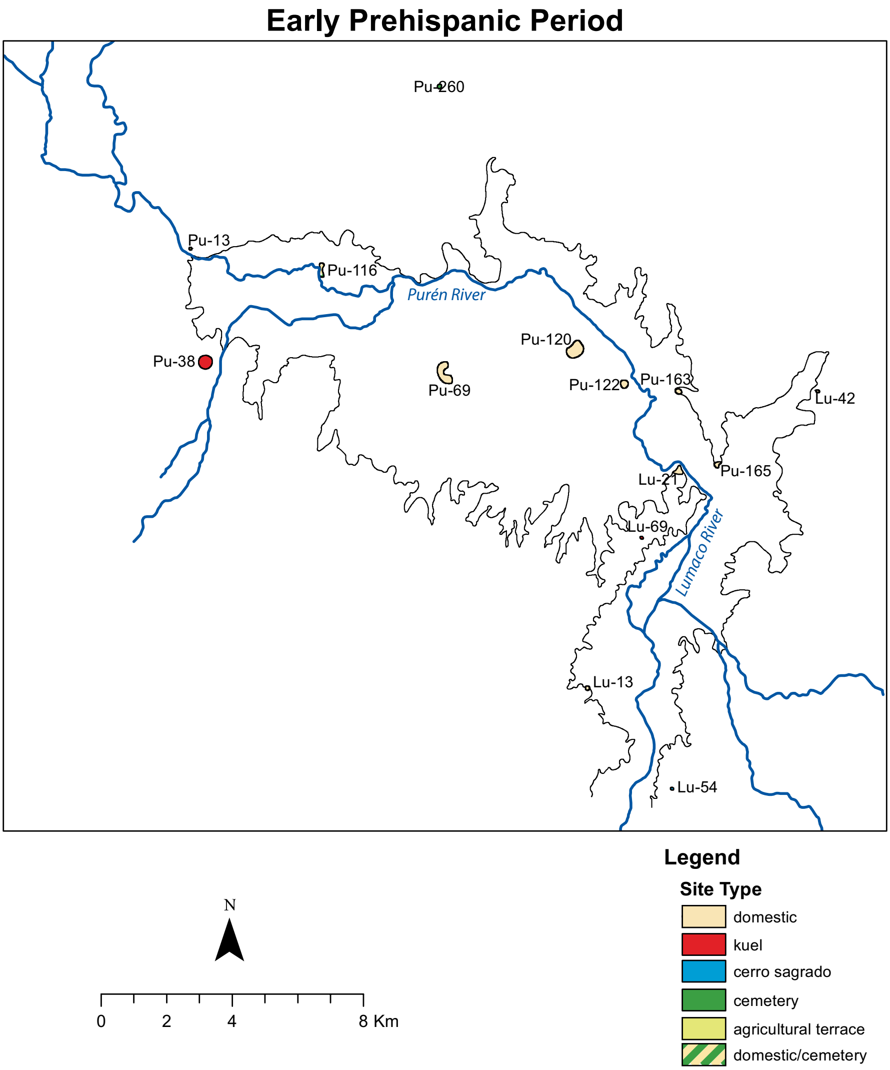

Fig. 10.4 Location map of early pre-Hispanic period sites.

Early Pre-Hispanic Period (EPH, ~AD 400–1000)

The earliest time period, primarily associated with the Pitrén ceramic style, presents the highest percentage of small sites, indicating that the population was widely dispersed in small settlements scattered throughout the valley (Figs. 10.4 and 10.5). These smaller sites maintain some of the same concentration patterns that are observed in the overview presented above, particularly the southeastern concentration

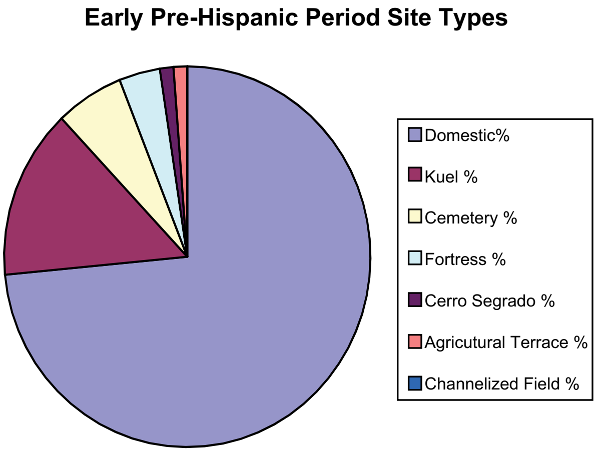

Fig. 10.5 Frequency chart of site types for the early pre-Hispanic Period.

and the central concentration. There are a variety of site types present during this time period as well.

For unknown reasons, this period has the highest percentage of cemetery sites, two of which are both domestic and cemetery sites, PU-116 and LU-17. This may indicate a difference in burial practices between the three time periods.

There is only one agricultural site present during this time period. PU-127, a terrace, is relatively small at 0.51 ha and is located in the central region of the Purén Valley, somewhat isolated with only one domestic site nearby, PU-107. There are no channelized fields included in this time period.

There are 12 *kuel* present during this period. The two large continuously occupied *kuel*, PU-36 and PU-132, are present during this early period; one at each end of the Purén Valley. Other than these two sites, most *kuel* of the early time period are small (<2 m high and 8 m in diameter) and located in the low hills above the west bank of the Lumaco River. There are seven *kuel* in this area and one across the river on the east bank. In addition, there is PU-34, a medium sized *kuel* 0.5 km southeast of PU-36 and PU-112, a small site to the north along the Purén River.

Late Pre-Hispanic Period (LPH, ~AD 1000–1550)

This intermediate period, primarily associated with the El Vergel ceramic style, has the largest number sites and the highest percentage of medium sized sites (Figs. 10.6 and 10.7). This implies an increase in the size of sites over time rather than a decrease number of sites. This increase may be related to the construction of more *kuel*.

Of the 109 sites included in this period, 17% are *kuel*. This is the highest percentage of *kuel* of any period. There are 13 small *kuel*, mostly scattered along the west

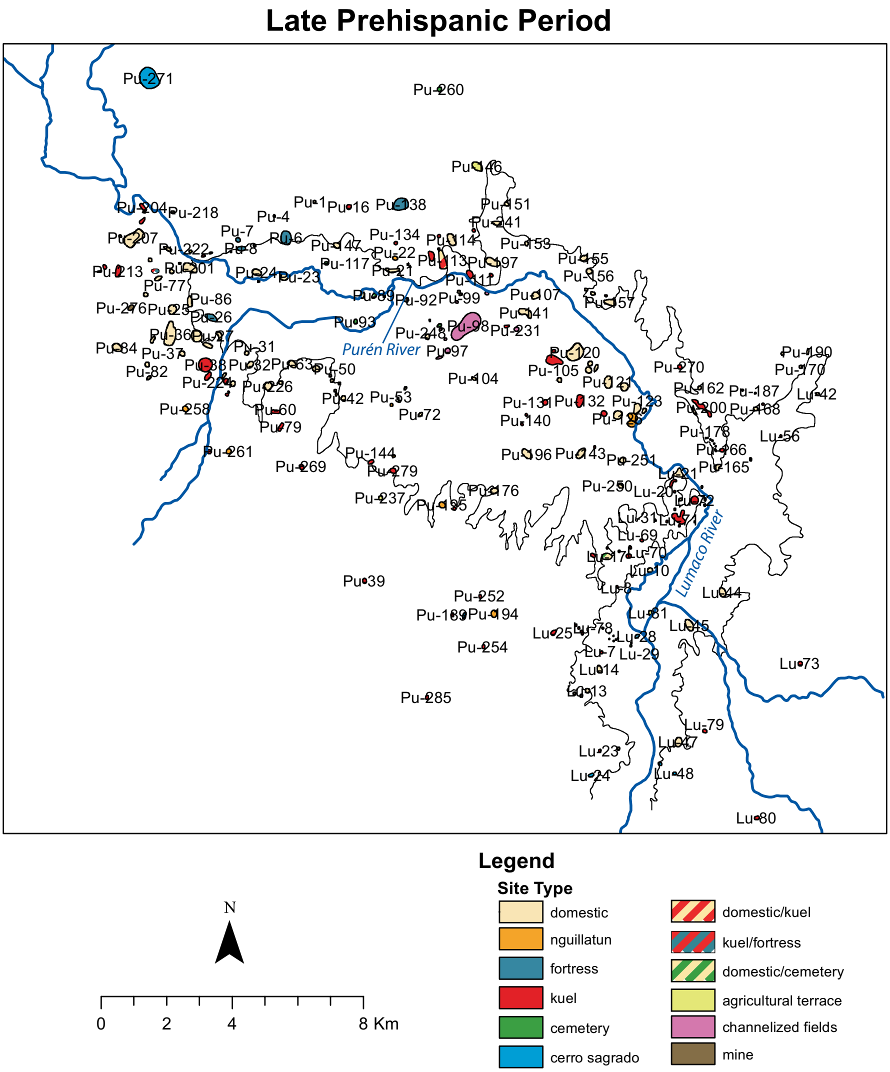

Fig. 10.6 Location map of late pre-Hispanic period sites.

bank of the Lumaco Valley, 4 medium *kuel* (2–5 m high and 8–15 m in diameter), mostly in the Purén Valley, and 1 large *kuel* (>5 m high and 15 in diameter), PU-38. One medium-sized *kuel* is a combined domestic and *kuel* site which is located north of the Purén River.

The percentage of domestic sites during this period remain about the same, 75 % and 75.2 %, from the EPH to the LPH, respectively. Many domestic sites of the early period are also occupied during this period, with the addition of 20 new sites. Most of these are small to medium and are fairly evenly distributed throughout the

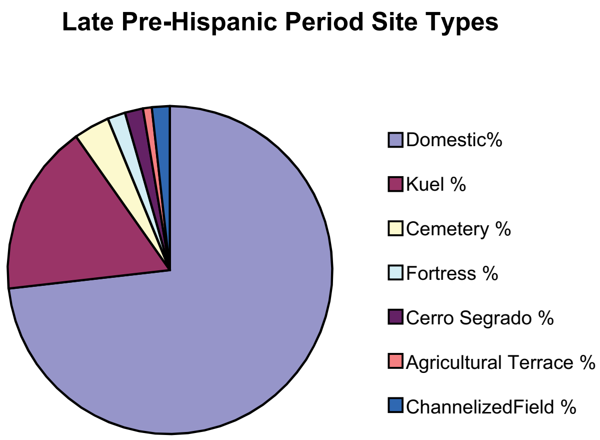

Fig. 10.7 Frequency chart of site types for the late pre-Hispanic Period.

valley. There is one large domestic site that is unique to the intermediate period, PU-67 (14 ha); it is located in the central hills south of Ipinco Creek, across the creek from the large channelized field, PU-98.

The LPH also has the largest number of agricultural fields, and is the only period clearly associated with channelized fields. While there is only one terraced field in both the early and intermediate periods, terraces in the intermediate period are larger, at 5.2 ha, than ones in the early period, at 0.51 ha. In addition, the intermediate period has channelized fields, PU-98 and PU-81, both located in the central valley floor between the Purén River and the Ipinco Creek. The appearance of the fields perhaps indicates a change in agricultural technology to the valley floor, perhaps to accommodate a larger population. The size of the fields and total area covered by agricultural cultivation, both terraced and channelized fields, increased by a large margin (from half a hectare to more than 47 ha), indicating an increased dependence on agriculture as a food source during this time.

Two probable late pre-Hispanic fortresses are present during this period: PU-8 and PU-26. They are located on the west end of the Purén Valley. PU-6, a large fortress, is located further to the east along the north bank of the Purén River.

There appear to be fewer cemeteries during the intermediate period. There are four cemeteries, two of which are combined domestic and cemetery sites. One of the domestic-cemetery sites, LU-17, is also present in the early time period. The other domestic-cemetery site is PU-89, located north of the Purén River, about 1.5 km to the east of PU-116, the other domestic cemetery present in the early period. Another cemetery that is included in both the early and intermediate periods is PU-260, located 3.5 km north of the nearest site.

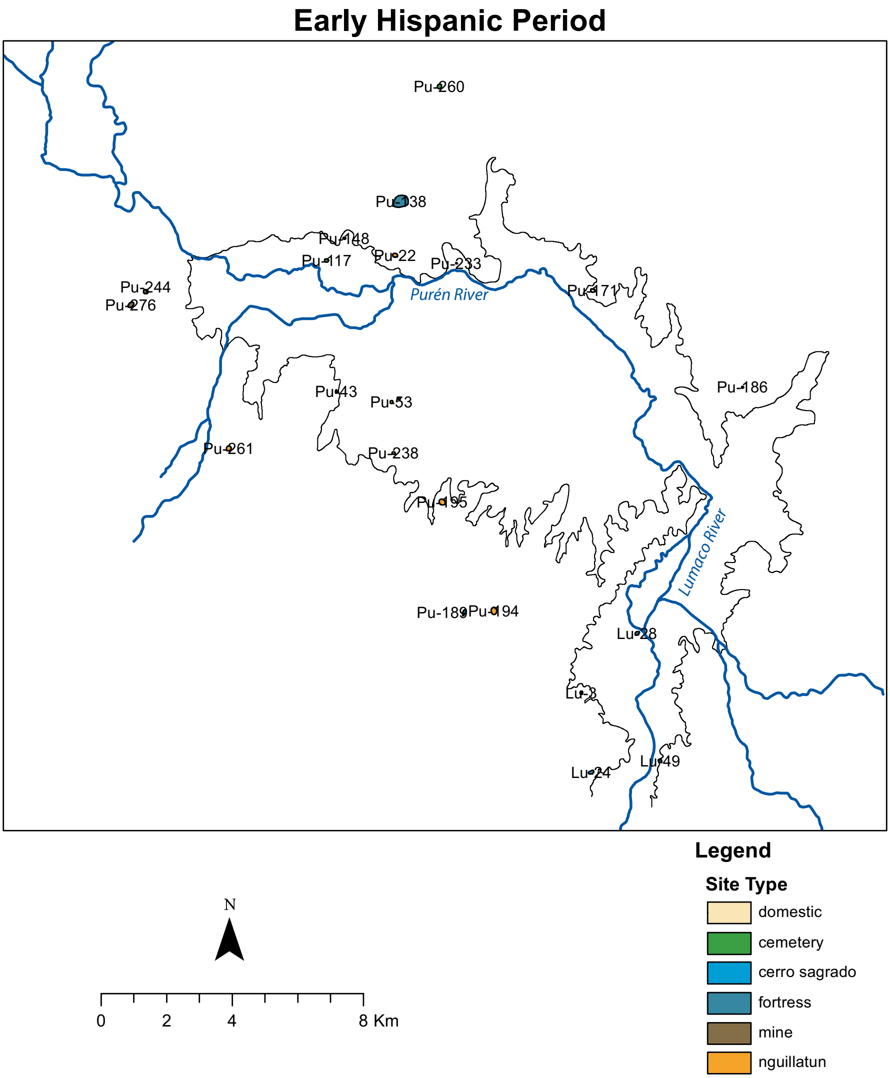

Fig. 10.8 Location map of early Hispanic period sites.

Early Hispanic Period (EH, ~AD 1550–1700)

The late period includes a smaller number of sites, with only 20 sites total, but it has the highest percentage of large sites (Figs. 10.8 and 10.9). This suggests that near contact era, the population moved from smaller scattered settlements into larger centralized settlements located in key positions throughout the two valleys. There also is less variety of site types in this period, with only 17 domestic sites, 2 *kuel* (with evidence of Spanish materials in them or radiocarbon dates of this period)

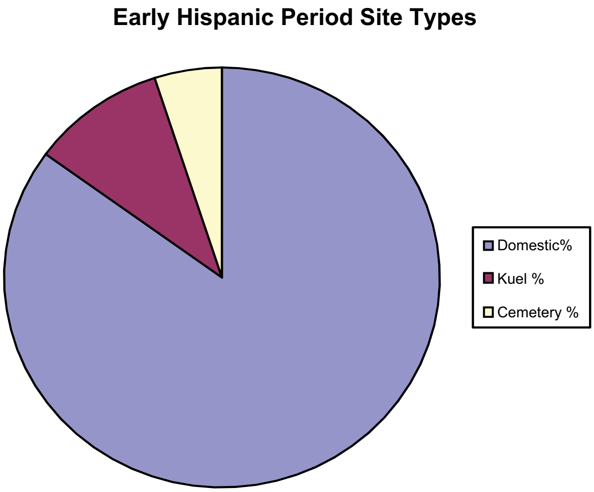

Fig. 10.9 Frequency chart of site types for the early Hispanic period.

and 1 cemetery. This also could be indicative of conflict in the valley during this later period, forcing people into centralized settlements. There is also a noticeable absence of agricultural fields, fortresses, and ceremonial sites (*nguillatun* and *Cerros Sagrados*), although the latter two sites were probably continuously utilized.

One of the key positions occupied during the late pre-Hispanic period is the southeastern portion of the Purén Valley, centered around PU-36 and PU-38 (see discussion of Southeast Concentration), which also includes two smaller sites, PU-35 and PU-37. These latter two are important locations in the headwaters of the Boyeco Creek during the EHP as well. PU-36 is one of only two *kuel* present during this period that contains Spanish materials.

Another key position is along the Purén River as it changes course from west-east to northwest-southeast. Along this 5 km stretch of the river valley, there are six domestic sites, including PU-120, PU-122 and PU-249 on the terrace along the southwestern bank and PU-157, PU-171, and PU-264 on the northeastern bank. This is an important location, given its proximity to the confluence of the Purén and Lumaco Rivers.

The EHP also has the highest percentage of fortress sites for the three time periods, indicating that the Spanish shifted their defensive positions repeatedly. This interpretation is supported by the chronicles that describe the numerous times in which the Spanish established a fortress, were defeated by the Araucanians, and then forced to leave the valley (see Chapter 3). All three early fortress sites, PU-6, PU-8, and PU-26, are located on the western edge of the Purén Valley near the headwaters of the river, perhaps representing the earliest Spanish foothold in the valley. Other fortresses exist in the valley but we are not certain if they date to the Spanish era or to the Chilean Republic period.

There are a few small domestic sites scattered throughout the valley during this late period. They are primarily small to medium sites, with the exception of LU-38, a small *kuel* on the slopes above the southern portion of the Lumaco River, and LU-

29, a small cemetery located on a low rise in the Lumaco Valley. These two sites are within 2 km of each other as well as LU-13, a small domestic site.

Continuous Occupation

Of the 140 or 376 total sites that are included in the type series maps, there are 10 that show clear evidence of occupation through all three periods. These continuously occupied sites are fairly evenly distributed across the size categories, with three small (<2 ha), four medium (2 ha), and three large (>8 ha) sites. These sites do not represent much diversity in site type. All are domestic with one exception: PU-38, a *kuel*. This *kuel* and its associated *ñichi* platform and ceremonial area is 13.8 ha, and is located in the southwestern portion of the Purén Valley on the terrace above the valley floor. It is approximately 1 km southeast of a large continuously occupied domestic site, PU-36. These two sites may reflect one centralized area of occupation that survived through all time periods, with the population breaking off and coming back together as environmental, political, or social conditions dictated. The largest continuously occupied site, at 19.25 ha, is PU-120, located in the northern Lumaco Valley. This site overlooks the river from a low hilly terrace to the west.

All continuously occupied sites follow the general settlement pattern described earlier, in that they are located on the valley floor or, more commonly, on the terrace above the valley floor. The continuously occupied sites in the Purén Valley are situated south of the river and are large to medium in size. The only exception is PU-35, a small site at 1.7 ha. However, it is located approximately 285 m west of PU-36 across a small tributary and could possibly be an extension of PU-36. The Lumaco River is less densely occupied across all time periods with more small to medium sites; an exception is PU-12. LU-13 is a small site at 1.36 ha, located in the southern Lumaco Valley more than 7 km from LU-35. Overall, the distribution of continuously occupied sites indicates centralized occupation areas, concentrated in the northern part of the study area, with scattered, smaller, long-term occupation sites along the Lumaco River.

Discussion

The combined settlement and ceramic patterns identified as a result of the analyses discussed provide the information needed to interpret how the Purén and Lumaco Valley population reconstructed social, political, and economic relationships during the late pre-Hispanic Period and especially the early Hispanic Period. The data suggest concentrations of settlements in places near defensive sites and large ceremonial complexes. Also noted is the larger size of domestic sites during the early Hispanic period (see Chapters 2 and 4). This study is just a beginning and much more archival and archaeological research is required to confirm many of these interpretations and to ask new questions of the data.

Lastly, Chapters 6 and 14 provide evidence that the climate and environment of the valley during the period under study was relatively similar to the cool temperate rainforest that exist today. These studies also suggest that the valley was characterized by cleared spaces between forest patches, revealing the intense and long-term modification of the environment by humans over the past several millennia. The results of these data correspond well with the chroniclers who also state that the valley had many *llanuras* or grasslands without forest (see Chapters 3 and 6).

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Part III
The Teleoscopic Polity

Chapter 11
The *Kuel* and Ceremonial Fields as Places of Patriotism and Patriarchy

Tom D. Dillehay

Introduction

Unlike many regions of the Americas where indigenous groups experienced rapid and often drastic changes from contact with and occupation by European colonialism, the intrusion of the Spanish in south-central Chile led to the formation and growth of an ethnic polity or proto-state, one that lasted for nearly 350 years. In the *Estado* area, the rise of the polity was immediately followed by a rapid reconfiguration of social, political and economic relationships during the late sixteenth and early seventeenth centuries. This response of the area's population to European contact differs from that of the majority of other ethnic groups in the Americas (exceptions are the Pueblo of the American southwest and the Lacandon Maya of Yucatan) in that they were occupied and eventually incorporated into the Spanish empire. Instead, the Araucanian people simply shifted their patrilineal and patriarchical organization to higher levels of geopolitical integration to form a formidable and lasting resistance to the empire.

Identifying the Araucanian response to Spanish contact is fairly straightforward in the early written records. Although sparse, these records provide details on the intersocietal relationships between the Spanish and the Araucanians (e.g., Ercilla y Zúñiga 1982 [1569]; Góngora Marmolejo 1960 [1575]; Gónzalez Nájera 1889 [1614]; Mariño de Lobera 1960 [1580]; Olaverría (1852/1594); Rosales 1989 [1674]; Valdivia 1887 [1606]). How the Araucanian population reconstructed social and political relationships is not always easy to discern, however. Unlike other situations of contact, the transition from initial contact to organized resistance is marked by local centralization of political power at the *lof* and *regua* levels but regional noncentralization at the *ayllaregua* and *butanmapu* levels. I say noncentralization because centralized political power among the Araucanians at the territorial level seemingly never existed. However, the archaeological presence of a settlement hierarchy (e.g.,

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mound complexes, small to large domestic sites, defensive locales, and agricultural sites) clearly indicates the continuation and teleoscopic enhancement of some formalized social and political inequality prior to and during the Hispanic period. Intergroup ceremonialism and ritual, as reflected by the large *kuel* mounds, *rehuekuel* complexes, and ceremonial fields, became even more important, as indicated by both the archival and archaeological records (Dillehay 2007). Prior to the arrival of the Spanish, mounds were fewer in number, smaller in size, and associated with smaller and less dense domestic sites and *rehuekuel* complexes. These sites probably represent small-to intermediate-level societies engaged in exchange systems and perhaps occasional conflict among themselves.

In this concluding chapter, I focus on the social, spatial and political dynamics that connected ceremonial fields and *kuel* as sacred sites with people, both leaders and their grassroots followers, and with the Araucanian polity, keeping in mind that these localities were strongly related to domestic and other sites. Most archaeological studies of ceremonial and monumental sites treat them as inanimate architectural objects that reflect administrative hierarchy, elaborate burial of elites, extractive political economies, epiphenomenal ideological expressions, and so forth (e.g., Bradley 2000; Burger and Rossignol 2012; Milner 2005; Scarre 2002; Thomas 1998; Trigger 1990). As I argued previously (Dillehay 1986, 1990, 1992, 1999, 2003, 2007), the Araucanian monuments are considered to have been (and still are in a few Mapuche communities) animated beings like humans that have kinship relations among them and with living people and their ancestors. Like humans, *kuel* pray, contest, fear, and feel. However, unlike humans, they can communicate and transpose themselves from the living world to the sacred upper *Wenumapu* world. *Kuel* have feelings, thoughts, lives, and needs, including nourishment and care by the human communities living around and interacting with them. Even more significant is that these places are the conduits through which the living human population interacts and communicates with the *Wenumapu* world. These places register and sustain identity, memory and agency, which also is the case in many other regions of the Andes.

More specifically, to the modern-day Mapuche in the Butarincon area of the Purén and Lumaco Valley, *kuel* mounds are considered to be kinsmen that have specific life histories and that house the spirits of important deities, ancestors and shamans. In order to know how to interact with, read and communicate with *kuel* and to respect their life histories, people must be “mound literate” (or *nauchi* in the Mapuche language), meaning they must know how to converse with and understand *kuel*. That is, people must respect and accept *kuel* and *rehuekuel* as members of a vertically and horizontally layered patrilineal network of social relations between the living, the mounds, and the ancestors and deities. This network is defined metaphorically by a proliferating kinship network of son–daughter and brother–sister mounds through which history is continually made, recorded, and perpetuated across the landscape of the living. Today, participation in public ceremonies (i.e., *nguillatun*, *rucatun*, *coyantun*) rekindles this network and provides solace and tranquility to the linkages among all participants. Ceremony is a concept and an activity that unites *kuel* and *rehuekuel* (and in the past the *lof* and *regua* or patrilineages comprising the *ayllaregua*) into a dynamic system of human interaction with history and sacred spaces across the landscape. These spaces, as represented by the *kuel* and *nguillatun* ceremonial fields, were and still are symbolically interactive, socially integrative in terms of real and fictive kinship structures, topographically bounded, and experientially holistic and meaningful (Dillehay 2007). However, the existence of *kuel* and the ceremonial fields was and is much more than just symbolic landscape and genealogical history. Their essence is not only both social and religious but also physical and cosmological. In short, *kuel* and ceremonial fields have their own personhood much like humans; they have names, locations and histories; and they have individual and collective rights, duties, and responsibilities similar to humans. These are some of the elements that make the Araucanian/Mapuche culture Andean in nature (Dillehay 2007). Others relate to basic religious, symbolic, and organizational structures (see Dillehay 2007).

What are these rights and duties? How did they relate to resisting or warring Araucanian populations of the sixteenth and seventeenth centuries, and how can we infer the meaning of these issues within the broader context of the historical and archaeological records? These are some of the questions that are addressed in this chapter in an attempt to better connect the archaeological record to the known circumstances of the historical archives and to the inferred patriarchical social and political organization of the early Hispanic period Araucanian society. There are no known archival records that directly address the duties and rights of *kuel* and other sacred places of the Araucanian society, and it is obvious that archaeology cannot easily identify these kinds of attributes in the material record. Oral ethnography and history, however, can and has done this for the Mapuche residing in the Purén and Lumaco Valley today, as revealed through detailed shamanic rituals that I recorded previously at actively used *kuel* and *nguillatun* sites, in addition to numerous interviews with elders from several *lof* communities. Given the care and aesthetic architectural details of the *kuel* in this valley, it is obvious that these places had and still have great social, ideological and historical meaning to the local population. Along these lines, I draw on the present-day thoughts, feelings, memories and identities that local *machi* shamans and others have of these places to further infer, even speculate, on the broader role of *kuel* and ceremonial fields during the period of study here.

Presented below is a brief example of the ritual dialogues of *machi* who administer public ceremony at two actively used *kuel* in ceremonial fields in the Purén and Lumaco Valley. These dialogues reveal the special linkage between the living and the dead, the meaning of the *kuel* to the people today, and the rights and duties of the people and *kuel* towards each other.

> *Kuel* are our brothers and sisters, they helped us and protected us in the past. They are important places that keep the spirits of the *machi* and they give us access to the deities *Chau Chau* and *Pillan* in the *Wenumapu*. The *kuel* know our history and remind us of it. They must be respected and given offerings of *chicha*, food, care, respect, and prayer. If not, then they become upset, sick and uncooperative, and they stop advising and protecting us. It is for this reason that the *machi* must work with the people to make the *kuel* feel wanted and respected. This is our duty to do this and these are the rights of the *kuel*, for us to do this for them. In turn, they have the responsibility to protect us and to give us advice. This

> is our right. But also, the *kuel* have their places of residence, their *ñichi* and the *nguillatun* fields where the *lof* come together to worship and to build community of differences (*machi* Lucinda and Juanita, Butarincon and Rucalleco, 2001 and 2010).

The premise of public ceremony at and with *kuel* addresses both the needs of the Araucanians in the past and the Mapuche in the present to impose a social and cosmological order on patriarchical *lof* communities and also a unified understanding of what was partial and invariably fragmented in the early Hispanic period—the indigenous population at large. The archaeological and historical context in which the patriarchical model proves particularly illuminating is in the understanding of the sociopolitical organization, kinship structure, and order of public ceremony at *kuel* and ceremonial fields and their role in acting as nodes of intergroup cohesiveness during the course of the Arauco War. The intent was social continuity and political stability materialized primarily through the setting of the built monumental environment of *kuel* and fields within the Purén and Lumaco Valley and secondarily through the repeated use and rebuilding of domestic spaces in closely defined locations near these places. As material signatures upon the landscape, the *kuel* (and *rehuekuel*) and the fields reflect how and why greater continuity of and attachment to these places were achieved and remembered. This continuum still exists today both materially and symbolically between the individual family *rucas* and hearths in the *kuel* and the fields as places of spiritual residence and exchange and the individual family *rucas* or houses in the *lof* communities (see Chapters 4 and 5).

The materiality and permanence of the physical location of the *kuel*, fields, and community lands belie a fluidity in local household and *lof* composition and continuity. The physical *ruca* itself within both the fields and the living communities, along with the patrilineage names, origin stories, and ancestral memory attached to both places, provides a historical stability that cloaked and facilitated the social and economic mobility of fragmented groups in the past and their incorporation into local communities and their ceremonies. It is in the juxtaposition of social, economic, and ceremonial mobility, often with permanent location but impermanent community and kinship identity due to mobility that the unique character of social flexibility of the Araucanian society of the sixteenth and seventeenth centuries emerged. Thus, mobility and flexibility within public ceremonialism and the patrilineal community structure was at the heart of what partially made the Araucanian society public and resilient. It is for these reasons that *kuel*, *rehuekuel* and ceremonial fields dominated and, in a few communities, still dominate the social and historical landscape of Purén and Lumaco. During the war years, the temporal and spatial replication of these single but united forms of *kuel* and ceremonial fields, were the manifestation of an *ethos* of patrilineal communities made up of both kinsmen and nonkinsmen individuals. These places thus signified the intergenerational aspect of each patrilineal community as well as expressed claims for patriarchical continuity and increased political order across a wider territory. (Even during the *reduccion* period of the terminal twentieth century and the twenty-first centuries, when *lofs* and communities continued to be fragmented due to political and demographic shifts, real and fictive kinsmen still united through public ceremony. Today, due to increased shifts resulting from governmental land purchases for the Mapuche, fragmented groups still move into and become attached to other, usually more stable, ordered communities by participating in traditional ceremonies or by joining evangelical churches, where the latter exist in acculturated areas.)

The Need and Condition for Order

Notions of the Araucanian's need for an increased social, political, and domestic order organized around household, community, and public ceremonial remind me of aspects of Hodder's (1999) conceptualization of the European Neolithic domus, which he employs as a conceptual metaphor for the "domestication of society." Domus is the organizing place and concept that defined the Neolithic household, the family, the domestication of plants, animals, and the people living in and interacting with it. Hodder views the undomesticated, the natural or untamed, being controlled and processed through its involvement in the practice and place of activity in and around the domus. (This is similar to Bourdieu's notion of habitus, whereby practice organizes and influences the material and nonmaterial world.).

The key to understanding Hodder's model is the notion of giving more order to the natural, cultural, and social worlds. This is done by increasing the control and organization of domestic sites by moving towards sedentism (for the Neolithic period) and by planning the layout of public and private spaces in communities. Planned communities are especially important because they reflect the voluntary agreement of people to live permanently in larger and more ordered communities. This requires "some degree of social constraint" by people and an "ideology and practice of the domus which is used to create stable, aggregated and long-lived social units" (Hodder 1999, p. 34). As a result, families and households become more subjugated to these conditions and places, and this fosters more and larger communities and eventually centralized political control and, I would add, "governmentality" (sensu Foucault 1990; see Chapter 2). Hodder further believes that by rendering to this process and by "sacrificing the needs of small units to larger ones," the eventual outcome is the development of a "social will to sedentism" and order (in Hodder's case but an ordered intercommunity polity in the Araucanian case). Of equal importance for Hodder's model are the social codes, rights and duties, and spatial boundaries that define differences between insiders and outsiders forming this collective action. That is, a more ordered spatial, architectural, and social environment leads to greater complexity, continuity, solidarity, and stability, as postulated by Hodder for the European Neolithic period and as I surmise for the Araucanian case.

Hodder's wider implication is that society gives up something for security and order at a higher and larger level, and this, in turn, brings with it both rights for and duties of the members as well. Whether we agree with all aspects of the model or not, its implication is the connection between socially constituted and ordered environments and the potential for greater control, security, and goal obtainment through the construction of larger, more organized social and spatial units. His model focused on the Neolithic tomb as an extension of the house and revealed a continuum of the conceptual role of the house or domus in all aspects and levels of the wider or public society. In a somewhat similar vein, the Araucanian household or *ruca* was and is similar in representing the family and *lof* levels in public ritual and, by extension, the public ceremonies that entailed generations of kin-related *kuel*, ceremonial fields, and kinship layers, and the rights and duties associated with them, especially in times of stress, when more order and security were needed across communities as they resisted the Spanish invasion.

To continue these themes, presented below is a discourse on the meaning and role of the rights and duties as inferred from the chroniclers and ethnography, with the intent of providing the setting and condition within which *kuel* and ceremonial fields were used and had rights and duties. It is in this setting that we also can further infer the meaning and patterning of the materiality of these places, and how they fitted into the historical conditions of polity formation. This discussion also brings forward the conditions of these times to the present day, as the Mapuche still undergo political struggles in Chile (Dillehay 2003; Dillehay and Saavedra 2013; Dillehay and Rothhammer 2013).

Rights and Duties of Kinsmen, *Kuel*, and Ceremonial Fields

How did social and religious linkages between different households and communities help foster the formation of the Araucanian polity and how and why were the duties and rights of people, *kuel*, and ceremonial fields articulated? Public ceremonies such as *coyantuns*, *nguillatuns*, *cahuins*, and others were the places of a religiopolitical organization at all levels of the patrilineal society from the domestic household and *lof* to *ayllaregua* ceremonial spaces. They physically and organizationally enabled the recruitment and incorporation of outsiders and the social formation of compatriots as rights-claimants within warring communities (capable of being subjected or governed). I believe that the *kuel* and ceremonial field as the major public sites of religiopolitical organization is key to understanding the formation of the kind of subject that was a kinsman (fictive or not, the geographically wider *kuga* kin system; see Chapters 1–2) and a compatriot. The *kuel* and field also were the sites through which both the domestic and public lives of people were coalesced, organized, assembled, and rendered meaningful. Public ceremony also was the place through which socialization of old and new groups into local cohesive communities took place. I am using the term "through which" rather than "where" to indicate that the conception of the ceremony as the place of the religiopolitical does not only refer to its actual form with spatially enclosed structures such as the *kuel* mounds, *rehuekuel* complexes and the *nguillatun* fields but also includes its virtual form as kinship relations, symbols, imaginaries, material representations, categories, and ideas. That is, the ceremony was not a just a spatial container in which social relations happened. The ceremony also was a place *through which* social, religious, and political relations were produced, reproduced, and transformed, as evidenced by ethnographic research (Dillehay 2007) and the chroniclers (see Chapters 1 and 2; Dillehay 2007; Dillehay and Zavala 2013). The significance of public ceremony as a place and activity of political solidarity especially has been repeatedly recognized and emphasized by all chroniclers and historians over the past four centuries (e.g., de Góngora Marmolejo 1990 [1575]; Mariño de Lobera 1960 [1580]; Olaverría 1852 [1594]; Rosales 1987 [1674]; Valdivia 1955 [1555]; Vivar 1979 [1558]; Goicovich 2002, 2003; Bengoa 200; Boccara 1999, 2000, 2007; Dillehay and Zavala 2013; Leiva 1977; Zapater 1973; Zavala 2000, 2011; Zavala and Dillehay 2010).

It is this relationship between the living *lof* communities and the deities and ancestors that entailed certain rights and duties of the *kuel*, the ceremonial fields, and the kinsmen, as revealed in the above statements by shamans from Butarincon and Rucalleco. To reiterate, just as people have a kinship status and have rights and duties as members of the community, the *kuel* mounds and fields also acquired a kinship status with duties and rights. It is this status that the status of the people who belonged to and resided near the *kuel* and fields were largely derived. What were the rights of the common or subject people? As discussed in previous chapters, they were and still are reciprocity and political obligation, access to public ceremony, rights to claim compensation, and rights to join other perhaps more stable residential groups via the *kuga* or other social networks (see Chapter 2). On the other hand, rights of the *kuel* and fields were to receive offerings, to be considered kin, to be maintained, and to be respected. The rights of the *kuel* and fields as sovereign, authentic and living entities conferred upon those who belonged to them, rights that otherwise they might not have accrued as individuals acting outside of the public ceremonial context. This principle of the rights of the *kuel* and fields is obvious in the narratives of the shamans performing healing and other rituals at *kuel* in the Purén and Lumaco Valley (see Dillehay 2007).

To provide a specific example of these rights and duties for both *kuel* and people, in 2001, one mound near Purén, *Hualonkokuel* (Fig. 11.1), was sick and had turned against the local community for not giving it offerings, prayers, respect, and medicine. A local *machi* was required to perform a healing ceremony to cure the sick *kuel* and to mend relations between it and the local community. The *machi* enacted a lengthy ritual narrative as part of her healing ceremony at the mound in the presence of the community (Dillehay 2007). Four pervading themes ordered the narrative. First, the shaman had been commissioned by the people to heal the sick *Hualonkokuel*. Second, the *kuel* was sick and had turned bad, failing to give the community advice and to bring good omens. It deliberately failed its duty, because people had neglected their religious duties and offerings to it; they had not been staging ceremonies with it, not offering it *chicha*, food and gold, and not recognizing its powers and its kin relations to them and to the ancestral *Wenumapu* world above. It was the duty of the people to do these things before and for the *kuel* in public ceremony. Third, the *kuel* was perceived as a living force and a kinsman—it prays, contests, fears, and feels, and also has its own rights and duties. However, unlike humans, it communicates and transposes itself from one world to another like the *machi* administering the ceremony. It also has multiple histories and multiple identities—it can even transform itself into a *machi*, which in turn, can transform

Fig. 11.1 General view of *Hualonkokuel* mound, shaman's *rehue* pole and *rucas* and the *nguillatun* field.

herself into a *kuel*. The interchangeable gender identities between the *machi* shaman, her kindred spirit (*fileu pullu*), and the *kuel* are obvious throughout the healing narrative (see Dillehay 2007). The *kuel* and the *Hualonko* ceremonial field where it is located thus emerged as those spaces where loyalty, virtue, patriotism, respect, duties, and the discipline and order of community members were cultivated with the appropriate measure of the rights of the *kuel*.

In much of their history, fields and mounds were articulated as belonging to the deities and ancestors and religiopolitical rights that derived from that belonging. In other words, the rights and duties of kinsmen who belonged to the *kuel* or fields were derived from the rights and duties of the *kuel* themselves which in turn, were derived from the deities and ancestors above. The difference between rights *of* the fields and *kuel* (involving attributes of tribute, loyalty, virtue, ancestral history, offerings, physical maintenance, mutual discourse, discipline, and prayer) and rights *to* the field (involving attributes of praying, public worship, knowledge, security, living history, and ancestral support) is key to understanding the fields and *kuel* as the sites that enabled the political formation of compatriots as rights-claimants during the early Hispanic period and even today as the Mapuche struggle with rights in the Chilean nation-state (Dillehay 2013; Dillehay and Rothhammer 2013).

Community autonomy, appropriation, difference, and security remain essential attributes of the rights to the fields even today. Yet, these attributes are not necessarily harmonious attributes. They engender tensions, as revealed in the ritual narratives (Dillehay 2007), and are the essence of the difference between rights *of* the fields and rights *to* the fields. The articulation and claiming of rights of the fields and rights to the fields also demanded different ceremonial practices. While rights of the fields essentially revolved around genealogical rights and historical attachment to the local landscape, rights to the fields involved religious and political rights and changes in residence and kinship affiliation. The *kuel* and fields thus were the sites of religiopolitical cohesiveness in this precise sense, both enabling the formation of old and new community members as claimants of rights that were not necessarily restricted to the rights of the fields and of making use of rights that originated from the fields regardless of their kinship affinity. The fields as the sites of the religiopolitical thus combined two distinct but related set of rights. This is a fundamental difference that enables us to see how the struggles for retribution, recognition, reciprocity, and obligation (which were the foundations of patriotism as claims to justice and survivability; see Chapter 2) were linked across the changing landscape of political resistance and took shape through the articulations of these rights and duties within the polity.

It is recognized that archaeologists dealing strictly with the materiality of these kinds of social relations, places, and monuments will have a difficult time accepting these assertions and interpretations because the material correlates are not vividly present in this study. However, we know from the archives and from oral traditions that these linkages and conditions existed during the war years, and we are obligated to study them and to attempt to infer their meaning regardless of the level of ethnographic extrapolation and the nearly invisible material record involved here. As mentioned above, it is granted that much of this is speculation and the wider and deeper meaning of these issues were likely somewhat different in the past, but the fact that the shamans in ritual discourse today still allude to the past times of warfare and address the grievances, duties, and rights of both the people and the *kuel*, indicates the memory, continued agency, and identity of the places and events with the historical past. Today, local informants report that the function and meaning of the *kuel* and ceremonial fields still facilitate and obligate opposing yet complementary sets of *lof* and invited outsiders seated in the *rucas* of the fields to gaze at one another, to share food, experience and knowledge across the open space of the U-shaped fields. People meet in the common space of the field between the *rucas* at the *llangi llangi* altar, which symbolizes the integration of related yet different groups participating across the landscape, as they give offerings, prayers and, above all, foster intergroup solidarity via the *kuel* and the dialogue of the shamans with the deities and ancestors above.

In the historic past, the affiliation and security that newly incorporated fragmented outsiders sought through participation in public ceremony must have threatened the appropriations of already formed or stable *lof* groups who received these outsiders. Despite any familiarity the outsiders may have had with the local material record, daily practices, and ceremonial beliefs, the valorization of any difference and diversity in communities formed by locals and outsiders probably sometimes resulted in increased tensions around security and access to local resources (see Chapters 2 and 3). It is through these tensions that the fields and the *kuel* probably became sites of social power and more struggles whose aims became articulating the rights of the outsiders to these places. Understanding the religiopolitical roles of the *kuel* and fields at any given historic moment thus involves an attempt to grasp the seemingly infinite multiple instances of inter-community fractures that might have been opened by these. These kinds of tensions must also have been some of the conditions of polity building during the time of war and conflict.

In the end, the *kuel* and fields helped to produce both local and outsider compatriots as rights-claimants. These rights would have defined local membership, which was likely bounded by, contained in, and expressed through a wider *kuga*—like territorial kinship jurisdiction. In turn, these rights must have defined translocal membership across nearly all communities, which due to the conditions of warfare with the Spanish, had to have been unbounded, unbundled, and extraterritorial. These themes of the rights of the *kuel* and fields and rights to the fields were probably neither complementary but often-conflictual "elements" that made the *kuel* and fields the important religiopolitical sites that they were and still are in a few communities. Today, those *lof* still involved in the politics of and policy towards the *nguillatun* fields practically and intuitively understand these tensions and know how to work through them.

In summary, by considering the *coyantun*, *nguillatun*, *cahuin*, and *borrachera* public gatherings at past and present *kuel* and ceremonial fields as the primary sites of polity formation, I have aimed to argue that participation in public ceremony by both insiders and outsiders at *kuel* and in the fields was fundamental in recasting not only the religiopolitical but also the social in *lof* (and *regua*) kinship networks as these basic social units developed into the larger *ayllaregua* and *butanmapu* levels. If the fields and *kuel* were indeed the primary sites through which all kinsmen's lives hung together and higher levels of political organization were reached, the coexistence and codependence that this implies belied any demands being geographically and patrilineage-specific. They were social demands, arising from social situations of patriotism and producing social consequences of reciprocity and political obligation. These situations and consequences were inherently translocal and certainly had to have overflowed the local patrilineal boundaries that were set up to contain them, thus eventually allowing the formation of the larger-scale *ayllaregua* and *butanmapu* levels of organization.

Furthermore, I have already suggested that polity formation was social, religious, and kin-related before it was political during the Arauco War. Patriotism was social in the deep sense of that term as involving a way of coexisting and cosurviving that was inextricably kin codependent. If the *kuel* and ceremonial fields were the sites of the religiopolitical then public ceremony and patriotism were strongly related and this is more than just a historical contingency. I have also suggested that the mounds and fields were sites of social works insofar as they enabled the social formation of rights-claimants, the *kuel*, and the people, both capable of articulating entitlements, retributions, and demands. Yet, patriotism also involved duties. The themes of the rights of the fields and rights to the field then were and are essential elements of these places as the central spatial and material nodes of the religious and political obligation between leaders and the social reciprocity between patrilineage members during times of stress.

Last, it also is through the *kuel* and fields that individual leaders ontologically and publicly became obligatory and reciprocal (understanding individual and *lof* communities as codependent entities existing with others), and became religiopolitical because the fields were the grounds on which civic, social, and political rights became possible. As argued in Chapter 1, leadership was thus compositive and assimilative, given to combining many different groups and institutions rather than accumulative, the latter in terms of gaining wealth and status by controlling a prestige economy. Since codependence between leaders and communities both presupposed and engendered political solidarity as well as conflict and competition, questions of justice were inherent in a patriotic existence as revealed by the women demanding retribution from leaders for the loss of their husbands during the war (see Chapter 2).

From Domestic to Public: Teleoscopic Extension of the Patrilineal Family to the *Lof* Community to the Patriarchical Polity

It should be recalled that several chroniclers and historians refer to the absence of an Araucanian centralized political authority in late pre-Hispanic and early Hispanic times, although they do recognize the development of the more politically complex *ayllaregua* and *butanmapu* organizations as well as the *Estado*. Boccara attributes the development of this authority to responsive transformations towards a new ethnicity made by the Araucanians in times of war with the Spanish (see Chapters 2 and 4). He also recognizes the influence of a priori indigenous political structures in these transformations.

> Like many of the populations encountered by the conquistadors at the frontiers of the great Inca and Mexica empires, and in Amazonia, the *reche* [the earliest term applied by the Spanish to the Indians living in the Araucania] were considered a people "without King, without faith, without law." The term used repeatedly to describe the organization of those groups located on the southern frontier of Tawantinsuyu was *behetria* [meaning a free settlement whose occupants had the right to elect their own leader]. The principal characteristic of the settlement pattern of these groups was dispersal; their sociopolitical organization was acephalous, that is, characterized by the absence of obedience to a political figure, a chief, who had the means to exercise his authority (Boccara 1999, p. 427).
> One of the noteworthy changes in *reche* sociopolitical and territorial structure [as a result of contact with the Spanish] was precisely the institutionalization of the *ayllarehue* and the *futamapu*, which from temporary units in prehispanic times became permanent political associations in the late colonial system with their own political representatives…Thus, the war of resistance brought with it the fundamental transformation of society, it was essentially a vector of acculturation (Boccara 1999, p. 434).

In regard to Boccara's notions of a transformed society and a new ethnicity (or as he called it, *etnogenesis*, in his publication of 2000), he did not have access to the current archaeological record, and even if he did, he likely would still refer to these changes as part of an ethnogenesis. However, I disagree with this idea and simply view these transformations as representing an *ethnomorphosis* rather than an ethnogenesis, that is, a change from one state of ethnicity to another. Most of these changes occurred politically, socially, and demographically in the region of the *Estado* and later in other regions. I oppose Bocarra's idea because an Araucanian ethnicity already existed at the time of the arrival of the Spanish; afterwards,

Fig. 11.2 View of the "*oraculos de los indios*" mentioned by chroniclers upon entering the valley from the north (arrows point to *kuel*).

it simply intensified and changed into a more formal and politically and materially (archaeologically) visible entity.

In the case of the written records generalized by Boccara, they are somewhat incomplete and overgeneralized, in my opinion, with respect to the acephalous nature of the late pre-Hispanic Araucanian society, because formal leaders had to have existed to organize the corporate labor necessary for public projects (e.g., *rehuekuel*, canals, and raised agricultural fields; see Dillehay 2007; Dillehay and Saavedra 2010). Furthermore, many of the chroniclers writing in the sixteenth and seventeenth centuries were often too myopic in their vision of the Araucanians, which has led many recent historians, over relying on the early archives, to be misled somewhat. What are the reasons for this? I suspect that many chroniclers had experiences in limited geographic areas of the Araucania, were basing their opinions primarily on the northern Araucanians in central Chile who were occupied by both the Inca and the later the Spanish, or visiting areas where there was indeed little to no formal political development (see Chapters 4 and 5). Although many of the more reliable chroniclers were in the Purén region during the sixteenth and seventeenth centuries and observed many cultural practices there, they failed to describe the religious and political importance of the *kuel* and *rehuekuel.* Exceptions are Pineda y Bascuñán ([1673] 2003) who refer briefly to earth mounds over the tombs of leaders and Quiroga (1979 [1690]) who noted that upon entering the Valley of Lumaco from the north (Angol), he could see the "*oraculos*" of the Indians. He was referring to the *kuel* complexes at Butarincon, which still can be seen when entering the valley from the pass to Sauces to the north (Fig. 11.2).

Boccara also comments on the theme of political obligation and the recruitment, inculcation, and socialization of new members brought into the obligatory order of the *butanmapu* organization in the early 1700s.

> We see here that the formation of this new macroregional sociopolitical entity [*futumapu* or *butanmapu*] was accompanied by the upswelling of a new sentiment of identity which transcended the simple local group formerly constituted by the *rehue* [*regua*, patrilineage]…we offer an example of how colonial institution or colonial power structure (the general assembly) could influence both political practice and indigenous awareness…At a purely formal level, holding regular assembly [*coyan*] required each group to elect individuals to represent it outside the community. Moreover, each *futamapu* [*butanmapu*] had to elect only one representative, which contributed still further to the concentration of political power and to the dynamic of the delegation of power. The assemblies became a political meeting obligatory for all the caciques of the Araucania…the different groups which participated in the general assembly were classified and distributed in space in a rigid fashion, thus creating among the Mapuche a vision of their sociopolitical space. Each *futamapu* was assigned its own place [in the assembly] and the groups [*ayllareguas*] called unaffiliated were necessarily integrated into this new representation and organization of space. Each one of the indigenous representatives had to find his place [within the ceremonial field] and remain within it. The elaboration of a political space ordered by clearly delimited districts was concomitant with the inculcation of cognitive structures and the diffusion of a legal-political norm without which all harmony between the objective order of things and the subjective order of consciousness would have been impossible (Boccara 1999, pp. 458–460).

Boccara refers to the ordered obligatory spaces of public ceremony in reliopolitical ceremonial fields such as the *coyantun*, the *nguillatun*, and others (see Chapter 2). In essence, he and other authors (cf., Bengoa 2003; Zavala 2008; Goicovich 2003; Barros Arana 1884) address issues of social structure and governmentality. Over time and with population growth and renewed political development, the Araucanians eventually honed the “art of government” (Foucault 1991) into the more specific and higher levels of the *ayllaregua* and *butanmapu* structures. This organization primarily identified with a complex of institutions, prevailing philosophies, traditional codes of conduct and belief (*admapu*), rights and duties, and tactics that an effective pan-Araucanian government developed (cf., Bengoa 2003; Zavala 2008). This in turn allowed it to administer the warring populations at large and build a more secure political economy that catered both to the perpetuation of the government and to the welfare, security, and satisfaction of the governed. It is assumed that as the polity government evolved from local *lof* and *regua* patriarchies led by patrilineage leaders to the administrative patriarchy of the developed *butanmapu* and higher level *meli-butanmapu,* it developed this complex of faculties as a response to the growing needs and expectations of the governed during the war years. *Ayllaregua* and *butanmapu* were thus not only expository and compulsory organizations but also strategies. As this ensemble of four domains of the *Estado* was a need-based strategy itself and as leaders of the *Estado* understood needs within their own independent logic, an effective government utilized the web of faculties and ideas it developed to condition the warring population to act in ways conducive to the perpetuation of patriarchical political organization and to the needs of the governed.

Both the *ayllaregua* and *butanmapu* thus precipitated the constant transformative development of the understanding of the wider political environment of the war as constructed by governmentally created religiopolitical power and indigenous knowledge systems as manifested through public ceremony and the infrastructure of the war machine. Practically, this meant that in the same way these organizations allowed war leaders to manipulate considerations of political issues, people facilitated specific conceptions of issues through a combination of experience and response, which generated certain moral, patriotic, social, and political responses. Effective local and regional government via the *lof* to *butanmapu* network, then, created self-regulating, local to regional leaders who preserved a cycle of political discourse with particular premeditated attitudes with which the polity wide philosophy was eventually permeated (see Bengoa 2003; Zavala 2008; Dillehay and Zavala 2013). Not known are the details of how families, sub-lineages, *lofs* and *reguas* were transformed socially and economically to compose higher levels of religiopolitical community organization, although this transformation is statically visible in the archaeological record and described in the archives.

Reflections on the political security of communities thus reveals not only the ways in which Araucanian patriotism developed and the need, therefore, to centralize thinking around the new ethnicity (*sensu Boccara*) and ethos of the polity, but also the need to critically investigate the conceptualization of the polity as the container of the religiopolitical. Thus far I have referred to the way patriotism increasingly or telescopically involved new and higher levels of configurations of power and collaborations of inter- and intra-patrilineage governing. This included the harmonization of alliances among *indios amigos* in the north along the Bio Bio River, the shift of local power to larger and more powerful regional actors like the *ayllaregua* organizations, and finally, a shift towards governing through broader arrangements like *butanmapus* that controlled and disciplined at the site of the individual regions. I also have argued that, taken together, these changes in governing suggest that ethnicity, patriotism, and polity were becoming a regionalizing regime of the Araucanian political organization (see Leiva 1977).

The first insight that emerges from these considerations is that the security of patriotism towards the war effort did not necessarily lead to the reentrenchment of traditional notions of strong local leaders and polity-based notions of widespread security. Rather, security processes actually helped to transform patriotism into a regionalizing regime of government by enabling new inter-patrilineage relationships, involving a range of different groups and locations within, between, and across various *lof* and *regua* patrilineal territories. The second insight that emerges is from a regionalizing regime of patriotism that must be understood not just in terms of unified polity patrilineal territories but through the interregional flows of safe spaces or *refugio* communities as an integral part of a regional order and polity development under these conditions. From an archaeological perspective, the mixtures of different ceramic styles and paste types at sites and the standardization of sediments in the upper levels of mounds in the valley during the early Hispanic period is a result of this interregional flow of different people (fragmented groups or outsiders) into and across different local domestic and public or ceremonial spaces, as argued for the Purén and Lumaco Valley. By considering the governing practices of these flows, a more complex picture of Araucanian politics emerges than the one we are more familiar with, which is a vision of religiopolitics based on interactions between contiguous, spatially separate, and territorially bounded *lofs*, *reguas*, and *ayllareguas*. This more complex view suggests that if we want to understand how ethnicity, patriotism, and community membership within the forming polity was changing, and the new developments in governing and forms of politics that they engendered, we need to think of patrilineages in terms of overlapping, interpenetrating, and intermingling spaces. Or in terms of "space as flows," as the geographer Massey (1994, p. 5) puts it, that are created out of, or by, these very governing practices themselves. From this perspective, patriotism is more than the condition and institution of Araucanian ethnic rights and membership located within a bounded, separate container of ethnic space that we call the *Estado* or polity. Patriotism was a regime of practices enabling the recruitment and governing of individuals, groups, and populations that created a resisting polity space, and not as a bounded territorial container but as an assemblage of overlapping patrilineal governing relations involving a range of actors and forms of political relations, knowledge, and powers from the local *lof* community to the interregional *butanmapu* level. This was the Araucanian polity.

The Teleoscopic Polity: Reciprocity and Obligation

The inquiry of this study into the coalescence of a teleoscopic formation from *lof* to the interregional *butanmapu* has concentrated on three interrelated factors: (1) the coalescence of a notion of patriarchical family and community interests and political security; (2) the elaboration of an interior religious, ceremonial and ethnic conscience (a public ceremonial community); and (3) the topographical location of ceremonies (e.g., *cahuin*, *coyan*, *nguillatun*) in key places (*kuel*, *rehuekuel*), the primary archaeological sites under study here. All of these factors involved the constitution of the categories of "obligation" and "reciprocity" over and against each other; both must have displayed the tendency to replicate teleoscopically from the local realm of the family household to the wider society and vice versa in order to have facilitated ongoing intergroup cohesion. I argue that this type of teleoscopic growth and integration facilitated resistance to the Spanish and the resilient mobility, coordination and incorporation of fragmented groups across the countryside.

What were the social conditions that related to these changes in the relationship between leaders, kinsmen, and nonkinsmen as these developments took place? One way to perceive this question is through the notion that obligation was deeply embedded in a religious, political, social, and cultural matrix of practices whose guidance suffused daily experience and encouraged reciprocal relations on the local social and economic levels. The early war experience was an explicit and self-conscious awareness, characterized not so much by the way it saturated people's social practices but by the way it satisfied the canons of Araucanian epistemology (*admapu*), which imposed on political obligation the test of self-justifying self-sufficiency, a test that must have been presented numerous times to leaders and their patrilineage followers whether to engage in warfare, disengage and act neutral, or join the Spanish (cf., Bengoa 2003; Zavala 2008; Faron 1962, 1964; Guevara 1913; Latcham 1924; Medina 1952; Silva 1983; Villalobos et al. 1982; Villalobos 1995) .

Because of these and other developments, the management of the patrilineal family and household and of the household economy of the *lof* communities had to be transformed into a model for the management of the greater *regua* and *ayllaregua* communities—that is, for the political economy and infrastructure of the war—whose implications and scale of operation were different from those of the analogy between the family and the *lof* community levels. A number of factors were probably involved in this process. In the pre-contact era, food production was organized around the household and the *lof* through *mingaco* labor reciprocity (Zapater 1973, 1992). With intensive agriculture of the wartime, the *mingaco* of economic production was extended from the private household and *lof* levels and undertaken for the public *regua* and *ayllaregua* levels, as was the case in the domain of Tucapel, which produced food for and with the Purén domain (see Chapters 2 and 3). At the same time, the function of the household was greatly altered and augmented as a contributor not only of food for subsistence and public ceremony but also of goods and warriors (see Bengoa 2003; Martín García de Loyola (1598)). This increased responsibility of and engagement in food production, defense, and large-scale public ceremony is clearly manifested in the archaeological record of these domains, as evidenced by the presence of the raised agricultural fields, the terraces, canals and fortresses, ceremonial fields, and *rehuekuel* complexes, respectively.

In the foregoing, we can observe three principles in operation that have bearing on the relation between the domains of political obligation and socioeconomic reciprocity. The first principle, that of teleoscopic unification, consisted in the way the traditional habit of distinguishing between leaders and followers gradually became concentrated into all motives to unite them at ever increasingly higher and geographically extended levels of political and religious cooperation to resist the Spanish. Absolute as it may appear to be, however, this first principle is complicated by a second principle, that of obligatory recapitulation. This second principle concerns the way the momentum of governing was carried over to its products, relativizing the linkage between public gatherings and private households by successively discovering within each domain of the *Estado*, the components of the old distinction between *lofs* and *reguas*—and their incipient cohesion at the *ayllaregua* level. This recapitulation is most evident in the development of upward and outward mobility of political obligation, which begins with the outgrowth and coalescence of the *ayllaregua* from the patrilineal *lof* and *regua* segments of the society and, which transported the family and *lof* from lesser to greater spheres in responsibility and interaction: paradigmatically, from the economic to the political and from the domestic private to the public. Evidently as a process of obligation, this is also one of "upwardness" and "externalization" insofar as a solution to political problems in the greater Araucania sphere was programmatically sought within the lesser sphere, that being the local *lof*—level of community production and ever wider participation in the war effort. This shift and upward scale again is evidenced archaeologically by the presence of larger domestic sites located near agricultural fields, terraces and *rehuekuel* complexes (see Chapters 7 and 10).

Broadly speaking, the transformation from the local *lof* patrilineage and the wider *regua* network to the regional *ayllaregua* thus was a political movement first "inward" to solidify each patrilineage and then "outward" to unify all of them at the *ayllaregua* and *butanmapu* levels, through the realms of the political authority structure and the society at large, the religious and wider public spheres, the polity and the family, domestic labor, mound architecture, gender differentiation, cohesive and reinforcement communities, and subjectivity. This process also involved a movement from the domestic to the public realms of political obligation. This trajectory also considers this coalescent process as a social teleoscopic movement "upward," a progressive attachment of the normatively absolute patrilineage head authority to its presumed locale in patrilineal absolutism and its relocation in the cause and public sphere. Yet, even as this principle of the absolute was translated inward and then extended upward, the increasingly domestic spheres of the family and *lof* experience in which it took root eventually consigned them to the realm of the public *ayllaregua* and *butanmapu*. This was, in other words, part of the extended teleoscopic process of polity formation and sovereignty. Inward and then outward coalescence through the patrilineages was the key to forming a sovereign patriarchical society.

The third principle at work in the linkage bears reciprocal relation to these first two. If obligation involved the systematic multiplication and authorization of patrilineal family entitlement and rights, duties, opinions, desires, and ethnical subjectivities—it was also obliged to reconceive the nature of the realm of leadership, which was obligated to acknowledge and comprehend the potential of the family to ascend to ever increasingly higher political levels. I speak now not of the *ayllaregua* and *butanmapu* polity structure of the seventeenth century—the institutionalized public realm of the Araucanian government and its apparatus—but of a category of nondomestic publicness that was as unprecedented prior to the arrival of the Spanish as the system of proliferating family and patrilineage connections it came to embrace. What was required of the wider public was the dynamic flexibility of a whole that accommodated an unlimited and perpetually changing number of interchangeable societal parts across and beyond the territory of the *Estado*, which I submit was made possible by the simplicity and standardization in the social and political structure of the four domains, ceremonial fields, *kuel*, ceramics and other artifacts that facilitated obligation by being stylistically and symbolically familiar and legible. The *Estado* was able to do this because it derived its own, virtual entity from these same standardized parts and places that composed it. Its primary boundaries were defined neither by space nor time nor leaders but by the affiliation and cohesiveness of its recursive, legible, and exchangeable individual parts. The parts were persons, actual individuals, patrilineal groups, and standardized ceremonial practices and material goods that comprised a population whose makeup shifted constantly according to the patterns of identity-making and breaking and alliance-building and breaking (e.g., either as *indios amigos* and *indios enemigos*), mobility, and circulation that moved the exchangeable component parts through the warring and supporting system of recapitulation of a life of sporadic conflict.

This movement also entailed the familiarity of the religious acts, the *admapu*, and the ceremonial fields and *kuel*. These sacred acts and places did not necessarily represent territorially contained and delimited spaces, but as such, something almost like a gravitational field around and through which fragmented and nonfragmented groups formed and reformed or, to continue the physics metaphor, orbited. Conceived in this way, it is impossible to envision ethnicity, patriotism and polity formation as just an expression of a territorial container such as Tucapel, Purén, Mareguano-Catiray, and Arauco.

A fourth consequence of my argument is that there were new and emerging practices that constantly interpolated new subjects into ways of acting that rendered them as rights-bearing or responsibility-owing individuals of the polity, which included not just persons but the *kuel* mounds and other sacred spaces. I have said that patriotism involved new subjects (scales, reversals, and sites; see the discussion in next section) and created a web of rights and responsibilities that stretched across already defined domains whether these were stable or unstable, territorialized or deterritorialized, and centralized or decentralized.

While local *lof* and *regua* authorities may have served to provide certain services (defensive, residential space, and economic) that were local, other services were translocal in character (surplus food for other areas, public ceremonial, and providing warriors and leaders). This principle assumed a hierarchical and exclusive relationship between the various scales of administration from the *lof* to the *butanmapu* levels. Since the rights to such services for fragmented groups also inherited a translocal character, this also took the form of rights to all ceremonial fields within the polity as such rather than to a specific field or locality. For such rights they created "translocal authorities"—thus the *guen-toqui* and *toqui* war and *hechicero* ritual leaders. Such authorities came into being when a powerful patrilineage constituted itself by appropriating a *kuel* and field as the site of the social and religiopolitical and whose claims involved translocal rights: rights that could not be granted by the existing local jurisdiction. If we conceive translocal membership as those rights that are articulated as rights to the *kuel* and fields, then new and extended avenues begin to open up; in short, rights *of* mean local and rights *to* mean translocal. Those fragmented, mobile social groups that constituted themselves as translocal, could then claim both representation and power. Of course, how certain groups were recognized and formally constituted as translocal outsiders, what powers of representation they should have had, and their longevity are complex issues and should be seen as objects of political negotiation and deliberation for future study.

Much of the above discussion has implicitly turned on the linkage between local *lof* kin, nonkin recruits and war refugees (outsiders), specifically on the notion that the division between these categories was broadly coextensive with the transformation of the second and third groups into the first through such concepts as the *kuga* and fictive kinship systems (see Chapters 1 and 2). One of the key points in developing this notion is the way of articulating how historical change occurred within and across these systems. At the same time, the consideration of this change can suggest a once-and-for-all watershed between the traditional pre-Hispanic period and the late sixteenth and early seventeenth century Araucanian societies at which all that was once traditional pre-Hispanic became Hispanic-related (cf., Boccara 2000) but not necessarily Hispanic-influenced. The ongoing process by which the traditional became Hispanic-related was a local, multiple, irreversible, overlapping, and uneven development that must have differed according to a wide range of variables: geographical location, leadership, population density, economy, participation in public ceremony and the war effort, and so forth. The argument here is nonetheless based on the conviction that the figure of the pre-Hispanic traditional-rendered-Hispanic is justly concentrated on this historical period in particular, a conviction whose plausibility depended entirely on the conditions of warfare that nurtured these changes.

New Subject Categories of the Polity

The political institutions that made up the Araucanian polity were created as acts of collective embodiment and attachments of ever increasingly higher organizational levels of multiple patrilineages. They defined the extension of the polity and the social and economic institutions of the culture, the society at large and the polity—as one from the local family to the composite *Estado*. The parallel is instructive for two reasons. First, it reminds us that the family and polity shared the category “subject.” I invoke this notion in order to speak schematically of a shift in status from, on the one hand, that of political subjects who underwent “subjection” to the *guentoqui* war authorities to, on the other hand, the status of ethnic and patriotic subjects, who probably reflected upon his or her condition of subject hood and thereby laid the ground for the growth of a reflexive and autonomous “subjectivity.” Being born into a preexistent local patrilineal family, it presumed involuntary subjection but voluntary involvement in the war effort.

The patriarchical society thus became discernible at the permeable boundaries that coalesced within these integral categories, boundaries between subject and leader, between warrior and supportive (reinforcement) compatriots, between family and emerging ethnicity, and between territorial inhabitants and Spanish outsiders. The use of the term family here is both narrow and comprehensive (see Chapter 4), implying both the immediate community of potential subjects and the larger, geographical, and sociological community of the warring Araucanian society. Indeed, the question of how the former was encompassed by the latter may be seen as the problem that the politics and modes of socioreligious organization we know as *ayllaregua* and *butanmapu* variously may encourage us in an analogical way of thinking about the relation of political obligation and socioeconomic reciprocity according to which pan-Araucanian politics and the patrilineal households are understood to have been and still are distinct and unequal versions of each other rather than separable entities.

The patriarchal analogy is thus not simply a metaphor linking these separate but integral entities; it defined the continuity between and the interpenetration of social, political, economic, and religious relations that were distinct but inseparable from each other as the dynastic patrilineages grew into the patriarchal *ayllareguas* and *butanmapus*. It also produced the material record presented in Chapters 7–9, 13–16. In a dynastic patrilineage, moreover, the analogy between the polity and the family was reinforced by their metonymic relationship: political sovereignty was a function of patrilineal descent (social kinship genealogy) and patrilineal ascent (political organization). Given this inward and upward trajectory, a question is why did the polity never attain a true centralized state development?

A State Lost? Redistributive Politics and Translocal Patriotism

I have emphasized throughout this book that the Araucanian population was undergoing significant transformations and that these transformations have been well rehearsed in concerns over defense and security (cf., Bengoa 2003; Boccara 1999; Dillehay 2007; Leiva 1977; Zavala 2008). If creating patriotism was the condition of making a polity, governing was a project of managing across emerging, shifting, and mutating subjects, ceremonial fields, both kin and nonkin, scales, and sites of a developing ethnic membership (what Boccara called ethnogenesis, 2000). This again reveals that polity formation was private, religious, and kin-related before it was public, civic, and political. It is not a new insight that Araucanian polity authorities had invested in subjects and kinship. However, the fact that polity authorities increasingly implicated themselves in governing kin and nonkin members through a growing number of reconstituted communities, initially from the *lof* and *regua* levels to the *ayllaregua* and the *butanmapu* levels, makes social governance or governing the social a significant object of politically governing the new polity within an ambiance of sporadic conflict and warfare (cf., Boccara 1999; Zavala 2008). As the historian Leiva has noted:

> The Araucanians of that time appear to us as a case of the development of a culture beginning with a national spirit: resistance to domination and self-sufficiency. Moreover, we see that there arose among the Araucanians an increasingly intense and previously unknown national interest. Thus, we have proof of the tenacity of the link, of the nature of cultural traits with the land, of what Kroeber calls, "the capacity of a culture to absorb and resist at the same time." Which, over many years, for all that cultural borrowings diffuse into its interior, succeeds in finding the dynamic principle to organize their society: warfare (Leiva 1977, p. 160).

As a result of warfare, the territorial polity of the *Estado* had a basic and distinctive interest in being able to control the flow of persons within and across its borders—in being able to compel, induce, discourage, or forbid the entry or exit of particular categories of persons—i.e., the Spanish outsiders and their allied *indios amigos*. However, what the Araucanians could never achieve in their thrust towards polity formation was complete territorial closure by occupying a centralized controlling position in the web of interregional interaction. Even within the *Estado* and its larger *butanmapu* structure, complete administrative closure was never achieved. A neutral or uncommitted community and an ever-changing *indio amigo* population prevented centralization. Leaders of the polity never succeeded in excluding these groups from their territory and from all associated goods and opportunities (see Zavala 2008, 2011; Dillehay and Zavala 2013). However, these shifting groups also offered new opportunities of recruitment and alliance-making for the warring communities as well, since their loyalty to any group was often fleeting.

The recruitment and formation of translocal or transpatrilineal households fragmented by war engendered the formation of new subjects who constituted and entitled themselves to social and civic rights across different *lof* and *regua* boundaries. This complex respatializing of rights and kinship networks that resulted from demographic changes cannot be fully captured by terms such as elite lineages, royal subjects, or cosmopolitan forms of rulership and by the material and spatial patterns of the archaeological record because this respatialization created hybrid allegiances and loyalties rather than territorially contained and hierarchical identifications that might easily fit these terms. (Nonetheless, the diversity of ceramics at sites and the homogeneity of soil deposits in the early Hispanic levels of *kuel* support the notion of reconstituted hybrid populations; see Chapter 7 and 16.) Another effect of this respatialization was the transregionalization of patriotism across the four *butanamapu* divisions rather than passive recipients of a developing interregional regime somehow existing "beyond" them. Despite our understanding of patriotism as an Araucanian ethnic-polity regime of governing, it also became a pan-Araucanian regime of governing innumerable population movements and recombinations through practices of mobilization produced by the threat of conflict.

Araucanian governing principles, in a nutshell, intentionally generated certain *zeitgeists* among the population at large, so that the population acted in ways conducive to a leader's desired next steps as far as policy and strategy were concerned. The new political structure of the polity blended the primordial understanding of territorial defense with an increasing perspective towards management of larger, more composite patrilineal units made of both fictive and nonfictive kin, and it marked the transition necessary to a more complex style of political leadership, one not just given to security and protection but to cultural survivability, ethnic polity formation, and economic sustainability. In this sense, Foucault's meaning of a state has implications. He believed that the purpose of a political structure was "to set up an economy at the level of the entire state, which means exercising towards its inhabitants…a form of surveillance and control as attentive as that of the head of a family over his household and his goods" (Foucault 1990, p. 92). This is what partially happened in the case here—for the first time, an Araucanian ethos of political economy formed during the Arauco War and took a more direct role in managing the populace, understood primarily in patrilocal family units, as a goal within itself, rather than regarding such management only as a minor tool strictly for territorial preservation. This political economy involved surplus production and extensive raised agricultural fields, terraces, and irrigation canals and intensified agriculture production in wetlands (Dillehay 2007; Dillehay et al. 2008). With the emergence of an Araucanian political economy also came the notion of effective local and regional political leaders as individuals who tended to the population with an individual yet still common governing interest in mind—what Guillaume La Perrière has identified as a movement of government towards "a complex of men and things" (cited in Foucault 1990, p. 93).

As the political economy matured from the late 1500s to the late 1700s, La Perrière's notion of this man–thing complex can be seen as manifesting itself in what Foucault called an "art of government." As of the late sixteenth century, the contemporary Araucanian political war leader was defined by his engagement not only with the physical security of his people as were his predecessors, but also with the economic development and food surplus of the society as a whole to support the war effort (see Bengoa 2003). As this effort was uniformly and consistently increasing, leaders were thus forced to direct the focus of the political economy beyond the base unit of the local patrilineal family in order to contend with these new issues like epidemics or food supply for the fighting forces, which affected larger, more diverse segments of the population. The Araucanian government of the *ayllaregua* and *butanmapu* organizations thus expanded beyond a solitary agenda of a local military strategy and allowed room for the development of social and economic policy compatible with both the leaders and the governed. The "art of government" thus marked the penultimate stage in the metamorphosis of an *Estado* governance towards more complexity and signified the notion that as the role of the government became more complex, a proto-state ultimately operated on its own independent, utilitarian logic which changed over time to suit the specific understanding of and prerequisites for the survival and welfare of the warring population. However, despite all these coalescing governmental forms, a formal political centralization and true state organization never developed. It is for these reasons that I prefer the term proto-state or polity employed to describe the administrative system of the *Estado* (see Chapter 1). It also was the inability of the *Estado* to control its own population that hindered true state development. I also believe that another reason, albeit likely secondary, was the conflicting desire of many *guen-toqui* leaders to administer their own territories and their own affairs with outsiders, whether they be the Spanish or *indios amigos*, without a single leader presiding over them.

In the end, all forms of political closure presupposed some way of defining and identifying outsiders and the outside. Outsiders were defined and identified residentially as nonmembers, or directly, as bearers of some disqualifying attribute; they were Spanish and their allied *indios amigos* (Dillehay and Zavala 2013). The *indios amigos* were excluded not because of what they were but because of what they were not—they were not recognized or acknowledged as allied insiders. Insiders were defined positively—as members of a family, patrilineage, and associated organizations. On the other hand, insider-outsider groupings may have had a narrower or a wider interactional and temporal span. At one extreme, they may have been ad *hoc* and ephemeral, linked to a particular and fleeting interaction in a particular local; at the other, they may have crystallized into a structured "groups" like *reguas* and *ayllareguas*, persisting over time and spanning a variety of interactional settings. In the first case, definitions of insider and outsider were narrowly context-bound: outsiderhood in one context had no connection with or implications for outsiderhood in another. This self-defined insider and outsider dichotomy is revealed in an early seventeenth century chronicle. In a passage referring to Utaflamme, a principal leader of the Purén Valley at the turn of the sixteenth century, Luis de Valdivia ([1606] 1887) states that:

> [Utuflamme] spoke and in the name of his *regua* [sic] and of the province of Purén…and said, firstly, that all the land at war had received with great content the good news that His Lord, and I had sent, and although there were various opinions [expressed by *conas* (warriors)] and restless young captains during the interval while the four principal heads of the war were not united, but afterward they ended by uniting and agreeing, which concluded the three days. There is not, nor will there be any *cona* [warrior] or captain who dares to take up arms in the *abereequas* [*ayllareguas*], which at present were at war, and it will be very easy for them to be expelled from their lands as refugees and outsiders, native to the pacified {Spanish] provinces, fugitives from Arauco, Tucapel, and Catiray (cited in Silva 2001, pp. 11, 12).

Conflict with the Spanish was binding not only on its allied *indios enemigos* members, but, to a great extent, on all persons temporality or permanently present in the territory. Mere presence in the Araucanian territory made a person an object of administration by, a provider of resources for, and a subject of claims on the polity, while absence from the territory or alliance with the Spanish would undo these relations. Thus, social and kin membership was above all about *redistributive politics*. The interest shown by some leaders to recruit and engage fragmented communities and refugees as development residents represents an innovative form of conceptualizing a redistribution of patriotic obligations. Furthermore, one ruler's gain was another's loss: the cost successfully externalized by one was borne by another, all of which further prevented centralization.

The polity was thus committed to spreading and consolidating its authority to outlying regions. Araucanian leaders always sought to teleoscopically recruit and expand their population of control (see Bengoa 1998, 2003; Goicovich 2003; Zavala 2008). Below, Bengoa describes the situation of leaders losing followers and their desperate attempts to recruit others and to biologically expand the size of their own group by encouraging women to mate with available young men.

> Beginning in those years, indigenous society became obsessed with the problem of depopulation and the need for [a larger] population. Having many men to take up the lance was a requirement for freedom. Women were free to seek out young men [for reproduction] …The chiefs recommended having many wives and sent their *conas* [warriors] to get creole women [*criollas*] also in order to have more children. At this time, polygamy became a necessity and a means of survival for the indigenous society…. (Bengoa 2003, p. 423)

By contrast, population movement and recruitment did not engage so directly the vital interests of personal polities, since a rule in these settings was exercised over particular sets of kin and nonkin groups, not always over territories: the mere presence of a lineage in a territory did not entail political, administrative, or legal inclusion. Space was not politically neutral or insignificant in the polity. However, since jurisdiction often depended on the personal status of the leader agent rather than the spatial coordinates of his action, movement was less consequential. As jurisdictional closure buffered such polities against the consequences of mobility, territorial closure was less urgent. However, and as importantly, insofar outside migrants increasingly holding multiple memberships, allies, and material and cultural embeddedness in more than one territory, migration and alliance shifting were forces that splintered, spatially dispersed, and complicated polity building.

In summary, in my opinion, several factors contributed to the absence of a centralized Araucanian state authority: (1) the shifting alliances of the minority population of *indios amigos* which made it difficult to more effectively control the allegiance of the internal population of the Araucania; (2) the constant adaptive organizational changes taking place within the governing apparatus of the *Estado*, which never coalesced into a centralized form of decision-making; and (3) although not discussed in detail above, the lack of a bureaucratic mechanism to regulate the interregional social, administrative and economic affairs of the *Estado* (see Spencer in Chapter 2), and to take a greater advantage of the diversity and hybridity of insider/outsider communities that constantly formed and reformed the *Estado*.

A Matter of State: Araucanian and Andean

I have argued that war, resistance, and resilience brought the Araucanians to form a regional ethnic polity during the late sixteenth century AD. The war provided fertile soil for the transformation of local community-level patrilineage subjects into an interregional polity-level patriarchy of compatriots. If our understanding of ancient Inka and Spanish state development has been polity-centered and assimilationist (e.g., D'Altroy 2003; Kolata 2013), the Araucanian development has been ethnic-centered, differentialist, and survivalist. Since ethnic sentiments were probably developing before the intrusion of the Spanish and the formation of the *Estado*, the Araucanian idea of the ethnic was not originally political, it was social, religious, and kin-related. The proto-*Estado* of the early sixteenth century AD must have been the product of several decades of polity building, perhaps initially in response to the presence of the Inca in the northern Araucanian territory of central Chile (Dillehay and Gordon 1988; Dillehay 2007), and of the development of a growing ethnic consciousness within the spatial and institutional frame of the developing territory by Araucanians south of the Bio Bio River (Boccara 1999, 2000). It is partially for these reasons that I do not believe that the arrival of the Spanish in the Araucania led to ethnogenesis as Boccara (2000) does; again, I see these changes as representing an ethnomorphosis of an existing ethnicity.

However, as discussed above, the scale, fragmentation, and fluidity of political authority in the late sixteenth and early seventeenth centuries, makes it difficult to identify Araucanian territory with the institutional and territorial frame of a centralized state. In the *Estado,* the "conceived order" or "imagined community" and the institutional realities of ethnicity and patriotism were likely fused. An ethnic field was an ethnocultural fact to the Araucanians; to colonial Spain, it was a political curse. To the extent that talk of "identity and agency" make scholarly sense at all, the subjective identity and agency of the vast majority of the Araucanian population throughout the Arauco War was no doubt largely political on the one hand and religious on the other until at least the end of the nineteenth century. For most inhabitants local and regional *lof* and *regua* identities probably continued to be more salient than ethnic identity until late in the twentieth century. The point is both a structural and a social–psychological one. Thus, the political ethnocultural Araucanian coincided neither with the supraregional pretensions of the polity nor with the subregional reach of effective political authority. It was more difficult to distinguish polity and ethnicity, and therefore to imagine a specifically ethnocultural Araucanian state in the south-central Andes.

A second, closely related difference in patterns of ethnic self-understanding is also rooted in political and cultural geography. As noted above, the Inca and Spanish understandings of statehood and empirehood were more assimilationist, the Araucanian understanding was more differentialist and survivalist. The gradual formation of the Inca state around a single political and cultural center in Cuzco was the historical matrix for an assimilationist self-understanding. I suspect that the initial rise of the Inca state was similar to that of the Araucanian polity in the sense that it also teleoscopically transformed the social structure of the lower grassroots level of the *ayllu* and *panaca* kinship systems to higher levels of state and empire administration. It may be that this is a feature of earlier Andean states as well (e.g., Moche, Wari, Chimu). On the other hand, the conglomerative pattern of proto-state-building in the polycentric patriarchical Araucania was the historical matrix for a more differentialist self-understanding and self-identity of ethnicity and patriotism.

Patriotism was a universal and distinctive feature of the political landscape among many but not all Araucanian populations (exceptions were *indios amigos*). Nearly every Araucanian patrilineage defined its allegiance, whether it was with the warring Araucanians or the Spanish, publicly identifying a set of persons as its members and residually designating all others as nonmembers, or *huinca* outsiders. Every lineage attached certain rights, duties, responsibilities, and obligations to the status of *lof* and *regua* community membership. These attributes defined a region of equality and a political territory. Indeed, political territory as we know it today—bounded territory to which access was controlled by the polity—presupposed membership. It presupposed some way of distinguishing those who had access to the territory from those who did not, those who belonged to the polity from those who did not, and those who sided with the Spanish and those who did not. The Araucanian polity was simultaneously a grassroots territorial organization, starting with the *lof* and reaching the *butanmapu* level, a social and ceremonial association, and a political stigma. The Mapuche region has many of these same attributes and conditions today.

Unostentatious Materiality: Breaking Down Hierarchy and Difference

In this book, I have ranged quite freely through historical and archaeological time and space, especially in this chapter, treating Araucanian patrilineages to some extent as a unified ethnic group by blending material from my own anthropological work with earlier ethnographies and chronicles in order to summarize what I believe are the salient contextual dimensions to sixteenth and seventeenth century of patrilineality, patriarchy and, to the fullest extent possible, the archaeological materiality of the *Estado*. The main points I have been attempting to explore in this book are, first, that patrilineal communities of this time period were members of a wider Araucanian ethnic society and polity. Second, that material artifacts associated with this kinship practice and political structure form elements within a much wider material content, elements that are not easily identified in the archaeological record, and third, that the ideological premise to patriarchy, upheld, reproduced, and transformed through socially and ideologically sanctioned practices—is also grounded within this materiality. Fourth, while patriarchy confronted political emergencies and stresses, individuals and household groups within the wider society also had an important and active role to play in negotiating for their own general welfare.

I also have argued that the actions of patrilineages form but one, albeit major, dimension to a much wider dialogue between communities. In this broader field of communicative contact, the actions of creation, use, and deposition of material culture, primarily the *kuel* mounds, *rehuekuel* complexes, and the ceremonial fields formed the essential media of intergroup communication and polity formation. Places such as *kuel* and the patrilineal kinship structure were symbolic manifestations of the Araucanian polity. The *kuel* and *rehuekuel* were architectural landmarks and settings for the practice of public religious and political life. Understanding the nature and meaning of a patrilineal material record, that is, the information in primarily the mound and ceramic styles discussed throughout this book, is an important and different part of Araucanian identity and interaction during this period. A detailed analytical focus on the actions or material accouterments of patriarchy suggests that patriarchical practices need not leave clear archaeological remains. However, if the actions of the patriarchy are contextualized within a wider suite of historical and ethnographic practices, which have been detailed throughout this book, then a number of themes can be opened into a thicker physical description of the material dimensions to a patriarchical worldview, especially in regard to the sediments and clays comprising the mound and ceramic assemblages analyzed in Chapters 7, 9 and 16.

Boivin has considered the importance of the physicality and color properties of soils and other elements, their employment in architecture, ceramics, and other material dimensions, and their wider technological and aesthetic meaning within ancient societies. As she notes, "the material world impacts on the social world in a real way not just because of its ability to act as a carrier of ideas and concepts, but also because its very materiality exerts a force that in human hands becomes a social force" (Boivin 2004, p. 6). The diversity yet simplicity and presumed familiarity of the ceramic styles and the standardization and homogeneity of mound sediments in the early Hispanic levels of the *kuel* in Purén and Lumaco were clearly linked to much wider social forces within the Araucanian society. These elements also were social forces, especially the mounds which were and still are considered to be "kinsmen."

As discussed in Chapter 7, the organization of these forces—corporate-patrilineal labor (*regua*)—in the physical construction of *kuel* and *rehuekuel* is similar to that of the building of and participation in *nguillatun fields* today, which is structured by the cardinal position of communities with respect to the ceremonial field (see Dillehay 2007). That is, patrilineages living to the east of a *kuel* pack sediment on its east side, those to the west on its west side, and so forth. The local patrilineage packs in the center (*renin*) and on all sides. Thus, the layers and different soils in a *kuel* are derived from different and distant patrilineal homelands that represent the wider social catchment basin of a deceased buried in a *kuel* through his/her extended marriage alliances and the perdurable social relationships between consanguinally related lineages. The *kuel* are, in short, spatial nucleations of "social soil" (Dillehay 1992, pp. 404–410, 2007). Therefore, the vertical and horizontal accretion of *kuel* relate more to principles of genealogical continuity, lineage perdurability, and residential contiguity on a landscape or homeland than to the direct socioeconomic power and prestige of local leaders and their constituents. The size of a mound thus depends upon the number of kin and fictive kin linked to the deceased through the *kuga* system and through his multiple in-married wives and marriage alliances established through his out-married daughters.

At *TrenTrenkuel*, *Maicoyakuel*, *Rapahuekuel*, and other excavated *kuel,* the early Hispanic levels contain homogenous sediments as compared to the late pre-Hispanic levels which are characterized by greater mixtures of soils and soil colors from many different local and nonlocal depositional environments. While this homogeneity of soil types in the early Hispanic period implies greater simplicity, standardization, and legibility similar to that documented in the early Hispanic ceramic wares, I believe it also is reflective of major shifts taking place in the social structure of local communities whereby they have become more fragmented, more receptive to receiving unattached outside groups who are fictive or new kin, and thus more diversified. These newly incorporated nonlocal, perhaps nonkin groups simply did not have access to the soils in their prior or original homelands, thus when participating in the construction of mounds in their new homelands—the Purén and Lumaco Valley in this case—they were obligated to collect local sediments and place them on the mound. That is, the newly incorporated "locals" gathered the soils within the immediate vicinity of the mound, their new homeland, along with real or "attached" locals. I believe that this action produced the homogeneity of sediments documented in the early Hispanic level of the mounds.

Rodning refers to the attachment to and longevity in a landscape as "emplacement," which is "a set of practices whereby communities had attached themselves to a particular place through formal settlement plans, architecture, burial and other material additions to the landscape" (Rodning 2002, p. 629). In the Araucanian case, there was and still is an attachment to the original homelands and their sacred landscapes, but in only those places where a patrilineage has resided for several generations. It is the prolonged attachment of a patrilineage to a particular landscape, to a homeland, that establishes the access and right to place local soils in local mounds. When the demographic kinship structure of some communities was fragmented by war with the Spanish, people relocated elsewhere. They lost their sense of permanence or attachment to their original homelands, even though they were incorporated into local communities as fictive or real kin. Relocation gave them rights to a new homeland land and to its mounds and ceremonial fields. In return, these incorporated outsiders had socioeconomic duties and obligations, as described earlier.

What made this system work materially and socially was standardization of ritual practices, legible landscapes, and material styles. People moved into legible landscapes characterized by standardized forms and practices, which involved the creation and duplication of a set of inclusive residential rights and religious and social rules (i.e., *admapu*) that fragmented and reconstituted communities followed. Standardization and compliance in the seating pattern of families and patrilineages in ceremonial fields, in the usage of pan-Araucanian beliefs and symbols, and in the codification of symbols and messages in artifact styles and mound aesthetics were probably necessary for social integration in the absence of a strong centralized political authority with the power to coerce people.

Epilogue

How do early complex societies development and how are they expressed in different social and environmental settings? (I refer to development in the sense of more complex organization, not in the sense of one social form inevitably evolving from another (sensu Yoffee 2005)). Anthropologists have classified complex organization into contrasting schema based upon two traditional views of the formation of society: conflict and coercion (e.g., Carneiro 1970; Fried 1967) or consent and integration (Service 1962, 1975). More recent studies have argued for more attention to the complex negotiations and strategies that held polities together (see Chapter 2). These studies parallel recent efforts by political scientists to embed governing authorities within a sociologically broader account of local communities and how authorities drew grassroots communities into hegemonic relations (e.g., Migdal 2001; Mollenkopf 1992; Stoker 1996; Stone 1989).

In the parlance of political scientists, "strong" states are those that are able to extend effective authority in practice from center to periphery, and demonstrate legitimacy by building trust between the state and civil society (all nonstate corporate groups and commoners) throughout the body politic. Thus, state strength can in part be inferred by the degree to which leaders can mobilize a society's elites, corporate groups, and the subject populace at large to act in the interest of the state—to enact through practice the *image* of the state (Migdal 2001).

Practice-oriented approaches (cf., Blanton and Fargher 2008; Yoffee 2005; Migdal 2001) make a useful distinction between the *state* or *polity* and the *society*. According to Migdal, the state is a "field of power marked by the use and threat of violence and shaped by (1) the *image* of a coherent controlling organization in a territory, which is a *representation* of the people bounded by that territory, and (2) the actual *practices* of its multiple parts [i.e., various components of the society]" (Migdal 2001, p. 16). State strength and effectiveness can in part be inferred by the degree to which leaders mobilize hinterland elites, corporate groups, and the populace at large to act in the interest of the state—i.e., to enact through the *practices* of all societal parts the *image* of the state. Migdal (2001, p. 124) also notes that the increasing heterogeneity and hierarchy of power forces within a growing state, and the pressures from power forces outside the state, can make it increasingly difficult for the authorities to maintain and propagate a coherent system of trust and effectiveness, as well as to project a stately *image*. It seems that the Araucanian case partially fits this type of circumstance whereby internal and external power forces constantly affected the strength and effectiveness of the polity and its capacity to grow and govern at all levels within and across the patriarchical organization of society.

In looking at the emergence and transformation of the ancient Araucanian polity, I have combined a bottom up or a grassroots approach, examining the upward extension of local patrilineal segments to form higher levels of social complexity, with an inter-community analysis of public ceremonial space, where both integration and division occurred. Consent was the main binding force of this extension, with benefits from military security and social order to managerial efficiency by regional leaders that drew local subject communities into larger religiopolitical associations that demanded political allegiance in return. This dynamic interplay between leaders and their followers, whereby social interaction developed as a strategy within the parameters defined by the warring system, and inter-community collective action are important to recognize. *Guen-toqui* war leaders were agents who were socially embedded and engaged in interactive and recursive relationships among the different levels and parts of the teleoscopic patriarchical structures. Although the Araucanian polity had the *image* of a strong *Estado* or polity to the Spanish Crown, especially the area known as *Purén Indomito*, what primarily prevented the polity from achieving a strong centralized political system were the weak and fleeting horizontal ties among local *lof* leaders that represented the varying conflicting groups of *indios amigos*, *indios enemigos*, and some politically neutral *indios.*

Although the *image* of the four domains making up and representing the *Estado* may seem to have been similar, current archival and archaeological evidence suggests that the *practice* of each of the domains varied substantially, with a minority of leaders allied with the Spanish, others staying politically neutral, and a majority engaged in prolonged resistance. This indicates that there was less uniformity in the organization of and effective control by the polity (cf., Boccara 1999, 2000). Again, a key then to understanding the strength and effectiveness of the polity is to decipher the manner in which it was organized and generated legitimacy, familiarity, legibility, trust, and patriotic image, to look for increasing evidence of hierarchical (and heterarchical) dissemination of authority, and to explore the movement of the different parts of the society at large (e.g., *indios amigos*) towards or away from a commitment to the four domains of Purén/Lumaco, Mareguano/Catiray, Arauco, and Tucapel and their individual centers of power—the *kuel* and *rehuekuel* ceremonial complexes.

Many archaeological studies have emphasized the social and strategic importance of ceremonial centers as foci for the growth of intra- and interregional interaction, as frameworks for the expansion of public ceremony and craft production, and as filters for the dissemination of new values and codes of conduct. Whether early or late in time, the processes of state formation in many parts of the Andes seem to have been elucidated through long-term patterns of continuity, interaction, and integration and through the intimate material practices through which social identities and leadership roles were constituted and reconstituted. The landscapes created by these interactions were increasingly filled by an ideology of the "other"—the outsider, the Spanish in the Araucanian case (Boccara 2000), which can be seen eventually taking shape in the decoration of not only traditional, but restricted, exotic artifact types, such as trophy heads, ceremonial vessels, textiles, and other objects. Araucanian polity formation was the translation of late pre-Hispanic ceremonial authority into durable forms of institutional and political power (sensu Herzfeld, see Chapter 2), eventually centered upon the regulation of increasingly larger scales of human labor for military and economic production. Many of the technologies upon which new modes of agrarian production were based—such as intensive irrigation agriculture at raised agricultural fields and hillside terraces—had to have imposed a more complex division of labor upon the grassroots workforce. In this regard, the polity was constantly becoming more internally complex and hierarchically organized social and labor units, the integrity of which was identified, celebrated, and reinforced in public ceremonies and commensal politics at nodes such as the *rehuekuel* centers. It was within this growing complexity that many restricted forms of elite administration and grassroots subjectivity, including growing warrior and women support groups, as well as patriotism, were developed.

From the above perspectives, we can surmise that ancient polities can be seen as political associations that formed at the wider intersection of the horizontal ties between state authorities and elite-regulated institutions and the vertical ties to hinterland and grassroots subjects. Ancient polities generally were societies characterized by radical social differentiation at both the horizontal and vertical dimensions, by centralized institutional apparatus, and, according to Spencer and others (see Chapter 2), by a state-wide bureaucracy to manage affairs. Important to the formation of the state is how the horizontal ties among ruling institutions articulated with the vertical links to grassroots subjects. The specific linkages between the horizontal and vertical segments have received little attention from archaeologists, especially Andeanists, for instance. Most Andeanists have focused their studies of state development on elite control of the political economy, on military conquest, or on the spread of a hegemonic religious ideology to control hinterland populations (see Chapter 2). Little attention also has been given to the relationship between state institutions and the subjects and parts comprising them. In my opinion, this is where much of the critical work of the political construction and reproduction of ancient states and polities was accomplished. Another key to understanding the rise of ancient states is to decipher more thoroughly the manner in which they organized and generated their legitimacy and trust, to identify the processes that worked to undermine legitimacy and trust, to look for increasing evidence of heterarchy and the dissemination of authority, and to explore any movement of civil society away from trust in and commitment to state institutions. To study these issues, we must focus on all social segments of the society upon which the state or polity was built.

The Araucanian polity is a particularly interesting case study in the light of these points: it was comprised of several locally and regionally hierarchically nested parts made up of patriarchical elite and nonelite grassroots levels and complementary sacred and domestic areas; it employed a dynastic teleoscopic patrilineal structure to politically managed its administrative growth and development; it manufactured standardized and generally unostentatious architecture, symbols, and material goods to attempt to effectively manage the rapid incorporation of mobile and often fragmented groups into the system; and it projected the image (at least to the Spanish) of a more centralized and perhaps successful society than it really was. In considering the success or failure of the Araucanian *Estado*, it is obvious that it succeeded in many valleys throughout the region where new settlements and *rehuekuel* were built. In other valleys where there was less evidence of a polity presence, as expressed by the absence of these features, it is not known whether this paucity represents a successful, albeit materially inconspicuous, polity expansion, a case of independent resistance to the Spanish such as that which occurred in Villarrica and other areas (see Bengoa 2003), for instance, or simply the failure of the *Estado* to incorporate them. Whatever is represented by these instances, the *Estado* and neighboring regions always seemed to have had porous borders periodically infiltrated by the Spanish and by a minority of allied groups loyal to them.

To conclude, several points require attention. The Araucanian polity was formed by a contingent outcome of enduring traditions and strategies that developed rapidly over one to two generations. There were several interwoven strategies critical to this process. The Araucanians developed a defense ideology to coordinate multiple communities. This included a religion focused on deity and ancestor worship and on public ceremonial feasting and commensal politics. They developed complex strategies for incorporating different patrilineal communities from the local *lof* level up to the interregional *meli-butanmapu* level. They also strategically established marriage alliances with many groups, which created asymmetrical relations by distributing labor obligations that were reciprocated in territorial defense and public ceremonial events. This led to mobilized labor to intensify cultivation in certain areas such as Tucapel and Arauco. The Araucanians also strategically employed military action to establish a new social level of warriorhood and prestige. Overall, Araucanian strategies were differentialist, survivalist, and opportunistic and continually evolved to meet changing regional conditions.

Clearly, ancient states or polities like the Araucanian *Estado* were different from modern ones (cf., Trigger 1999). Modern polities build facilities and place state officials in local settings to administer their interests. Ancient ones did not always exact this strategy, but used local leaders and structures to manage affairs. In the case of the Araucanians, this strategy worked most of the time and in most places south of the Bio Bio River, depending upon local circumstances. Although the Araucanians may have found it necessary to initially commit or to achieve a centralized military node in one area—the Purén-Lumaco Valley—it seemed unnecessary to reconstruct and conspicuously manage local-level food production just for the sake of quality control and efficiency. Even the food surplus contributions made by the Tucapel and Arauco domains to Purén seem to have been only locally, if not subregionally, regulated. However, even these features were missing in many other areas of the polity's territory (or perhaps not mentioned in the archives), which again suggest that the Araucanians may not have exercised the governing control we have presumed during the early war years.

Beginning in the late seventeenth century when the Araucanians more intensively raided and marauded in central Chile and western Argentina, the basic content and organization of the economy and polity became more of an emergent structure of negotiations between an array of autochthonous traders, migrants, Spanish and *mestizo* entrepreneurs, and various neighboring ethnic groups, including the Pehuenche, Tehuelche, and Huilliche (Zavala 2008). At this point, the organization of the *ayllaregua* and *butanmapu* regulated the polity, but by then it also had become a confederated structure ruled by a larger consensus of *guen-toqui* and *ulmen* leaders who were usually involved in the long distance exchange of Spanish and other goods. While there was some convergence among Araucanians and other ethnic groups, there were also instances of difference, which necessitated accommodation and negotiation among them. By and large, those areas where the polity did not take root during the late sixteenth and early seventeenth centuries coincided with the more porous geographic boundaries of the Araucania, where even less allegiance and loyalty existed, thus making it even more difficult to centralize and incorporate loosely organized groups.

Lacking the political commitment, perhaps manpower, economic resources and administrative apparatus to sustain a polity wide government and entire population directly, many ancient polities needed the assistance of allies from subject communities to assert their authority at the local and regional levels. They also needed tribute to sustain their efforts. The Araucanian polity never formally extracted tribute nor set up a formal bureaucracy to handle its affairs. Tribute primarily was loyalty and allegiance. The most dynastic patrilineages were those that held their alliances together. A defense ideology centered on deity and ancestry worship and religio-political solidarity had more holding power than craft production, long-distance exchange systems, and the accumulation and display of elaborate items. The idea of the polity was not the object but a defense ideology that survived the test of time.

The focus of the Araucanian polity also was the patriotic *subject*, the creation and performance of particular *categories* of complementary compatriots—leaders, warriors, food producers, cohesive communities, and support or reinforcement communities. This included the creation of a subjectivity that developed through interactions with others and engagement with familiar objects and symbols such as ceramic and textile styles, mound forms, and ceremonial fields. This also required explicit social interactions and engagement with the ideological, ceremonial, and warring worlds, a process that not only "made" individual subjects, but "made" the society and its reconstituted communities, and of interest here, "made" the polity. As Althusser notes (1970, pp. 49, 50), by way of idiosyncratic terminology, "ideology" *interpellates* individual human beings as subjects; persons who were born into, and were therefore socialized according to a particular cultural logic enacted in defined sociospatial settings. The process of creating community members, subjects, or ideal compatriots in the *Estado* was an ongoing project, an endeavor that required constant attention and willing (or coerced) participants. Part of this process involved teaching and enacting "proper" behavior, which emerged from *habitus* (Bourdieu 1977); these were incorporated into one's way of being through social interactions in a particular historical moment in a particular community and/or social setting. That particular historical moment was the Arauco War.

Set in this context, it must be recognized that the disarticulation and disaggregation that affected indigenous groups elsewhere in most of the Spanish occupied America did not affect the Araucanians in the same way—in fact, the opposite seems to have transpired. Through preexisting political and social organization, the Araucanians aggregated, or came together more fully through long-distance kinship ties and religiopolitical practice in order to defeat Spanish forces and maintain political, social, and economic autonomy.

Last, besides an analysis of the Araucanian polity, this study also has been an exercise in rethinking the meaning of a particular type of archeological record—an unostentatious material record associated with an ancient complex society. This is not the only case of this type of record in world archaeology. However, if not for the written records, I would not have been able to interpret the material expressions of the place and period alone as a complex patriarchical polity. The discordance between the social and political complexity of the polity and its simple material expression, at least for the sixteenth and seventeenth centuries, leads me to believe that some materially underrepresented polities in other parts of the ancient world were perhaps more powerful than we have imagined and that some materially overrepresented polities were perhaps less powerful than we have projected, but these are topics for future analysis.

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Chapter 12
Appendix 1: Radiocarbon and Thermoluminescence Dates

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Radiocarbon Dates

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Table 12.1 Radiocarbon dates from excavated sites.

Site No./Lab No.	Provenience	Conventional ^{14}C-age ± STD [BP]	Cal age p(95 %) [cal B.C./A.D.]	Cal age p(95 %) [cal BP (0 = A.D.1950]	δ $^{13}C^{0}/_{00}$
PU-122 (Domestic 9) Beta 168999	Hearth in upper living surface	560 ± 50	1250–1450 cal A.D.	700–500 cal BP	−23.2
PU-120 (Domestic 11) Beta 168949	Hearth in deeper living surface	1100 ± 80	720–1080 cal A.D.	1230–870 cal BP	−26.1
PU-220 (Maicoyakuel) Beta 167558	Hearth in upper floor of mound	160 ± 40	1590–1990 cal A.D.	360–40 cal BP	−25.7
PU-220 (Maicoyakuel) Beta 167559	Hearth in upper floor of mound	250 ± 60	1400–1920 cal A.D.	550–30 cal BP	−25.2
PU-220 (Maicoyakuel) Beta ± 167557	Hearth on lower floor of mound	2520 ± 40	840–480 cal B.C.	2790–2430 cal BP	−24.7
PU-120 (Domestic 23) Beta 68999	Charcoal from burned floor in middle level of mound	1100 ± 80	720–1080 cal A.D.	1230–870 cal BP	−27.0
LU-23 (Gundermankuel or Trawulepuche) AA86945	Charcoal in feature	224 ± 35	1692–2000 cal A.D.	308–0 cal BP	
PU-221 (Rapahuekuel) Beta 167556	Hearth in middle floor of mound	550 ± 40	1260–1460 cal A.D.	690–490 cal BP	−25.2
LU-69 (TrenTrenkuel) AA64643	Burned area on upper floor of mound	125 ± 40	1590–1990 cal A.D.	360–340 cal BP	−21.3
LU-69 (TrenTrenkuel) AA64642	Burned area on middle floor of mound	1780 ± 35	90–370 cal A.D.	1860–1580 cal BP	−27.3
LU-69 (TrenTrenkuel) AA64653	Charcoal from middle-use floor of mound	1730 ± 40	200–400 cal A.D.	1750–1550 cal BP	−26.1
LU-69 (TrenTrenkuel) AA64977	Charcoal from lower use floor of mound	1850 ± 35	50–250 cal A.D.	1900–1700 cal BP	−27.5
LU-69 (TrenTrenkuel) AA64641	Burned area on upper floor of mound	1930 ± 40	40 cal B.C.–160 cal A.D.	1990–1790 cal BP	−26.0
LU-69 (TrenTrenkuel) AA64644	Burned sediment under mound	7625 ± 55	6590–6390 cal B.C.	8540–8340 cal BP	−25.9
LU-23 (Kuel 36) Beta 191662	Buried living surface	6140 ± 40	5270–4950 cal B.C.	7220–6900 cal BP	−24.2
PU-36 Beta191668	Hearth in lower living surface	600 ± 20	1260–1420 cal A.D.	690–530 cal BP	−24.6
PU-132A Beta282127	Charcoal in floor	790 ± 40	1170–1280 cal A.D.	780–670 cal BP	
PU-132B Beta294019	Charcoal in feature	280 ± 30	1620–1660 cal A.D.	330–290 cal BP	
Domestic PU-165 A203868	Burned corn from house floor	430 ± 40	1380–1540 cal A.D.	570–410 cal BP	−11.0
Domestic PU-165 AA64654	Charcoal from upper floor	660 ± 40	1220–1420 cal A.D.	730–0530 cal BP	−25.7

Table 12.1 (continued).

Site No./Lab No.	Provenience	Conventional ^{14}C-age ± STD [BP]	Cal age p(95 %) [cal B.C./A.D.]	Cal age p(95 %) [cal BP (0 = A.D.1950]	δ $^{13}C^{0}/_{00}$
Domestic PU-165 A–13772	Hearth in middle living surface	1315 ± 50	600–800 cal A.D.	1350–1150 cal BP	−25.0
Domestic PU-165 AA64657	Charcoal from middle floor	1615 ± 40	330–570 cal A.D.	1620–1380 cal BP	−26.2
Domestic PU-165 AA64651	Charcoal from hearth in middle-level floor	1680 ± 40	210–450 cal A.D.	1740–1500 cal BP	−25.3
Domestic PU-165 AA64645	Charcoal from middle-level floor	1735 ± 40	190–390 cal A.D.	1760–1560 cal BP	−26.1
Domestic PU-165 AA64655	Charcoal from hearth in lower living surface	1740 ± 35	190–390 cal A.D.	1760–1560 cal BP	−25.0
Domestic PU-165 AA64647	Charcoal from hearth in lower living surface	1800 ± 40	70–350 cal A.D.	1880–1600 cal BP	−25.3
Domestic PU-165 A-13780	Hearth in lower living surface	1810 ± 90	20 cal B.C.–420 cal A.D.	1970–1530 cal BP	−25.0
Domestic PU-165 AA64652	Charcoal from burned feature in lower use floor	1845 ± 40	50–250 cal A.D.	1900–1700 cal BP	−24.1
Domestic PU-165 AA64646	Charcoal from hearth in lower living surface	2010 ± 40	120 cal B.C.–80 cal A.D.	2070–1870 cal BP	−26.0
Domestic PU-165 AA64658	Charcoal from middle-use floor	2530 ± 40	850–490 cal B.C.	2800–2440 cal BP	−27.0
Domestic PU-165 AA64980	Charcoal from hearth	1715 ± 60	170–450 cal A.D.	1780–1500 cal BP	−25.9
Domestic PU-165 AA64979	Burned area on upper use surface	1780 ± 40	90–370 cal A.D.	1860–1580 cal BP	−26.4
PU-166 (Kuífilkuel) AA64978	Charcoal from middle-use floor	2080 ± 55	250 cal B.C.–30 cal A.D.	2200–1920 cal A.D.	−27.5
PU-166 (Kuífilkuel) AA64656	Charcoal from middle-use floor	2175 ± 40	420–100 cal B.C.	2370–2050 cal BP	−24.7
(PU-166 Kuífilkuel) AA64649	Charcoal from hearth in lower use floor	2200 ± 40	420–140 cal B.C.	2370–2090 cal BP	−26.2
PU-166 (Kuífilkuel) AA64648	Charcoal from upper use surface	2735 ± 55	1020–780 cal B.C.	2970–2730 cal BP	−26.6
PU-166 (Kuífilkuel) AA64650	Charcoal from lower use surface	2720 ± 40	950–790 cal B.C.	2900–2740 cal BP	−25.9
PU-166 (Kuífilkuel) AA76981	Charcoal in feature	955 ± 34	89–256 cal A.D.	911–744 cal BP	

Table 12.1 (continued).

Site No./Lab No.	Provenience	Conventional ^{14}C-age ± STD [BP]	Cal age p(95 %) [cal B.C./A.D.]	Cal age p(95 %) [cal BP (0 = A.D.1950]	$\delta\ ^{13}C^{0}/_{00}$
PU-166 (Kuífilkuel) Beta294020	Charcoal in feature	150 ± 30	1660–1890 cal A.D.	280–60 cal BP	
LU-20C (Kuel 19) Beta169000	Charcoal from middle floor	250 ± 60	1400–1920 cal A.D.	550–30 cal BP	−27.2
Deume Raised Fields	Organic-use floor	670 ± 40	1210–1320 cal A.D.	820–930 cal BP	−25.8

AA radiocarbon dates were calculated by Christopher Eastoe at The University of Arizona & additional calibration with CalPal: The Köln Radiocarbon Calibration & Paleoclimate Research Package. All others by Beta Analytic with calibrations done using CALIB Radiocarbon Calibration Program, version 6.0, on the Southern Hemisphere Calibration curve:

Stuiver, M., and Reimer, P. J., 1993, Extended 14C database and revised CALIB radiocarbon calibration program, Radiocarbon 35:215–230

McCormac, F. G., Hogg, A. G., Blackwell, P. G., Buck, C. E., Higham, T. F. G., and Reimer, P. J. 2004. SHCal04 Southern Hemisphere Calibration 0–11.0 cal Kyr BP. Radiocarbon 46, 1087–1092

Thermoluminescence Dates

Table 12.2 Thermoluminescence dates from excavated sites.

Site No./Lab No.	Provenience	Conventional age	Calendar age	P(Gy)	D(Gy/yr)
PU-13 (Domestic 13) UCTL 1557	Hearth in upper living floor	300 ± 60 BP	A.D. 1700	1.55 ± 0.16	5.15×10^{-3}
PU-13 (Domestic 13) UCTL 1556	Hearth in lower living floor	1540 ± 160 BP	A.D. 460	6.38 ± 0.65	4.14×10^{-3}
PU-220 (Maicoyakuel) UCTL 1555	Hearth in upper floor	425 ± 40 BP	A.D. 1575	2.03 ± 0.21	4.76×10^{-3}
PU-220 (Maicoyakuel) UCTL 1554	Hearth in middle floor	2535 ± 230 BP	A.D. 535	12.50 ± 1.25	4.93×10^{-3}
PU-220 (Maicoyakuel) UCTL 1552	Hearth in middle floor	1670 ± 170 BP	A.D. 330	5.80 ± 0.58	3.47×10^{-3}
PU-220 (Maicoyakuel) UCTL 1553	Hearth in lower floor	2065 ± 200 BP	A.D. 65	7.50 ± 0.73	3.47×10^{-3}
PU-211 (Domestic 41) UCTL 1558	Hearth in upper living floor	405 ± 35 BP	A.D. 1595	1.76 ± 0.12	4.33×10^{-3}
PU-211 (Domestic 41) UCTL 1559	Hearth in upper living floor	665 ± 40 BP	A.D. 1335	2.23 ± 0.13	3.36×10^{-3}

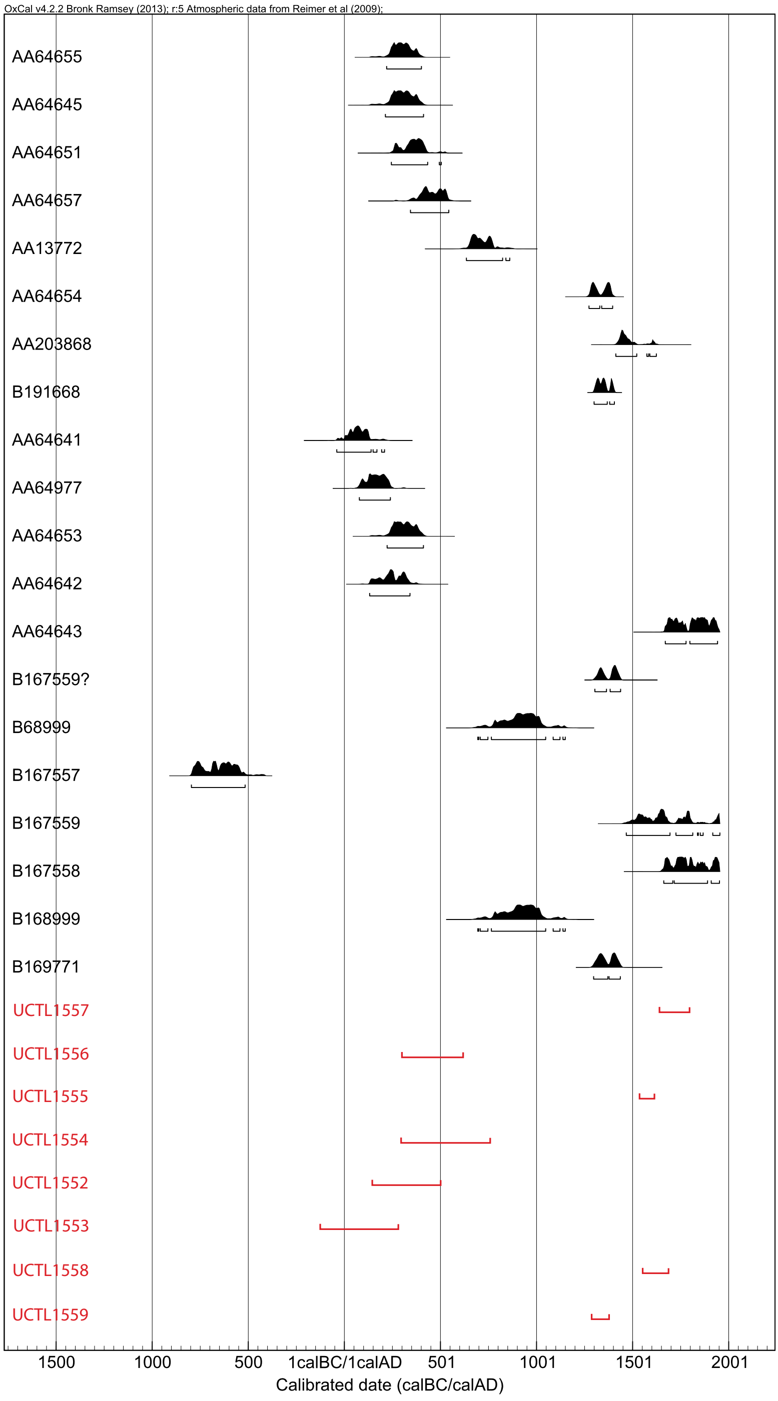

Fig. 12.1 Plot of two-sigma calibrated radiocarbon assays for all dates at excavated sites in the study area.

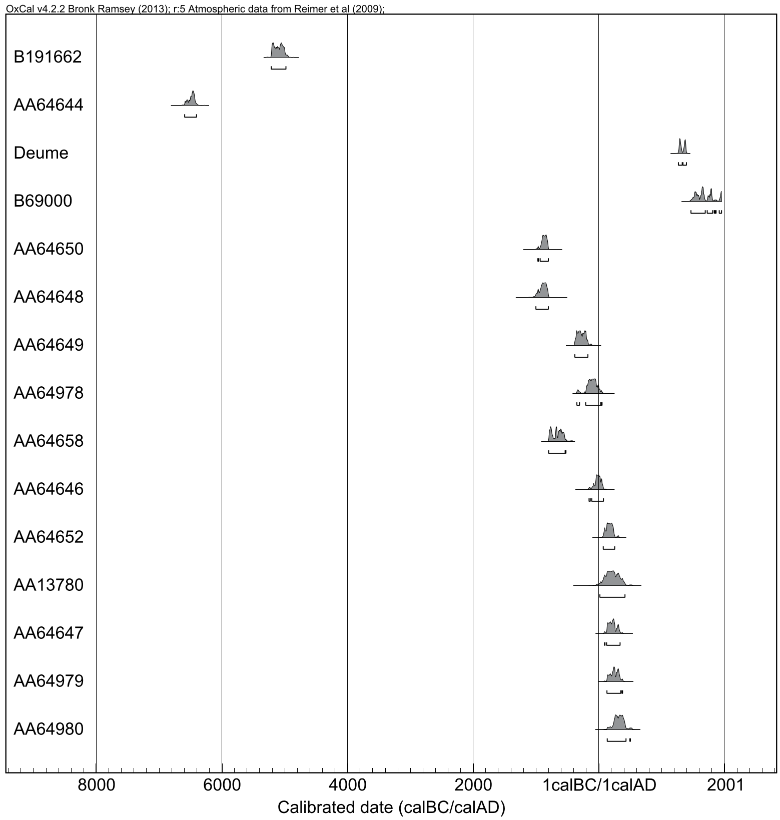

Fig. 12.1 (continued).

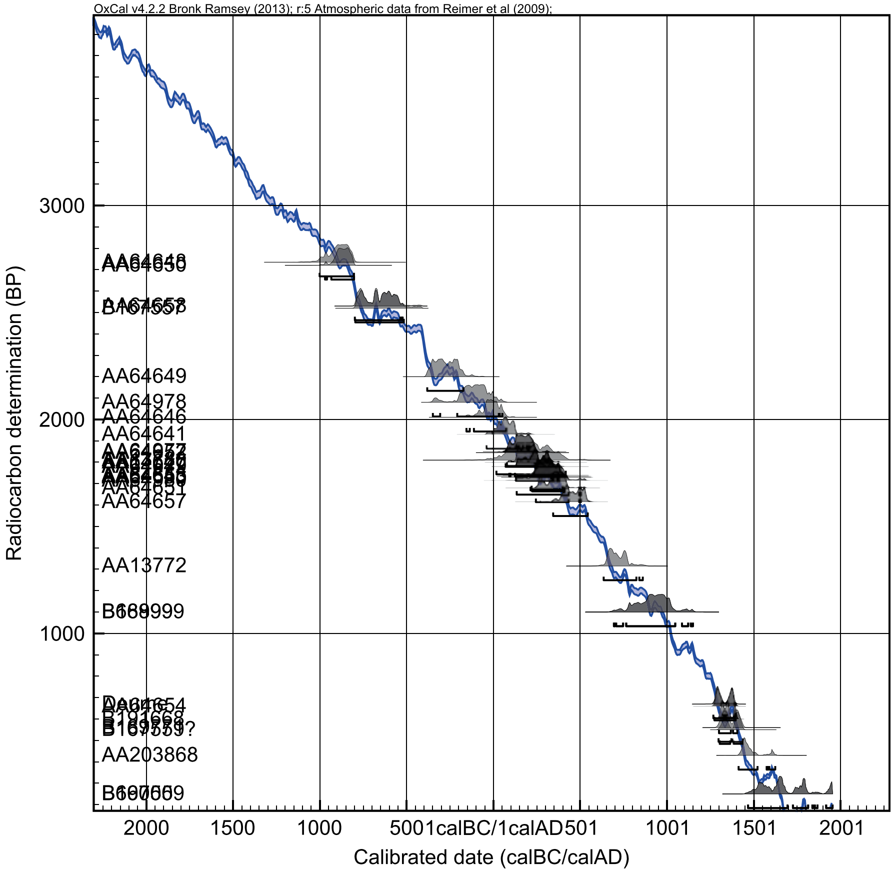

Fig. 12.2 Plot of two-sigma calibrated radiocarbon assays for only dates ranging between approximately 200 and 2,800 years ago.

Chapter 13
Appendix 2: Carbonized Botanical Remains from Sites in Purén and Lumaco

Renée M. Bonzani

Introduction

This chapter reports on the botanical remains recovered from two sites, PU-165 and LU-69. These sites occur at an elevation of 200 masl and are associated with artificial agricultural systems, domestic sites, and ceremonial mounds in the floodplain of the Purén and Lumaco Valley (Dillehay 1985, 1990, 2007; Dillehay et al. 2007). Radiocarbon dates from raised agricultural platforms in the area indicate a period of occupation from about AD 1220 to 1420. Diagnostic ceramics from the raised fields, associated mounds, and habitation sites date to ca. AD 400 and 1750 (Dillehay et al. 2007). The sites, themselves and associated botanical remains, date from the Archaic period to the early Hispanic period in the area.

From the two sites, both the botanical remains of maize (*Zea mays*) and tentatively identified seeds of quinoa (*Chenopodium* sp.) were recovered from cooking ovens and hearths in domestic contexts (Fig. 13.1; Bonzani 2005; Bonzani and Dillehay 2006). These specimens add to the growing source of information on botanical remains from this area of South America (see Falabella et al. 2008; Gil 2003; Pearsall 2008; Perry et al. 2006; Planella and Tagle 2004; Quiroz 2010; Rivera 2006; Sánchez et al. 2004; Silva 2005; Vinton 1996). Besides yielding general information on the diet of the inhabitants, analysis of the botanical remains of maize can be utilized to identify the possible originating source or sources of the maize found at archaeological sites. Such recent studies include those to identify the source of maize at Tiwanaku (Hastorf et al. 2006) and utilize extant characteristics of maize macrobotanical remains, including kernel depth or height or length, kernel width, kernel thickness, and cupule width and cupule length (also referred to as kernel thickness), as well as the angles of the sides of the kernels and/or cupules to determine cob row number (see Blake and Cutler 2001; Hastorf et al. 2006, pp. 435–437; Hastorf and Johannessen 1989; Wagner 1986). This botanical information can then be compared to extant races or varieties of maize in a region or country to identify the most likely candidate(s) for the area of origin(s) of the archaeological specimens. Tied into other

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Fig. 13.1 Maize cob fragment found at site PU-165.

sources of data from the archaeological record, including bioarchaeological studies (Rothhammer and Santoro 2001; Tung 2008) of sites in Chile, this information can also provide a clue as to possible human migration patterns or networks of contact that were occurring in south-central Chile from approximately AD 1000 to 1500 (Dillehay et al. 2007; Goldstein 2005; Janusek 2008; Kolata 1993; Rivera 1985; Rothhammer and Santoro 2001; also see Bonzani and Oyuela-Caycedo 2006; Owen 2005; Rossen et al. 2010; Staller 2010; Staller et al. 2006; Zaro 2007).

The earlier analysis of maize found at archaeological sites in Central Chile such as at La Granja in contexts dated between ca. AD 500 and 1000 indicates that 8-rowed and, predominately, 16-rowed maize first occurred in Central Chile in the early Ceramic period (Falabella et al. 2008, pp. 28–29). These are described as being of small cobs with small kernels with present-day associations to the varieties of Araucano from south-central Chile with an average of 9.7 rows and Curagua from north-central Chile with an average of 18.8 rows (Table 13.1; see Timothy et al. 1961). However, in this area in later Aconcagua contexts (ca. AD 1000–1450), a different variety of maize appears to be in use at archaeological sites from this time period. In these cases, the kernels are more triangular and have larger dimensions as do the cupules and cob length (Falabella et al. 2008, pp. 29–30), probably indicating maize cobs with row numbers lower than 16.

The data on the carbonized macrobotanical remains of maize from the Araucanian sites, under investigation herein, appear to confirm Falabella et al. (2008) in

Table 13.1 Races of maize in Chile with important characteristics for the present study. (Compiled from Timothy et al. 1961).

Race	Location	Elevation (m)	Row number	Length	Kernel width (mm)	Thickness
Marcame	Far north	3,200–3,600	15.4	14.62	8.65	5.42
Polulo	Far north	ca. 2,700	12.0	8.44	5.25	3.47
Negrito Chileno	Far north	2,260–4,090	17.0	8.61	8.40	4.74
Chulpi	North	2,260–3,200	17.4	13.43	7.42	4.49
Capio Chico Chileno	North	2,260–2,500	17.2	12.50	7.34	4.54
Capio Grande Chileno	North	2,260–2,600	19.1	13.52	6.27	3.92
Capio Negro Chileno	North	ca. 2,500	18.5	14.24	7.97	4.38
Chutucuno Chico	North	2,260–2,500	19.6	9.54	4.79	3.44
Chutucuno Grande	North	2,260–2,500	17.6	10.24	6.69	4.02
Harinoso Tarapaqueno	Far north	800–1,500	12.4	15.32	11.06	4.46
Choclero	North-central	58–600	22.1	12.67	7.14	4.09
Camelia	North to central	338–606	14.3	9.93	8.26	4.27
Curagua	North-central	500–800	18.8	8.54	6.17	3.79
Curagua Grande	North-central	450–500	19.0	9.38	6.37	4.91
Cristalino Chileno	North and south-central	50–120	13.6	10.06	9.08	4.62
Dentado Comercial	North to south-central	ca. 70	14.4	11.23	9.96	4.77
Araucano	North-central	50–150	9.7	7.51	7.84	4.97
Cristalino Norteno	North-central	ca. 72	8.0	9.72	10.95	4.43
[a]*Dulce (Evergreen)*	South-central	ca. 70	16.4	11.66	8.53	3.88
[a]*Dulce (Golden Bantam)*	South-central	ca. 70	13.4	9.87	9.26	3.97

[a] Probable recent introductions from North America

their observations of an introduced variety of maize into Central Chile around AD 1000 that has greater than 8 rows yet less than the 16–18 rows of maize as found in the present-day variety of Curagua. The maize recovered from the sites under study here is most likely of a 10–12-rowed variety (with one possible example of a kernel from an 18-rowed cob) that has more rows and kernels of smaller width than the present-day Araucano variety yet less rows than the present-day Curagua variety. This information appears to point to the introduction of this maize variety from an area outside of south-central and possibly even north-central Chile. Through a comparison of morphological characteristics of the macrobotanical archaeological remains of maize with the different varieties currently found in Chile (Timothy et al. 1961), it is possible to identify probable sources from which this maize came and tentatively verify that contacts (through either direct human migration or exchange/trade networks) were occurring between south-central Chile and more northern highland areas of what is today the Chilean and Bolivian Andes. The methods, data, and discussions that address these issues are presented further.

Methods

The macrobotanical analysis of the remains from the Araucanian sites included three samples from PU-165 (Bloque A, Subnivel B, Rasgo 1) and one sample from LU-69 (T-1, Unit 1, Capa 10) (Table 13.2). From PU-165, the majority of the carbonized botanical remains were of maize (*Z. mays*). These remains include 13 complete and fragmented unattached kernels (Figs. 13.2 and 13.3), a rachis segment with two measurable attached cupules (Fig. 13.4) and one unattached cupule, a carbonized mass of maize kernels without evidence of the cob structure, and one cob fragment with three countable rows of kernels still attached (Fig. 13.5). PU-165 also yielded six seeds that have been tentatively identified as quinoa (cf. *Chenopodium* sp.), though the process of carbonization has made the exact identification difficult. From LU-69, four uncarbonized casings that are not seeds were recovered. The identification of these remains was not determined and they may represent late historic activities at the site. These remains are described in more detail later by samples.

Prior to sorting, all samples were weighed. The samples were then gently sifted through a nested series of geological sieves (mesh sizes 2, 1, and 500 μm). This procedure facilitated sorting by producing three fragment size classes: greater than 2 mm, 2–1 mm, and less than 1 mm. All carbonized material in the greater than 2 mm-sized screen was sorted by count and weight into the constituent material categories (i.e., nutshell, wood charcoal, and seeds/fruits). No nutshell or wood charcoal was identified from these samples.

Seeds and fruits are then quantified by genus/species. Carbonized plant materials retained in the 1 mm and 500 μm mesh screens and catch basins are scanned using a binocular microscope at a magnification of 10×. Any seeds and fleshy fruits (e.g., *Cucurbita* rind) were removed, counted, and weighed by taxon and material type. Identification of plant remains was done using a binocular microscope at magnifications of 10–30×. Identifications were substantiated with the use of the reference collection in possession of the author. Secondary sources included various identification manuals (Bird 1985; Castañeda 1965, 1991; Cuenca et al. 2005; Galeano 1991; Galeano and Bernal 1987; Hather 1993, 2000; Lentz and Dickau 2005; Martin and Barkley 2000; Montgomery 1977; Morón 2006a, 2006b; Morcote Ríos 1996; Perez-Arbelaez 1978; Rocas 1989; Smith 1986; Towle 1961; Ugent and Ochoa 2006; Young and Young 1992; Zeballos Montes de Oca et al. 2003).

For the maize samples, information on kernels, cupules, and cob fragments is presented (see Hastorf et al. 2006; Hastorf and Johannessen 1994; King 1994). When burned, cobs may shrink 15–30%. On the other hand, when kernels are burned, they expand on average 5–20% in width and depth/height/length and, even more so, in thickness from 30 to 80% (King 1987 as cited in Wagner 1986, p. 112). For

Table 13.2 Araucanian site botanical remains.

Provenience	Scientific identification	Number	Weight (g)	Width (mm)	Kernels depth (mm)	Thickness (mm)	Side angles (degrees)	Estimated row number	Number	Weight (g)	Shank diameter	Cobs length	Extant width of kernels and shank	Estimated row number
PU-165	*Zea mays*	5 complete	0.4	6.5	8.8	3.7	ca. 30	12	1 (rachis segment, cupules attached)	0.1	5.7 mm (rachis width, fragment, possible tip or base of cob)	7.3 mm		
Bloque A				5.8	8.6	3.7	ca. 30	12						
Subnivel B				5.6	7.5	3.8	ca. 20	18						
Rasgo 1				6.5	7.8	4.0	ca. 30	12						
Sample 1				6.0	8.0	4.0	ca. 30	12						
		3 fragments	0.1	5.5	Frag.	5.0	NA							
				Frag.	Frag.	4.0	ca. 30	12						
				Frag.	Frag.	Frag.								
	Chenopodiaceae	6 (seeds in carbonized mass)	<0.1	1.5	1.5	1.2	Beak present							
	cf. *Chenopodium* sp.	(thickness size due to carbonization)		1.8	1.8	1.5								
				1.5	1.4	1.4								
				2.0	1.6	1.5								
PU-165	*Zea mays*	mass of kernels, cob	1.6	6.8	7.8	NA	NA							
Bloque A		structure not evident		5.5	7.2	NA	NA							
Subnivel B				NA	8.2	NA	NA							
Rasgo 1														
Sample 2		3 unattached	0.2	6.1	9.3	4.2	ca. 30	12						
				6.0	8.2	4.7	ca. 30	12						

Table 13.2 (continued).

Provenience	Scientific identification	Number	Weight (g)	Width (mm)	Kernels depth (mm)	Thickness (mm)	Side angles (degrees)	Estimated row number	Number	Weight (g)	Shank diameter	Cobs length	Extant width of kernels and shank	Estimated row number
				4.2	Frag.	3.5	NA							
PU-165	*Zea mays*	2 measured kernels in cob frag.		5.0	7.5	NA	NA		1 fragment	2.2	1.05 cm (top of frag.)	1.6 cm	ca. 1.4 cm	3 rows present Est.
Bloque A Subnivel B				5.8	7.5	NA	NA							
Rasgo 1											0.7 cm (base of frag.)			12 rows (based on angle of attachment of 2 kernels in cupule)
Sample 3		2 unattached to cob frag.	0.2	6.1	7.0	4.0	ca. 30	12						
				Frag.	Frag.	4.5	NA							

Table 13.2 (continued).

Provenience	Scientific identification	Number	Weight (g)	Width (mm)	Kernels depth (mm)	Thickness (mm)	Side angles (degrees)	Estimated row number	Number	Weight (g)	Shank diameter	Cobs length	Extant width of kernels and shank	Estimated row number
LU. 69 T-1, U:1 Capa 10 3.40 m	Unidentified, uncarbonized, possible recent Origin	4 casings, not seeds												
PU-165	*Zea mays*	2 on rachis		3.0		2.0	NA							
Bloque A				3.5		2.0	NA							
Subnivel B Rasgo 1 Sample 1		1 unattached	<0.1	3.4		2.0	ca. 60	12						

Fig. 13.2 Example of maize kernel remains from PU-165.

Fig. 13.3 Example of maize kernel remains from PU-165.

standardization purposes, therefore, the length-to-width (L/W) ratio is often utilized to compare uncarbonized to carbonized kernel remains. The kernels are the grain or seed found attached to the cob and usual measurements include the width, depth/height/length, and thickness of each kernel. Cobs with lower row numbers (i.e., 8 rows) will have proportionally wider kernels than cobs with higher row numbers (i.e., 12 rows or greater). By measuring the angles of the sides of the complete ker-

Fig. 13.4 Shank or cob fragment with cupules from PU-165.

nels, an estimate of cob row number from which the kernels came can be obtained with, for instance, the sides of a kernel from an 8-rowed cob forming a 45° angle and those from a 12-rowed cob forming a 30° angle (Wagner 1986, p. 112).

These measurements can also be performed on cupules or alicole (Blake and Cutler 2001, p. 95). A cupule is "a corneous depression on the cob from which two kernels are borne" (Wagner 1986, pp. 113–114). Cupule width and kernel thickness can usually be measured on archaeological specimens. Cupules that had borne large kernels typically from 8-rowed cobs are shallow and 7–9 mm wide. Those with average row numbers of 12 or greater are deeper and are narrower at 4–5 mm in width or less (Wagner 1986, p. 115). Since the angles of the sides of cupules from a cob should total 360°, the sides of a cupule from an 8-rowed cob should measure 90° while those from a 12-rowed cob or higher should measure 60° or less (Wagner 1986, p. 114). The number of rows of kernels on a cob has been identified as the most useful character for differentiating between races or varieties of maize (Blake and Cutler 2001, p. 95). Measurements on the fragmented cob include shank diameter, extant width of kernels and attached shank, and length.

Results

Sample 1, PU-165 (Bloque A, Subnivel B, Rasgo 1) From this sample, five complete (0.4 g) and three fragmented (0.1 g) kernels of maize (*Z. mays*) were recovered (Table 13.2). The mean width, depth/height/length, and thickness of the kernels

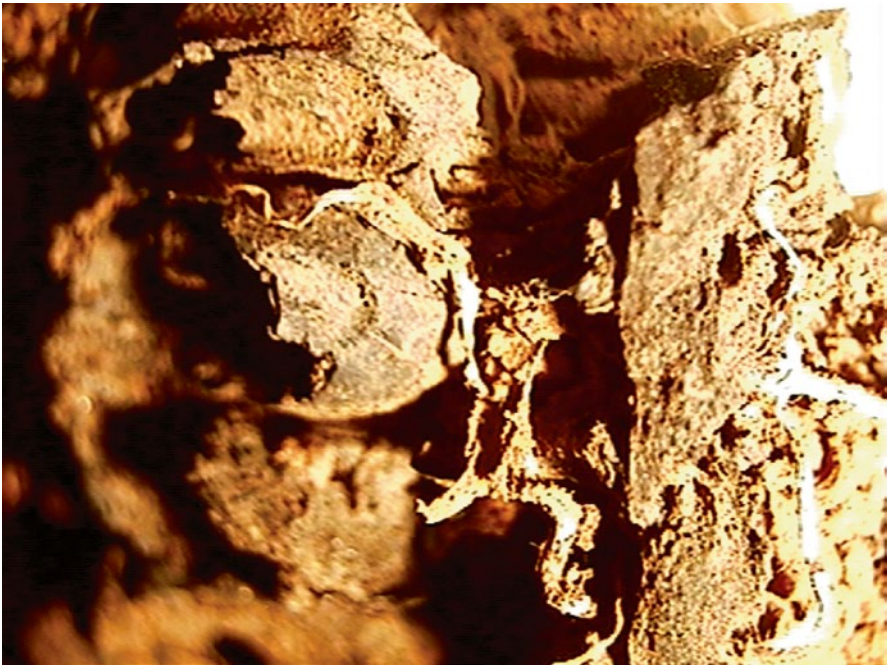

Fig. 13.5 Cob fragment with kernels attached from PU-165.

were 6.0 mm (n=6), 8.1 mm (n=5), 4.0 mm (n=7), respectively. The kernels are rounded to flat at the tops. The estimated side angles of all of the measurable kernels were ca. 30°, indicating that they most likely came from cobs with approximately 12 rows. Only one kernel had a side-angle measurement of less than 30° and may be indicative of an 18-rowed maize cob. This measurement may have been due to deterioration of the kernel, or cobs with greater row numbers than 12 may have been utilized by the inhabitants of the site.

One rachis segment (a short fragment of the cob structure) with two attached measurable cupules and one unattached cupule was also recovered from this sample. Rachis width was 5.7 mm and length was 7.3 mm. Mean width of the three cupules was 3.3 mm and kernel thickness or cupule length indicated by the cupules was 2.0 mm. The estimated side angle of the unattached cupule was ca. 60°, again indicative of a cob with 12 rows. Cobs with lesser row numbers (i.e., eight rows) would be expected to have cupule side angles approximating 90° (Wagner 1986, pp. 112–114).

Sample 1 from PU-165 also yielded six carbonized seeds of what are tentatively identified as quinoa (cf. *Chenopodium* sp.). Two of the seeds are encased in a carbonized organic matter. The four unattached seeds have the shape (round in longitudinal section and truncate in cross section) and length (mean 1.6 mm, n=4) and width (mean 1.7 mm, n=4) dimensions characteristic of domesticated *Chenopodium quinoa* (Whitehead 2007, 1999). However, the thickness of the seeds (mean 1.4 mm,

$n=4$) appears to have been affected by the carbonization process. One of the seeds has the characteristic beak found on seeds of *Chenopodium* that aided in making this tentative identification (see Bruno and Whitehead 2003; Langlie et al. 2011; Smith 1992, pp. 110–115). Quinoa is listed as being cultivated by the Mapuche (Cooper 1963, p. 700), but its use has decreased in recent years (Gumucio 1999, p. 100).

Sample 2, PU-165 (Bloque A, Subnivel B, Rasgo 1) From this sample, a mass of carbonized kernels (1.6 g) without an evident attached cob structure was obtained, as were three unattached kernels (0.2 g) (Table 13.2). Measurable dimensions of the attached kernels yielded a mean width of 6.2 mm ($n=2$) and a mean depth/height/length of 7.7 mm ($n=3$). The dimensions on the unattached kernels include a mean width of 5.4 mm ($n=3$), a mean depth/height/length of 8.7 mm ($n=2$), and a mean thickness of 4.1 mm ($n=3$). Again, the angles of the sides of the kernels were approximately 30°, indicative of cobs with greater than eight rows of grain.

Sample 3, PU-165 (Bloque A, Subnivel B, Rasgo 1) From this sample, one maize cob fragment was obtained with three attached rows of kernels. Two unattached kernels were also recovered in this sample (Table 13.2). The measurable shank diameter (cob structure without attached kernels) was 1.05 cm at the top and 0.7 cm at the base. The extant diameter of the shank and attached kernels is ca. 1.4 cm. The angle of attachment of two of the kernels in a cupule was estimated to be 60°, indicative of a complete cob with approximately 12 rows of kernels. The dimensions of two of the attached kernels yielded a mean width of 5.4 mm ($n=2$) and a mean depth/height/length of 7.5 mm ($n=2$). Kernel thickness could not be obtained on these samples. The two unattached kernels had a width of 6.1 mm ($n=1$), depth/height/length of 7.0 mm ($n=1$), and thickness of 4.25 mm ($n=2$).

LU-69 (Test Pit 1, Unit 1, Capa 10, 3.40 m) This sample yielded four uncarbonized casings that were not identifiable as seeds (Table 13.2). The uncarbonized state of the material may indicate that it is of historic origin. A specific identification of the material could not be made at this time.

Discussion

The carbonized maize (*Z. mays*) remains recovered from the Araucanian site PU-165 included kernels, cupules, a rachis, and a cob fragment. The measurable dimensions on these remains indicate that the inhabitants at the site were utilizing races or varieties of maize that had greater than 8 rows of grain, with row number probably approximating 10–12 rows on a cob, except for 1 kernel possibly from an 18-rowed cob. This conclusion is drawn from measurements of the angles of the sides of the kernels and cupules and of cupules' widths that were indicative of approximately 12-rowed cobs. The dimensions of the kernels with the depth/height/length of the kernel being greater than the width is also indicative of cobs with greater than eight rows in that eight or less rowed maize is noted to have kernel widths which exceed kernel depths (Wagner 1986, p. 115).

Although actual reference material of the races or varieties of maize that occur in Chile today was not accessible for this analysis, information taken from Timothy et al. (1961) is helpful in identifying the most probable race(s) of maize that these archaeological specimens may represent (Table 13.1). Based on the estimate that the majority of this material came from approximately 12-rowed cobs, six races from Chile are identified as having cobs approximating this row number. These include Polulo (average row number (arn) = 12), Harinoso Tarapaqueño (arn = 12.4), Camelia (arn = 14.3), Cristalino Chileno (arn = 13.6), Dentado Comercial (arn = 14.4), and Araucano (arn = 9.7) (Timothy et al. 1961). It is unlikely that these archaeological remains are from Harinoso Tarapaqueño, Camelia, Cristalino Chileno, or Dentado Comercial given that in these varieties, the average kernel dimensions (in particular, average depths/heights/lengths and widths) are much greater (i.e., 2 mm or more) than those recorded for the carbonized archaeological specimens. Given that upon burning, experiments indicate that kernels expand in size (King 1987; Wagner 1986), those races that have uncarbonized kernel dimensions that are much greater than the carbonized specimens could not be the source of the maize remains recovered from site PU-165.

However, the L/W ratio of the kernels of the races of maize from the far north to north-central of Chile including Polulo (L/W = 1.61), Harinoso Tarapaqueno (L/W = 1.38), Camelia (L/W = 1.2), and even Curagua (L/W = 1.38, that has on an average 18.8 rows) all fall within the variability of this ratio for the analyzed archaeological kernels which range from 1.15 to 1.67. The current races of maize from south-central Chile, including Araucano, all have ratios that fall below 1.15 and those recorded for the archaeologically recovered kernels.

Further, although cobs of the variety Araucano can vary between 4 and 12 rowed, with most having 9.7 rows (Timothy et al. 1961), the average dimensions of this race's kernels indicate that the kernel width is greater than the kernel length/depth/height. None of the measurable archaeological kernels had this characteristic, and instead in all cases kernel length exceeded kernel width by at least 1–2 mm. The Araucano kernel L/W ratio of 0.95 is also below that of the ratios of all of the analyzed archaeological samples.

If the estimated cob row number of 12 for these remains is correct, then taking into account the archaeological kernel dimensions, the race or variety of maize currently found in Chile that is most similar to that of the majority of the archaeological maize specimens from site PU-165 is Polulo. The race of Polulo is found in far north Chile at altitudes of ca. 2,700 m. The characteristics of this race, as reported in Timothy et al. (1961), do appear to fit those described for the archaeological specimens including having on average 12-rowed cobs and kernel depths/lengths/heights that exceed kernel widths. The L/W ratio of the kernels of Polulo (L/W = 1.61) also falls within the variability of this ratio (1.15–1.67) for the archaeological specimens. For the archaeological kernel that may be indicative of cobs with 18 rows, the race of Curagua is a good possibility in that its kernel dimensions, L/W ratio, and average row number (18.8) would fit this specimen (see Table 13.1). The race of Curagua is also found in the north (north-central) Chile at elevations between 500 and 800 msl.

The variety Polulo as well as others was also identified at the Chilean archaeological shell midden site of Cáñamo located on the south coast of Iquique and dated to 2810 BP. The cobs are indicated to be thin, a distinctive characteristic of northern Chilean and Peruvian maize varieties. Maize at the site is associated with an "intrusion" or introduction of agriculture into the area by mobile groups who had different subsistence strategies than those previously used (Núñez and Moragas 1983; Rivera 2006, p. 407). In the region of Chiu Chiu (site RaNL-100) located in the Atacama Desert, one archaeological cob of Polulo was also identified as having ten rows. It is believed to be similar to popcorn (a variety of maize that contains dehiscent seeds) with the current race of Polulo identified as a primitive popcorn (a variety of maize with hard seeds that burst when heated to form irregular puffs of endosperm). The race Polulo may be related to the primitive race of Confite Morocho (identified as an 8-rowed maize, but with average row number listed as 10.66, L/W ratio of kernels = 1.25), a popcorn found at elevations from 2,500 to 3,000 msl in the Departments of Ayacucho, Huancavelica, and Junin in Peru or possibly the race Rabo de Zorro (arn = 10.4, L/W ratio of kernels = 1.62), a hybrid of Confite Morocho (Grobman et al. 1961, pp. 147–148; Rivera 2006, p. 407). The actual race of Polulo, however, does not appear to be duplicated among the collections from other South American countries, including Peru and Bolivia (Grobman et al. 1961; Ramírez et al. 1960; Timothy et al. 1961, p. 30). Rivera (2006, p. 411) generally associates this information with a major population movement from the Altiplano into this area of Chile, albeit at an earlier time period (1000 BC–AD 300) than for the Araucanian sites under discussion herein.

Currently, the race of Araucano is found in south-central Chile in the area of the present-day Mapuche (Timothy et al. 1961, pp. 60–61). Araucano comes from elevations (50–150 m) that are similar to where the sites under study are located at 200 msl. A recent ethnobotany study of the Mapuche indicates that this race, termed Araucano Flint, is utilized in the area due to its adaptability to the short growing season of the southern Andes (Gumucio 1999, p. 100). The Mapuche grew eight or nine other varieties of maize but the actual identification of these is not given (Cooper 1963, p. 700). A possible explanation for the occurrence of Araucano in south-central Chile today is that it is a recently introduced race of flint maize from the northern part of the USA (Goodman and Brown 1988, p. 55), although this remains unclear based on the recovery and ceramic representations of other eight-rowed cobs in the prehistoric record of Peru and northern Chile (see Goodman 1994).

It does appear from the archaeological specimens at site PU-165 that an approximately 12-rowed variety of maize was being utilized at this locale in south-central Chile at the time of site occupation sometime before AD 1450, and that this variety is different from the one being utilized by the Mapuche indigenous groups today. This information may also correspond to changes that were occurring in maize use in north-central Chile in Aconcagua contexts at about AD 1000 (Falabella et al. 2008). The majority of the botanical remains have definite morphological similarities to the modern-day race of Polulo found in north Chile at elevations of ca. 2,700 masl (Timothy et al. 1961). Given this information, it is possible that a maize variety similar to Polulo spread from the northern highland areas of Chile and, possibly, Bolivia into south-central Chile by the time of site PU-165's occupation. Whether this maize variety accompanied actual human migrations or was exchanged intra- or inter-ethnically between groups living at different elevations cannot be determined from just this evidence. However, it does point to a source of origin(s) for the technological innovations including agricultural raised fields and platforms and new varieties of maize which occur in south-central Chile between ca. AD 800 and 1700 (Dillehay et al. 2007). This study also adds further evidence to the conclusions of previous research in north Chile that population migrations were occurring from the Altiplano region near Lake Titicaca during the collapse of the Tiwanaku state from about AD 1000–1100 onward (Bermann et al. 1989; Goldstein 2005, pp. 321–325; Rivera 2006), probably related to drought conditions and sociopolitical collapse in the Atiplano during this time period (Arkush 2008; Kolata 1993, pp. 282–302; Janusek 2008; Ponce 1981; Rothhammer and Santoro 2001).

Conclusions

The macrobotanical analysis of the remains from the Araucanian sites included three samples from site PU-165 and one sample from site LU-69 (Table 13.2). From PU-165 the majority of the carbonized botanical remains were of maize (*Z. mays*). These remains include 13 complete and fragmented unattached kernels, a rachis segment with two measurable attached cupules and one unattached cupule, a carbonized mass of maize kernels without evidence of the cob structure, and one cob fragment with three countable rows of kernels still attached. PU-165 also yielded six seeds that have been tentatively identified as quinoa (cf. *Chenopodium* sp.). From LU-69, four uncarbonized casings that are not seeds were recovered.

The determination of archaeological maize races or varieties must be attempted and viewed with caution (see King 1994; Hastorf and Johannessen 1994), as is the case herein. However, the morphological characteristics of the maize remains including estimated cob row number, kernel length/depth/height, width, and thickness, and cupule width and kernel thickness compared most favorably with the race of Polulo currently found in north Chile at elevations of ca. 2,700 msl (Timothy et al. 1961). The most common approximate row number calculated for the maize remains was 12 rows with kernel lengths/depths/heights exceeding kernel widths. This variety of maize has lower row numbers than the type most commonly recovered in north-central and north Chilean archaeological sites prior to ca. AD 1000, although this variety has been identified at a few sites in north Chile (Falabella et al. 2008; Rivera 2006). One archaeological kernel, however, did indicate the possible use of maize with approximately 18 rows of kernels.

The race of Polulo also appears to be different from that currently being utilized by the Mapuche today. The macrobotanical remains from site PU-165 as well as other archaeological data indicate that new technological practices were occurring in south-central Chile from about AD 1100–1300 onward. Based on similarities to the race Polulo, these macrobotanical remains of maize may have had their source(s) of origin in the highlands of north Chile and Bolivia, reaching south-central Chile sometime before AD 1450 through direct human migrations or intra- or inter-ethnic group exchanges.

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Chapter 14
Appendix 3: Analysis of Wood Charcoal Remains from *Kuel* and Domestic Sites

Maria Eugenia Solari

Introduction

This research is the first attempt to study the wood charcoal remains for several mounds and domestic archaeological sites found in the valleys of Purén, Lumaco, and Pucón, and offers information complementary to that from previous studies such as pollen deposition in wetlands near archaeological sites (see Chapter 6; Abarzúa et al. 2007) and the presence of carbonized fruits and seeds in archaeological contexts (Silva 2005 ms).

The study of wood charcoal remains from archaeological or anthropic sites is called anthracology. For this science, the archaeological interest focuses on the use of wood and the transformation of the woody vegetation in areas where human communities have established (Chabal et al. 1999). Wood charcoal forms as a by-product of incomplete combustion, which can occur as part of a natural, domestic, artisanal, or ceremonial context. The archaeological discussion of wood charcoal remains from domestic and ritual sites raises questions that are complementary to cultural research and the investigation of the traditional use of natural resources. For instance:

1. Are wood charcoal remains in the *kuel* mounds derived from the surrounding vegetation or were these already present in the soil used in their construction?
2. Are the paleobotanical patterns between *kuel* and domestic sites similar?
3. Can the *kuel*–ritual association introduce a "distractive" element in the scientific interpretation of wood charcoal remains?

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Material and Methods

Samples were recovered from the soil of each site using two techniques: flotation and manual sampling. Soil samples collected during the first season of excavation were floated in a column of sieves that were 2, 1, and 0.5 cm in size. During the next field season, the recovery of macrobotanical specimens was done using a flotation machine. Sampling by hand was found to be a less effective technique and was only used to gather traces of charcoal (patina) on clayish soils of the *kuel* (LU-19, PU-166) and a domestic site (PU-132).

The analysis of the charcoal was done using an Olympus BX60 optical microscope, equipped with refracted and polarized light. Identification was supported by comparing the material with samples from the reference collection of carbonized wood samples of plant and tree species commonly found in the temperate forests of southern Chile and available wood anatomy books of Chilean species (Wagemann 1949; Rancusi et al. 1987; Solari 1993; among others). Fragments were manually snapped along three planes (transverse, longitudinal radial, and longitudinal tangential). This made the observation of taxonomically important features in the fragment's anatomy easier.[1] These anatomical features also allowed classifying the samples as members of gymnosperms, angiosperms, or monocotyledons.[2]

The analysis of the wood charcoal remains from the sites of Purén, Lumaco, and Pucón also involved the description of complementary characteristics, both microscopic and macroscopic, such as dimensions of the fragment, presence of foreign intrusions, and vitrification.

Results

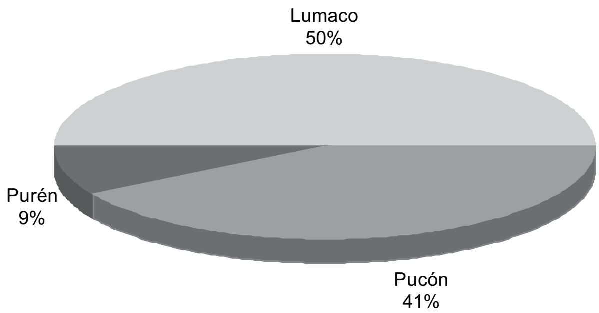
Vegetation Description for Each Site Zone

Historically, the vegetation around the archaeological sites in the Purén Valley corresponds to the transition forest type found in the Cordillera de Nahuelbuta. Common species found there are *Nothofagus obliqua* (roble), *Nothofagus dombeyi* (coigüe), *Laurelia sempervirens* (laurel), *Aextoxicon punctatum* (olivillo), *Eucryphia cordifolia* (ulmo), *Gevuina avellana* (avellano), and also sclerophyllic species such as *Cryptocarya alba* (peumo) and *Lithraea caustica* (litre), among others. In contrast,

[1] Microscopic identification of the wood charcoal did not always lead to the identification of the material at species level. This was subject to anatomical features within a particular genus, which can be affected by hybridization; in this case, both species are indicated (*Nothofagus obliqua–alpina*), or when less certain, the sample was given a comparative qualifier and cf. is indicated before the name (e.g., cf. *Laurelia sempervirens*). If the identification is only to generic level, the abbreviation sp. is written after the genus (e.g., *Nothofagus* sp.). Given the great variability within the identifications, the whole group is called taxon and includes all the previous categories as well as the families (i.e., Proteaceae and Myrtaceae).

[2] Gymnosperm with secretor channels.

Fig. 14.1 Percentage analyzed of wood charcoal remains from Lumaco, Pucón, and Purén.



Lumaco is located on the plains and is surrounded by park-like vegetation that is typical of northern Cautin. These plains were subjected to slash and burn practices to create fields for cultivation and stock raising. Nowadays, this broad zone is extensively covered by plantations of *Pinus radiata* (Monterrey pine) (Donoso 1993). Three wood fragments with anatomical characteristics similar to this species found in the site suggest the inclusion of this species in the archaeological site LU-34 (Mound G, Stratum 2). Finally, Pucón is located in the ecotonal zone of the Araucanian lakes of the Andes. Common tree species found there are *Nothofagus obliqua* (roble), *Nothofagus alpina* (rauli), and *Nothofagus dombeyi* (coigüe), along with *Laurelia sempervirens* (laurel), *Persea lingue* (lingue), and *Aextoxicon punctatum* (olivillo) (Donoso 1993).

Analysis of Wood Charcoal Remains

A total of 138 wood charcoal fragments were analyzed. These are from the sites in Lumaco (75 fragments), Pucón (52 fragments), and Purén (11 fragments) that are represented by *kuel* and domestic sites (Fig. 14.1). The samples cover a broad period of time (AD 1000–1900).[3]

Before presenting the results of the wood charcoal remains, it is important to indicate that the identification and quantity of fragments found in each site can be affected by the following:

- *Fragmentation of the remains*. Fragments are generally smaller than 5 mm, producing an overrepresentation of the species, for example, in the *kuel* LU-34, level 90–102 (*Nothofagus obliqua*), and the domestic site PU-165, level 33 cm (Myrtaceae family that includes the species arrayan or Chilean myrtle).
- *Presence of very fine lenses of charcoal*. These are less than 2 mm and the final product of intense fragmentation (e.g., by trampling on the site), which makes identification difficult, increasing the number of unidentifiable charcoal fragments (e.g., PU-165).

[3] Radiocarbon dates and relative dating of ceramics.

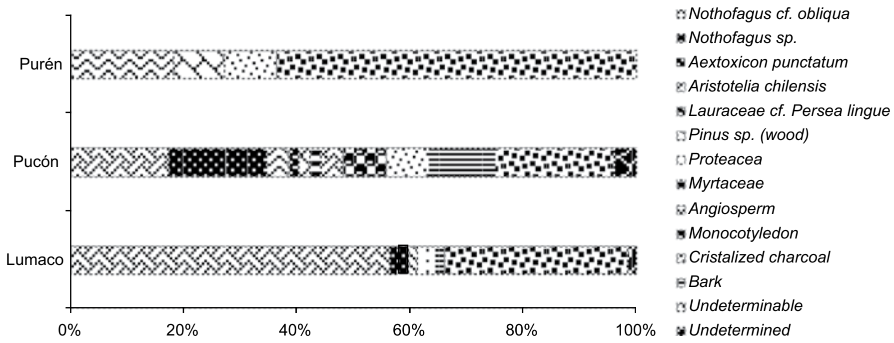


Fig. 14.2 Taxa diversity from *kuel* Lumaco, Pucón, and Purén.

- *Small size of the fragments* in both the ceremonial and domestic sites. These fragments are much smaller than those observed in other analyses (> 1 cm). They range from 1.2 to 0.3 mm in length with an average width of 0.4 mm.

Wood Charcoal Remains from Kuel or Ceremonial Sites

The taxonomic diversity of the *kuel* (Fig. 14.2) was obtained from the number of charcoal fragments identified in each site and the floristic richness of each area. The Valley of Pucón is located in the Andes and this area has a larger number of taxa (12 charcoal samples)[4] than the transitional sector between the Coastal Cordillera and the Central Valley where Purén (4) and Lumaco (8) are located (Fig. 14.3).

The analysis of eight samples from the Lumaco mound indicates the presence of thirty-five fragments of *Nothofagus obliqua* (LU-34, Mound G, Stratum 2, levels 80–95 and 90–104). Similarities in the anatomy and growth rings suggest the fragmentation of only a few pieces of wood charcoal, including the following:

- A series of unidentified charcoal fragments (unidentifiable, undetermined, bark).
- The low frequency of *Aristotelia chilensis* and *Aextoxicon punctatum,* both species of the temperate forest.
- Wood from an introduced species, *Pinus radiata*, found during the preparation of the profile of LU-34, Mound G, Stratum 2 (Fig. 14.3).

The mound site from Purén (PU-166, *Kuel* 8) has wood charcoal from four taxa. These taxa are *Aristotelia chilensis*, Proteaceae, and unidentified charcoals (unidentifiable, vitrification fragments). Meanwhile, the five samples from the site in Pucón show the greatest floristic richness, with an almost complete representation of the species found in the temperate forest of the Andes. Some of the species are *Persea lingue*, *Aextoxicon punctatum*, a member of the family Myrtaceae, and species of

[4] It is hypothesized that the impact of human activity in Pucón was lesser on the natural landscape.

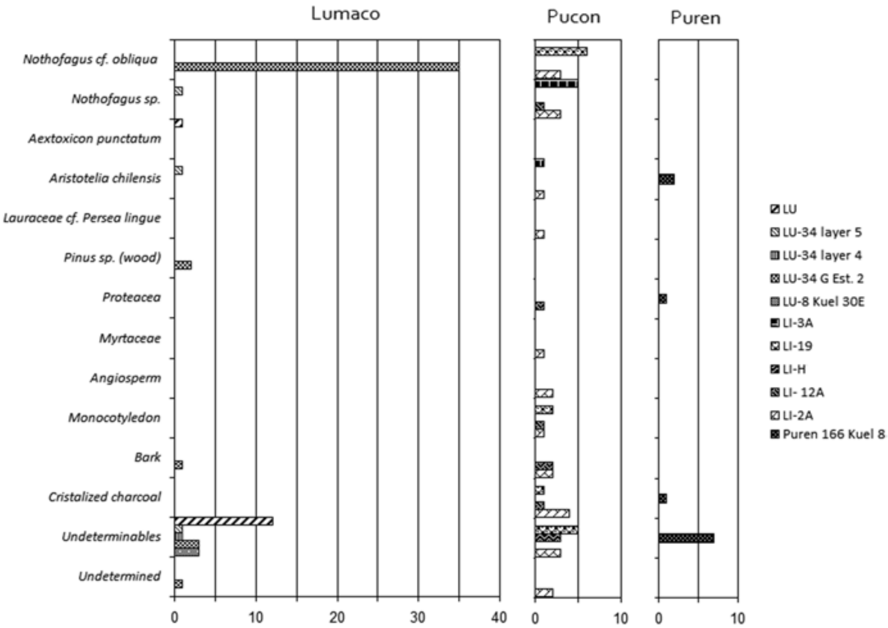


Fig. 14.3 Number of wood charcoal remains for taxa in *kuel* Lumaco, Pucón, and Purén.

vines and the genus *Chusquea*. This result is probably related to the lower human impact in this environment (the paleoenvironmental scenario) or to more intense and frequent episodes of burning on the *kuel* (archaeobotanical scenario).

Domestic Sites

The domestic sites are concentrated principally in Purén (PU-165, PU-132, and PU-87). They are absent in Pucón and there is only one site in Lumaco (LU-16), but many of the remains were identifiable. The taxonomic diversity of the wood charcoal remains in Purén is represented in Fig. 14.4. From all the taxa identified here, the presence of a representative of the Myrtaceae family is noteworthy (21 fragments). Members of this family are generally found in wetlands or in gallery forests associated with watercourses. This suggests that in Purén, these areas were used as places for gathering firewood for domestic use. Other species present are *Nothofagus obliqua–alpina* (6 fragments), *Persea lingue* (1 fragment), *Aristotelia maqui* (2 fragments), *Aextoxicon punctatum* (8 fragments), an unidentified angiosperm (15 fragments), and a species of the Proteaceae family (1 fragment).

There was a difference between the number of taxa recovered from the domestic sites (82 %) and the *kuel* in Purén (18 %). This difference is in direct relationship to the number of samples found on each site (10/2) and the amount of charcoal analyzed (Figs. 14.4 and 14.5).

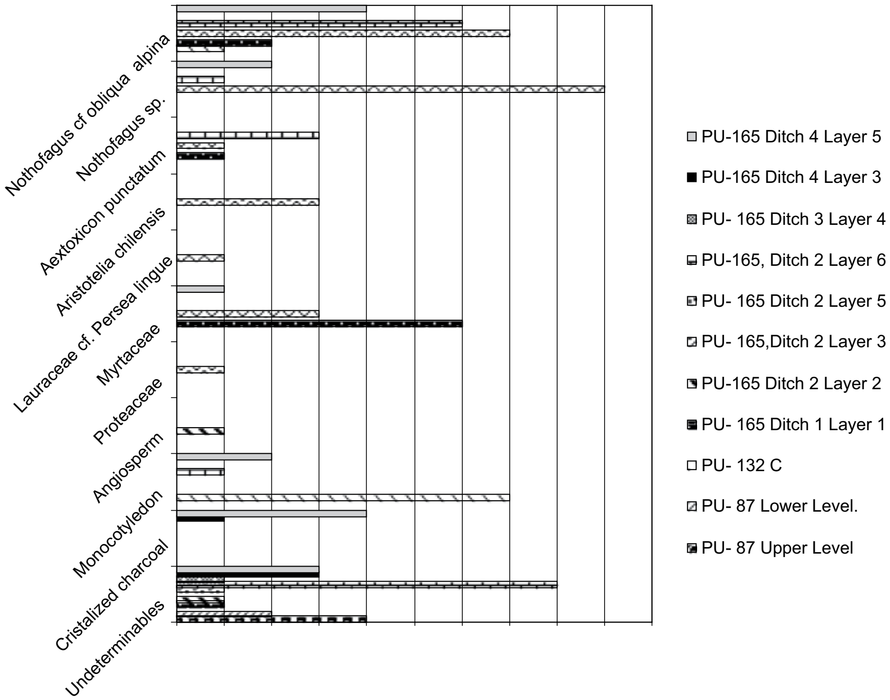


Fig. 14.4 Wood charcoal remains from Purén domestic sites.

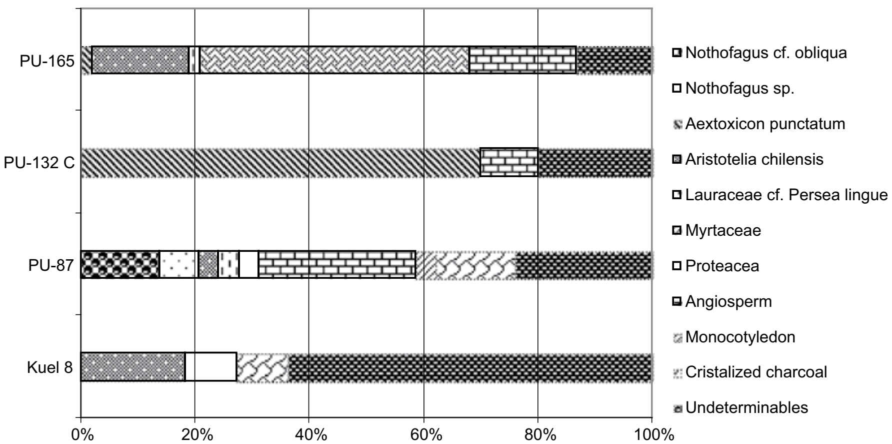


Fig. 14.5 Diversity of taxa found in the *kuel* and domestic sites in the Purén Valley.

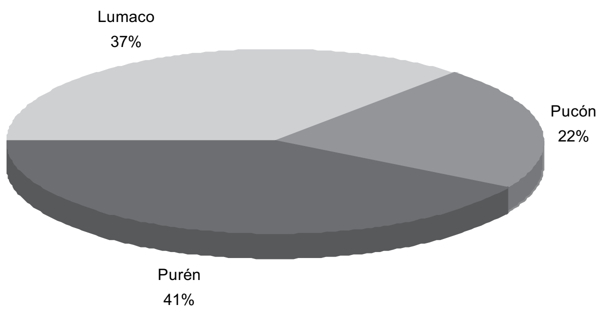


Fig. 14.6 Percentage wood charcoal remains unidentified in each site.

Unidentified Wood Charcoal Remains

With the aid of a dissecting microscope, the presence of small charcoal particles incorporated in very friable soil was corroborated (e.g., LI-19, Mound G). These could be charcoal fragments already present in soil carried to the *kuel* for construction or the product of the further breakage of these fragments through intensive trampling. These fragments were not counted and their presence was only noted.

The samples from the *Maicoyakuel* mound site (PU-220, levels 70–80, 74, 99, 196, 230–235, and 275–285 cm) that consist of traces of charcoal on red clay had no wood charcoal fragments suitable for identification. These traces can be produced by continuously trampling on small charcoal fragments. This can cause black spots of small diameter. Similar spots were observed in some of the samples from *kuel* PU-166 and in the domestic site PU-133 (levels 27, 33, 41, 42, 46, 48, 51, 60, and 62 cm).

Another difficulty encountered in the identification of the samples was the vitrification of fragments of small diameter (<2 mm), which were found at the following Pucón sites: LI-12A, LI-2A, LI-19, and PU-87. The extent of anatomical modification shown by the wood exposed to the process of pyrolysis and its characteristics have been studied before, but so far, there is no consensus among scholars about the causes of these changes.[5] In this case, these samples correspond to wood charcoal fragments of small diameter derived from species of angiosperm.

The category of unidentifiable mainly includes charcoal fragments of poor condition or smaller than 2 mm. The percentages of unidentified charcoal fragments were similar between Pucón (41 %) and Lumaco (43 %), both with a significant number of samples from ceremonial sites, while Purén has a larger number of domestic sites, with bigger, easily identifiable, wood charcoal fragments (Fig. 14.6).

[5] The subject was discussed in the workshop in Rennes, France (2001), and no consensus was reached regarding the cause of crystallization—vitrification of the samples. For some, this is associated with the type of species and their components, while for others, it is related to the small diameter or combustion of the material before they are completely dry.

Table 14.1 List of wood charcoal remains recovered from the *kuel* and domestic sites from Purén, Lumaco, and Pucón indicating scientific names, common name, habit, codes for samples where they were found, and notes on the species properties, use, or habitat preferences when available.

Family/group	Scientific name	Common name	Habit[a]	Sample code	Characteristic[b]
Fagaceae	*Nothofagus* cf. *obliqua*	Roble-pellin	Tree, deciduous	LU-34, PU-87, LI-2A, LI-19	Associated with Mapuche ceremonies; traditionally planted around the *kuel*; wood of excellent quality
Fagaceae	*Nothofagus* sp.	Roble/coigüe	Tree	LU-34, PU-87, PU-165, LI-3A, LI-2A	
Elaeocarpaceae	*Aristotelia chilensis*	Maqui	Tree, shrub	LU-34, PU-166, PU-87, PU-165, LI-2A, LI-3A.	Forms monospecific associations, called *macales*, on terrains disturbed by human use (slash and burn); prefers humid soil; berries edible and used to prepare *Chicha*, an alcoholic beverage
Lauraceae	*Persea lingue*	Lingue	Tree	PU-87, PU-165, LI-2A	Wood of excellent quality; rich in tannins and used for tanning leather; fruit poisonous for animals
Aextoxicaceae	*Aextoxicon punctatum*	Olivillo	Tree	PU-132, PU-165	Grows in coastal copses, where it prefers wet areas
Myrtaceae	Unidentified	Arrayan, pitra, meli, tepu	Tree, shrub	PU-165, LI-2A	Family associated with wetlands and waterways; colonizing species after the original forest has been cut down
Proteaceae	Unidentified	Avellano, Notro, radal	Tree, shrub	PU-166	
Monocot	Several	–	Vines, lianas, grasses	PU-87, PU-165, LI-2A, LI-12A, LI-19.	Species of *Chusquea* (*C. quila* and *C. coleu*) the most likely to be used for burning with their charred remains likely to last over time; liana-like taxa also present; all these can be used to initiate combustion
Angiosperm 1	Unidentified	–	–	PU-165	Its transverse plane has a high density of small-diameter vessels with paired radii; similar to the *Cunoniaceae* or *Laurelia* species, but without visible stepped perforations; small fragments making identification difficult

[a] The category of tree or bush refers to the family, not to the species
[b] Principal reference: Hoffmann 1982

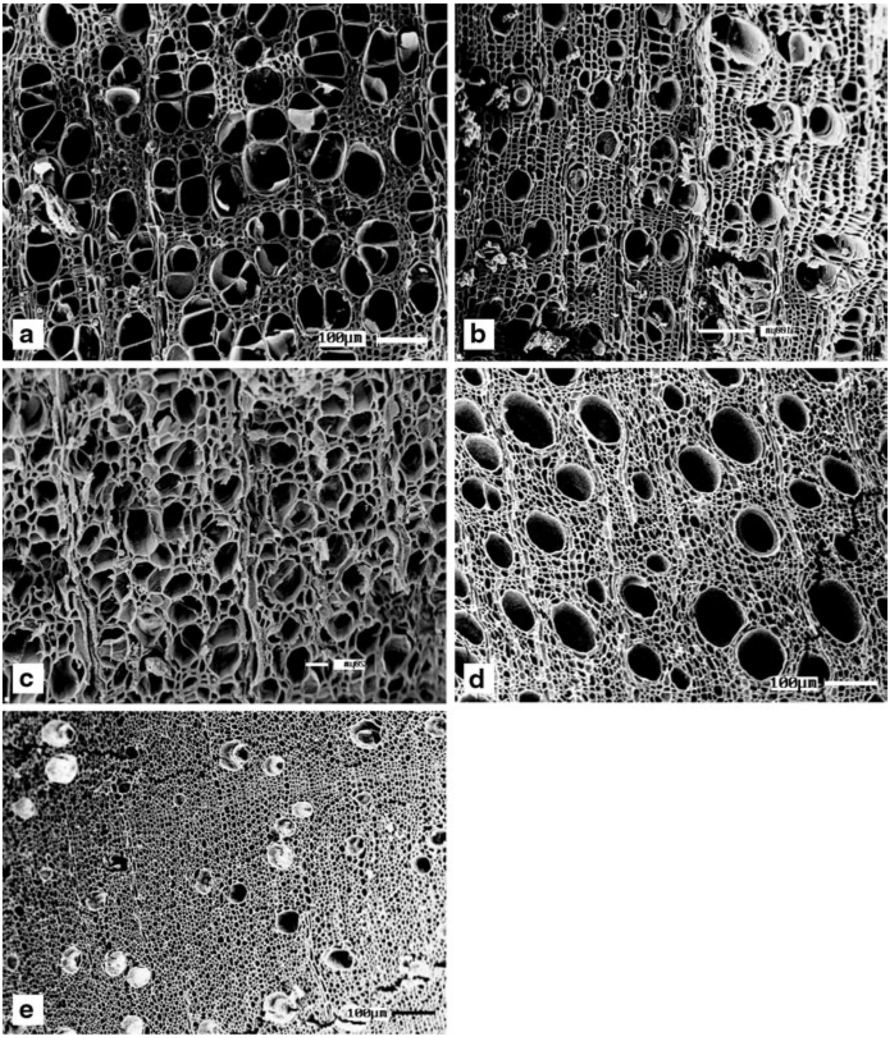


Fig. 14.7 Scanning electron photographs of the wood charcoal remains.

Anatomical Identification of the Samples

The list of families, species, and taxa present in the sites studied, belonging to the domain of the temperate forest of the south-central region of Chile (e.g., Lehnebach et al. 2008; Solari and Lehnebach 2004; Zucol 2000), which extends to the zone of Pucón, are listed and described in Table 14.1 (see Fig. 14.7).

Conclusions

It is interesting to evaluate the results obtained here with the questions on cultural and paleoenvironmental investigations presented earlier in this study. With regard to the number of charcoal fragments recovered, it is still necessary to further investigate whether the sampling methodology is adequate. This would require the implementation of a different protocol for each type of site (domestic or ceremonial) and the features of the fragments (dispersed or concentrated).

Despite the taxonomic richness between the samples from the *kuel* in the highland region of Pucón and the domestic sites of Purén being similar, establishing a clear paleoenvironmental scenario for both types of sites is impossible. Furthermore, the landscape in which these sites are found needs to be kept in mind. The valleys have been affected by human use to some or the other extent. Early chroniclers and historians like Camus (2006) and Bengoa (2003), respectively, describe these as “cleared lands” within the temperate forests of southern Chile associated with agriculture and extensive settlement.

The ceremonial sites present two types of charcoal fragments:

- Small samples of macroscopic wood charcoal, the product of individual fires, occurring in the different soils and use trampled surfaces of each *kuel*.
- Charcoal fragments smaller than 1 mm and unidentifiable microfragments, with the patina of the sediment of which they form a part; it is probable that these fragments were incorporated into the soil beforehand and were brought in it to build the *kuel.*

Another question to explore is related to the possible presence of species with ethnographically known ritual importance, such as *Drimys winteri* (canelo). This species was not found within the identified samples; however, the presence of *Nothofagus* was very frequent, especially the deciduous species commonly found in this area (e.g., roble, pellín, and cf. raulí). These species have a ritual importance in the ceremonies conducted in the *kuel*, and they are planted around some of these structures. It is possible that canelo and other species are present among the unidentifiable charcoal samples.

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Chapter 15
Appendix 4: Phytolith Analysis of Sites LU-69 and PU-165

José Iriarte

Introduction

A total of 20 samples from sites LU-69 and PU-165 were processed, identified, and counted at the University of Exeter Archaeobotany Laboratory (Table 15.1). Phytolith extractions from the archaeological sediments followed standard procedures. Samples were deflocculated in a shaker with Calgon for 24 h. Clays were washed by gravitational sedimentation, carbonates were removed using hydrochloric acid, and organic matter was removed with nitric acid and potassium chlorate when necessary. Samples were floated in a zinc bromide solution at a specific density of 2.3 g/ml, dried in acetone, and mounted in Permount. More details of this procedure could be found in Piperno (2006, pp. 119–129). In order to maximize the recovery of important phytoliths of different size classes, such as those that derive from the rinds of *Cucurbita* fruits and leaves and cobs of maize, archaeological sediments were separated by wet sieving into silt (2–50 µm) and sand (50–2,000 µm) fractions. The entire extract recovered from the sand fraction was scanned in search for *Cucurbita* phytoliths and other large arboreal and economic plant forms. Extended counts of the silt fraction were carried out in order to obtain a large sample of cross-shaped phytoliths in order to detect the presence of maize leaf phytoliths (Iriarte 2003; Pearsall 2000; Piperno 2006). Only sample No. 28 from PU-165 did not contain crosses, which prevented carrying out the discriminant function to test the presence of a maize leaf phytolith.

Methodology

The number of phytoliths counted varied from 221 to 334 per slide. Phytoliths were identified and counted under the light Zeiss Axioscope 40 microscope at 500× magnification. In order for phytoliths to be typed accurately, they were rotated on

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Table 15.1 Sample list from sites LU-69 and PU-165.

Sample No.	Sitio	Bloque	Trinchera	Pozo	Unidad	Rasgo	Capa	Nivel (cm)
31	LU-69		1		3			80
32	LU-69		1		1	asoc. Rasgo 1 10 (3–3.5 cm)		310–315
33	LU-69		1		1	8 (2.0–2.5 cm)		
35	LU-69		1		3			15–30
39	LU-69		1		1	asoc. Rasgo 1 10 (3–3.5 cm)		310–315
17	PU-165	A				2		3 (46–47)
18	PU-165	A				2		3 (46–47)
19	PU-165			4		3 (30–45 cm)		
20	PU-165			3				45–60
21	PU-165	A				4		45–52
22	PU-165			3		3 (65 cm)		
23	PU-165	A				3		54–65
24	PU-165			3				28–30
25	PU-165	A					2	18–24
26	PU-165	A					2	28–30
28	PU-165	A				3		final (59–61)
29	PU-165	A					3	35–40
30	PU-165			3			4 (45–60 cm)	48–50
37	PU-165			4				30–45
38	PU-165			4				18–20

the slide to view their three-dimensional morphology; gently tapping or pushing the cover slide with the point of a pen, as the samples were scanned before the Permount mounting medium hardened, easily accomplishes this. Identification of Poaceae phytoliths was based on a morphological classification first proposed by Twiss et al. (1969), and later modified or refined by various researchers by taking into account criteria based on three-dimensional morphology and other micromorphological features (Brown 1984; Fredlund and Tiezen 1994; Mulholland 1989; Twiss 1992); neotropical grasses (De Campos and Labouriau 1969; Pearsall 2000; Piperno 2006; Piperno and Pearsall 1998b; Sendulsky and Labouriau 1966; Sondahl and Labouriau, 1970; Teixeira da Silva and Labouriau 1970); and the Rio de la Plata Grasslands (Bertoli de Pomar 1971; Zucol 1996, 1998, 1999).

Results

In both sites, the phytolith assemblages of the archaeological sediments are dominated by the Poaceae (grass) family. Detailed counts and percentages are illustrated in Tables 15.2 and 15.3. The short-cell phytolith assemblage in LU-69 is predominantly composed of the Panicoideae subfamily, ranging between around 23 and 36 %, and Pooideae subfamily phytoliths, which vary between 23 and 30 %. A different pattern is found in PU-165 where Panicoid phytoliths are similar to LU-69,

Table 15.2 Detailed count and percentages from LU-69.

Morphotypes	Sample no.									
	31		32		33		35		39	
Count	Count	%	Count	%	Count	%	Count	%	Count	%
Panicoideae										
Bilobates	87	29.0	93	33.3	95	28.8	48	21.0	80	25.8
Crosses	9	3.0	7	2.5	6	1.8	4	1.9	9	2.9
		32.0		35.8		30.6		22.9		28.7
Pooideae										
Round/oblong	15	5.0	18	6.5	25	7.6	24	2.5	29	9.4
Rectangular/square	25	8.3	20	7.2	30	9.1	26	11.4	32	10.3
Wavy trapezoids	32	10.7	27	9.7	35	10.6	29	12.4	33	10.6
		24.0		23.3		27.3		26.3		30.3
Rondels	70	23.3	52	18.6	63	19.1	62	26.7	55	17.7
*Zea w*avy- and ruffle-top rondels					2		1			
Cucurbita scalloped phytoliths					2					
Sedge achene bodies	2	0.7	3	1.1	1	0.3	4	1.7	2	0.6
Fern phytoliths	9	3.0	12	4.3	8	2.4	6	2.6	9	2.9
Asteraceae	3	1.0	2	0.7	3	0.9	2	0.9	1	0.3
Woody dicot phytoliths	48	16.0	45	16.1	64	19.4	24	10.5	60	19.4
	300		279		334		231		310	

Table 15.3 Detailed count and percentages from site PU-165.

Morphotypes	Sample no.															
	17		18		19		20		21		22		23		24	
Count	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
Panicoideae																
Bilobates	67	24.4	78	29.5	85	29.9	78	21.9	64	22.9	90	34.5	100	21.2	75	21.6
Crosses	8	2.9	5	1.9	9	3.2	11	21.9	4	1.4	9	3.4	9	21.2	8	21.6
		27.3		31.4		33.1		43.8		24.3		37.9		42.4		43.2
Pooideae																
Round/oblong	26	9.5	23	8.7	31	10.9	28	21.9	44	15.7	30	11.5	15	21.2	23	21.6
Rectangular/square	40	14.5	31	11.7	28	9.9	25	21.9	20	7.1	18	6.9	30	21.2	20	21.6
Wavy trapezoids	28	10.2	19	7.2	21	7.4	12	21.9	41	14.6	30	11.5	32	21.2	18	21.6
		34.2		27.7		28.2		65.7		37.5		29.9		63.6		64.7
Rondels	43	15.6	39	14.8	45	15.8	65	21.9	52	18.6	33	12.6	55	21.2	37	21.6
Zea wavy- and ruffle-top rondels																
Cucurbita scalloped phytoliths																
Sedge achene bodies	1	0.4	2	0.8	3	1.1	5	21.9	1	0.4	3	1.1	3	21.2	4	21.6
Fern	5	1.8	5	1.9	6	2.1	8	21.9	11	3.9	3	1.1	5	21.2	4	21.6
Asteraceae																
Woody dicot phytoliths	57	20.7	62	23.5	56	19.7	65	21.9	43	15.4	45	17.2	67	21.2	52	21.6
Totals	275		264		284		297		280		261		316		241	

Table 15.3 (continued).

Morphotypes	25		26		28		29		30		37		38	
Count	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
Panicoideae														
Bilobates	54	24.9	43	19.5	53	22.7	48	22.1	65	27.2	61	26.1	55	22.7
Crosses	12	24.9	12	5.5	5	2.2	5	2.3	7	2.7	4	1.7	7	2.9
		49.8		25.0		24.9		24.4		29.9		27.8		25.6
Pooideae														
Round/oblong	18	24.9	11	5.0	33	14.1	15	6.9	10	4.1	11	4.7	25	10.3
Rectangular/square	15	24.9	25	11.4	18	7.6	12	5.5	13	5.4	18	7.7	21	8.7
Wavy trapezoids	17	24.9	31	14.1	28	11..9	24	11.1	39	16.3	32	13.7	35	14.5
		74.7		30.5		33.5		23.5		25.8		26.1		33.5
Rondels	42	24.9	37	16.8	38	16.2	43	19.8	49	20.4	55	23.5	45	18.6
Zea wavy- and ruffle-top rondels														
Cucurbita scalloped phytoliths														
Sedge achene bodies	5	24.9	1	0.5	1	0.4	2	0.9	1	0.4	1	0.4	1	0.4
Fern	3	24.9	4	1.8	7	3.0	4	1.8	5	2.1	8	3.4	5	2.1
Asteraceae			1				2	0.9	2	0.8	3	1.3	7	2.9
Woody dicot phytoliths	55	24.9	55	25.0	50	21.6	67	30.9	49	20.4	45	19.2	48	19.8
Totals	221				231		222		239		238		249	

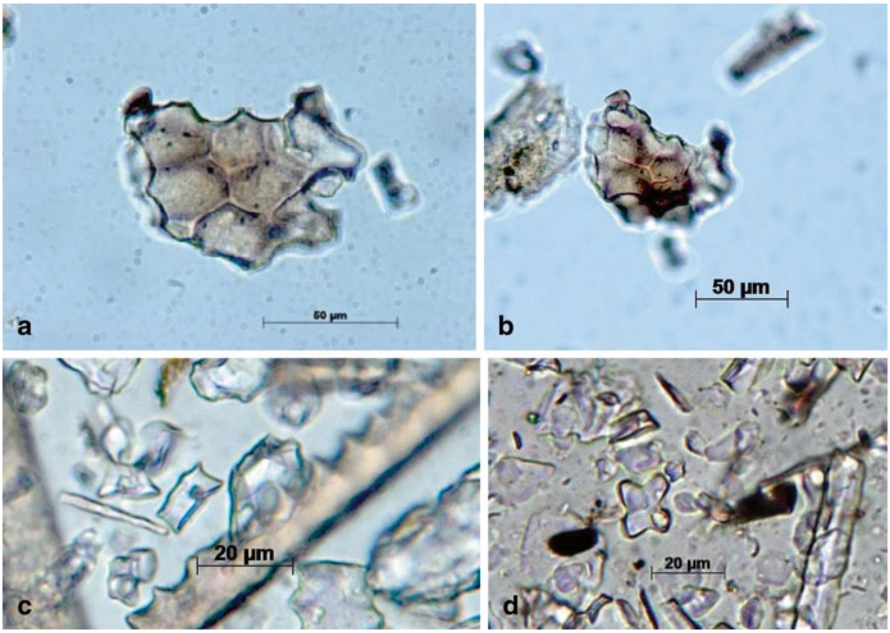

Fig. 15.1 a-d Fragments of phytolith species from various tested sites (third page).

ranging between 24 and 49 %, but Pooid phytoliths have a more broad spread pattern between 23 and 75 %. In the latter site, Pooid phytoliths are more abundant than Panicoid in most samples. Poaceae phytolith is followed by woody dicot forms (arboreal phytoliths), which varied from around 2 to 20 % in LU-69 and range between around 19 and 30 % in PU-165. Fern (Pteridophytes) epidermal cells, Asteraceae (the sunflower family) perforated opaque platelets, and Cyperaceae (sedges) achene phytoliths are also present in most samples in trace amounts (Figs. 15.1 and 15.2f, g, i). No Chloridoideae grass phytoliths, which are grasses adapted to hot and dry conditions, were found in the samples. This assemblage of nondomestic plants appears to represent the background vegetation of the sites' surroundings. The dominance of grass phytoliths indicates the presence of an open environment such as the one that must have characterized the ceremonial area associated with the mound. It is difficult at the moment to interpret why there is a major representation of Pooid phytoliths in PU-165 in relation to LU-69, but it is likely due to the former site being domestic in nature. The analysis of the phytolith signature of modern vegetation formations in the region will help clarify this pattern.

It is not possible at present to identify the presence of cultivated/domesticated species of the genus *Bromus* through phytolith analysis. In the future, it will be worth carrying out a comparative study of wild and cultivated/domesticated species of *Bromus* and closely related Pooid grasses, in order to see if *Bromus* or *Bromus* species could be differentiated using phytoliths.

In addition to the presence of Poaceae morphotypes, woody dicots, ferns, and sedge achene phytoliths, two plants of economic importance are represented in the

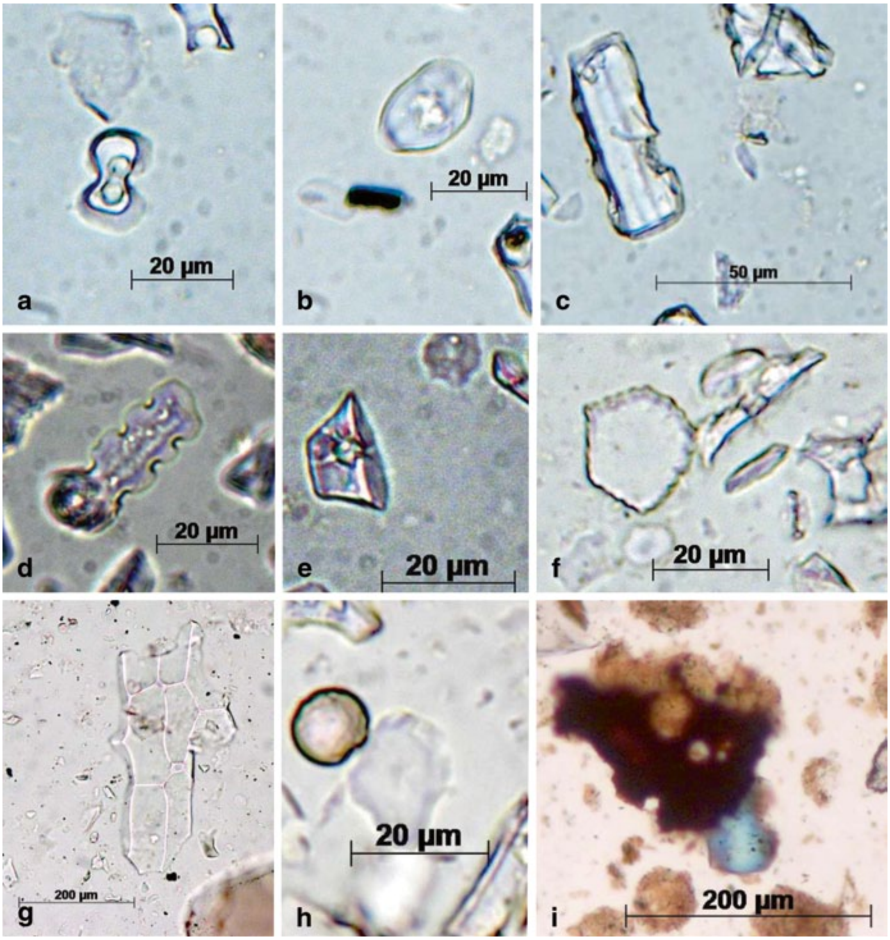

Fig. 15.2 a–i Fragments of phytolith species from various tested sites (third page).

phytolith record of these sites: maize and squash. In samples 33 and 35 of site LU-69, maize is represented by its diagnostic wavy top rondel phytoliths representative of cob decay (Fig. 15.1c) (Piperno 2006). A maize leaf signature was detected in samples 33, 35, and 39 in site LU-69 and in samples 17, 18, 22, 24, 25, 30, and 37 in site PU-165 (Fig. 15.1d; Table 15.4). It is clear that maize was an important *chicha* and/or food item in the ceremonies carried out at sites LU-69 and PU-165.

Despite intensive and complete scanning of all sand fraction slides from all the samples, only two fragments of *Cucurbita* scalloped phytoliths from fruit rinds were found in sample 33 in LU-69 site. Their size indicates that they correspond to a domesticated species of *Cucurbita* (Piperno 2006) (Fig. 15.1a, b).

The context of sample 33 from Trinchera 1, Unidad 1, and Capa 8 (2.0–2.5 cm) of site LU-69 requires special attention, as in this sample phytoliths both from

Table 15.4 Measurements of cob samples discussed in the text.

Site	Sample	*N*	X Var 1	X Var 5/6	% Var 1	DF value	Maize
LU-69	31	22	12.2	12.12	77	12.75784	No
LU-69	32	17	11.15	10.75	82	11.87631	No
LU-69	33	23	13.39	15.21	95	14.42332	Yes
LU-69	35	17	14.92	14.72	94	15.58814	Yes
LU-69	39	26	13.73	11.38	88	14.15504	Yes
PU-165	17	18	13.03	12.79	77	13.49732	Yes
PU-165	18	26	13.67	11.45	88	14.11372	Yes
PU-165	19	18	11.98	9.85	78	12.36886	No
PU-165	20	18	11.22	11.2	67	11.6565	No
PU-165	21	14	11.48	12.58	43	11.49209	No
PU-165	22	19	12.98	10.69	84	13.39216	Yes
PU-165	23	18	12.59	9.72	77	12.82704	No
PU-165	24	24	12.76	11.53	87	13.36496	Yes
PU-165	25	19	14.06	11.2	84	14.31729	Yes
PU-165	26	17	12.59	9	70	12.60274	No
PU-165	29	17	11.18	14.71	88	12.43545	No
PU-165	30	19	13.1	11.7	78	13.46367	Yes
PU-165	37	17	12.64	13.12	82	13.32345	Yes
PU-165	38	27	12.15	11.66	37	11.81028	No

the cob and from the leaf of maize in conjunction with *Cucurbita* sp have been identified.

Collectively, the phytolith analysis nicely complements the macrobotanical record of these sites. Both squash and maize were detected for the first time in several contexts in sites LU-69 and PU-165. The studied samples span both the late pre-Hispanic to the early Hispanic period (~A.D. 1200–1650).

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Chapter 16
Appendix 5: Soil Samples from Three *Kuel*

Oscar Seguel, Mario Pino Q. and Tom D. Dillehay

Introduction

Soil profiles in and near the *TrenTrenkuel, Maicoyakuel*, and *Boyoncokuel* (*Scheelkuel*) sites were studied to determine the variability of soil characteristics with respect to the Lumaco Series (CIREN 2002), dominant in the zone, and to correlate the soil horizon sequence with the cultural materials and stratigraphy present in the *kuel*.

The Mapuche (*mapu*, land; *che*, people) culture consists of different forms of expression and social organization (Dillehay 2007), but it is in the area of Purén and Lumaco that it achieved a high degree of complexity, presenting a hierarchic social structure. It is in this context that the production of foodstuffs in an organized and rational manner was required, without exclusive dependence on hunting and gathering. Beginning with this development, a special relation was forged with the land (that is the unit made up of the earth itself and the resources which sustain living things, water, landscape), which leads to the understanding of the necessity for building the *kuel* as a form of multiple expressions of Mapuche cosmology and history.

From the information available to us, we know that the late pre-Hispanic Araucanians or Mapuche developed irrigation technology and also were dependent on rainfall for their crop production. In Chile, rains fall in the winter months. This creates certain humid conditions and determines a strong relationship between location on the land, the type of soil and its characteristics, and the productive capacity of the system. Consequently, in order to understand the context within which the *kuel* were built, it is necessary to understand the characteristics of the climate, the geographical relief, and the soil of the place where they were placed.

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The context of the climate and the topography of the study area determines a relationship between the soil and the landscape which is well defined: Hilltop sectors suffer loss of material (erosion, washing of bases and nutrients) and are apt for woodland, pasture, and some winter grains, while flat, low-lying sectors undergo a dynamic of accumulation (of sediments, water, nutrients) and are apt for permanent pasture and crops which require more water.

Description of the Soils in the Study Area

Mountain and Hill Soils (CIREN 2002)

Lumaco Series: In the hilly sector of the Coastal Cordillera, where the *kuel* are located, the Lumaco Series in its several phases is dominant on the soil maps (CIREN 2002).
The Lumaco Series is a member of the fine, mixed, mesic of the Fluventic Dystrudepts family.

It is an Inceptisol, which in general is a poorly developed soil that is not related to its chronological age but rather to the intensity of the evolutionary processes that formed it. It has a udic humidity regime, which means that there are periods of up to 45 days during which the soil in the upper 30 cm remains humid. This condition relates to the climate under which it has developed, with abundant rainfall concentrated in the winter. The term Fluventic refers to the presence of more than 0.2 % of Holocene carbon at a depth of 125 cm; however, the decrease of carbon content is gradual from the surface to that depth. Dystrudept refers to the fact that it does not have accumulations of sulfur or carbonates (because of the same climatic regime that washes out the salts) nor is it a hardpan (which are chemically hardened soils that restrict root development and limit the depth of the soil). This trait reflects rainfall that is sufficiently abundant to completely wash out the salts, removing them from the soil profile, especially in low-lying zones in the river basin. For the same reason, base saturation is less than 60 %, which reflects limitations in the natural fertility of the soil (Luzio 2010). The soil also has a preponderance of fine grain-size texture classes with a mix of minerals without a predominance of any one and a mesic temperature regime that means that the annual mean temperature of the soil is between 8 and 15° C and the variation between winter and summer is less than 6° C (Soil Survey Staff 2006).

The Lumaco Series is a deep soil, formed from metamorphic rocks, on isolated hills or in contact with the Nahuelbuta Association. The surface horizon is a reddish brown (5YR), sandy clay loam. Quartz gravel, coarse and fine, is present throughout the profile. It is found on gentle hills (<25 % inclination), on well-drained terrace remnants, with moderately slow permeability. Below 90 cm, there can be abundant iron–manganese redoximorphic features.

Other Similar and Related Series and Association Soils

- The Huelche Series is an Inceptisol belonging to the fine loam, mixed, mesic of the Dystric Eutrudepts family; it is a deep soil, clay loam at the surface, very dark brown, in the 10YR hue; at depth, it becomes clayey and dark brown to dark reddish brown, between 7.5YR and 5YR. Quartz gravel is abundant, increasing with depth. This soil is found on remnant plains on dissected slopes with an inclination of 5–30 % and good drainage.
- The Nahuelbuta Association is very similar to the Lumaco Series, but it corresponds to an Ultisol soil (of the very fine, mixed, isomesics of the Rhodic Paleudults family) formed from metamorphic rocks; it has a silty clay loam texture at the surface, and at depth it can be a silty clay; the surface color is a dark reddish brown, 5YR, while at depth it is dark reddish brown, 2.5YR. The slopes are up to 50 %, the permeability is moderate, and the drainage is good.
- The San Esteban Association is an Inceptisol soil (fine loam, mixed, thermic of the Typic Dystroxerepts family) derived in situ from granitic materials rich in quartz, moderately deep, and found on mountains and high hills with dominant slopes than 10 %. The texture is a sandy clay loam and the color is brown on the 7.5YR hue at the surface, while at a greater depth, it is clay and reddish brown on the 5YR hue. Permeability is slow, especially when it is eroded, superficial runoff is rapid, and drainage is good.

Soils of the Valley Floor (CIREN 2002)

The Los Sauces Series is an Inceptisol soil (fine, mixed, mesic of the Typic Endoaquepts family). It is a deep soil, found on alluvial terraces, formed by sediments rich in quartz (Fig. 16.3). It is a clay loam and a dark gray 2.5Y on the surface; at depth, the soil is clayey and a dark greenish gray 10Y. There are abundant mottling and oxidation throughout the profile. It is found on level terrain with a slope of 1–3 %; the permeability is very slow with very poor drainage leading to occasional flooding in the winter in narrow valleys.

The Los Copihues Series is also an Inceptisol (fine, mixed, mesic of the Oxiquic Dystrudepts Family). It is a deep soil of alluvial origin, formed by the sediments of the Nahuelbuta Cordillera. At the surface, it is a silty clay loam, dark brown at 7.5YR; at depth, it is silty clay, with a color of olive brown at 2.5Y. It is found on slightly inclined plains with slopes of 2–3 %; its permeability is moderately slow and its drainage is partial. There are concretions and nodules of manganese at depth with abundant mica throughout the profile.

The Romehueico Series is another Inceptisol soil (coarse loam, mixed, mesic of the Aeric Endoaquepts family); it is a moderately deep soil located on alluvial terraces, whose sediments were originated from the surrounding granitic hills. It is a sandy clay loam at the surface and a dark grayish brown at 10YR; at depth, it is a silty clay loam with mixed colors from a dark grayish brown to yellowish red at

2.5Y and 5YR. There is abundant mica. Although, it rests on a sandy substrate, it can occasionally be clayey (below 80 cm) and gray at 5Y to a dark greenish gray at 5GY. There is abundant oxidation throughout the profile; below 90 cm, it is permanently saturated. It is found on level terrain with a slope of 1–2 % with moderate permeability and poor drainage.

The Carampangue Series is an Inceptisol soil (loamy coarse, mixed, mesic of the Fluvaquentic Dystrochrepts). It is a deep, stratified soil, made up of alluvial sediments very rich in mica and quartz from the Nahuelbuta Cordillera. It is a sandy loam throughout the profile, with a dark grayish-brown color at 10YR at the surface and 2.5Y at depth. It forms on level terrain with a slope of 1–2 %; it has moderate permeability and imperfect drainage. Oxidation and weak mottling are common on the surface and abundant at depth. The soil is found on the lowest terrace of rivers and streams that causes periodic flooding in the winter months. There are periods of poor to very poor drainage, in which case root development is limited and the effective depth of the soil is reduced.

The El Manzano Series corresponds to an Inceptisol soil (loamy, coarse, mixed, thermic of the Typic Xerofluvents family); it is a deep soil of alluvial origin, formed by granitic sediments. At the surface, it is a loamy sand*,* grayish brown at 10YR; at depth, it is a fine sandy loam, brown to dark brown at 10YR. It is found on gently inclined terrain with a slope of 2–3 %; it has moderately rapid permeability and partial drainage. It is very stratified and it can have silty loam horizons.

The Guadaba Series is a Mollisol soil (fine silty, mixed, thermic of the Fluventic Haploxerolls family). It is a deep soil, developing on a fine alluvium. It is clayey at the surface and a very dark gray at 10YR. At depth, it is a silty clay loam and a dark gray to very dark gray at 10YR. It occurs on alluvial and colluvial plains with flat to slightly inclined terrain. The permeability is moderately slow and drainage partial to poor with mottling beginning at 60 cm; its water table is below 100 cm.

The Purulaco Series is a Mollisol soil (coarse loam, mixed, mesic of the Fluventic Hapludolls family). It is deep and stratified and found on alluvial terraces. At the surface, it is a fine sandy loam to silty loam, a dark brown to very dark brown at 7.5YR. At depth, it is a fine sandy clay loam, very dark brown at 10YR. Below 80 cm, there can be horizons that are very variable in texture, from a silty clay to fine sandy loam. It occurs on level terrain and is moderately permeable, with moderate to very poor drainage. There are redoximorphic features, and its water table is variable in depth, depending on the drainage (Fig. 16.1).

Description of the Climate (Santibáñez and Uribe 1993)

The study area has a temperate, mesothermal, lower stenothermal, subhumid Mediterranean climate with average minimum temperatures of 4.1° C in July and average maximum temperatures of 27° C in January. The lower sectors of the valley have an average of 14 frosts per year, while on the ranges of hills there is an average of three frosts a year. Annual rainfall varies between 1,220 and 1,500 mm with a dry season

Fig 16.1 General view of the geographic setting of the Purén and Lumaco Valley.

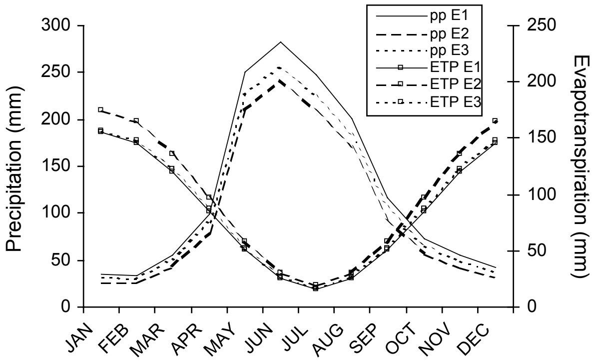


Fig. 16.2 Rainfall and potential evapotranspiration in the Purén and Lumaco Valley.

of 5–6 months. Figure 16.2 shows the annual distribution of rainfall and evapotranspiration for three agroclimatic stations present in the study area.

In areas that are hilly or have gentle slopes, where well-drained soils predominate, the distribution of rainfall is concentrated in the winter with low temperatures, which favors the cultivation of winter crops. In the spring and summer season, there is a short growing cycle that ensures an early harvest. The period with a hydrological deficit extends from the beginning of October to the end of April. The soil's capacity for water storage assures its availability after October, but only until the beginning of December. After that date, crops suffer water stress that limits production. In flat areas, where drainage is restricted by the position of alluvial terraces confined to the floor of the valley, it is possible for the soil to hold more water, which makes it possible to grow spring–summer crops, with the expectation of good agricultural production. The restrictions in this case would be in the period

Fig. 16.3 Lumaco Soil Series. View of knolls and hills and soils of the Cordillera de la Costa.

of sowing, because of the danger of spring frosts and an excess of water in the soils; both would affect sprouting and establishment of the crops; for this reason, sowing should be delayed until the middle of spring.

The *Kuels* and Their Pedological Interpretation

In this section, we present the results of fieldwork carried out in 2004, 2005, and 2006 in which different *kuel* and test pits in the soils in the Lumaco–Purén sector were studied in order to determine the possible origin of the materials used in the construction of the different *kuel* and the different construction phases. The analyses are based principally on physical and morphological properties, which were sufficient for understanding the context that the Araucanian culture identified with the soil, a resource which provided their essence as *people of the earth*. The results are based principally on three *kuel*: *TrenTrenkuel*, *Maicoyakuel*, and *Boyoncokuel* or *Scheelkuel*, Figs. 16.3 and 16.4. The principal evidence for their anthropic origin comes from the depth of the material which is well over 2 m in contrast with the profiles of the soils present in the sector, which range from moderately deep (75–100 cm) such as the El Manzano and Los Sauces Series (Fig. 16.4). to deep (100–150 cm) like the other Series, although none of them exceed 120 cm as a soil structure, rather they are massive with weathered geological material.

Fig. 16.4 Los Sauces Soil profile from the valley floor near *Maicoyakuel*.

Fig. 16.5 View of the *TrenTrenkuel* and profile of poncho-loads of different soils.

Description of Soils in the Stratigraphy at *TrenTrenkuel*

This is a very large *kuel* with a mixture of soils of different origin in its core (Fig. 16.5). Based on the morphological descriptions of the soils in its immediate vicinity, it is established that the site belonged to the Lumaco Series, but the soil of the sector on which the *kuel* was built was lowered some 30–50 cm. Hence, both at the base of the *kuel* and at a shallow depth in the leveled area of the site, it is possible to identify metamorphic materials which gave rise to the soil, as well as the quartz gravel and magnesium nodules characteristic of the Lumaco Series. In its colors and the distribution of texture, there are similarities with the San Esteban Association, but the latter is derived directly from granitic material, varying gradually in depth toward the weathered rock with sandy texture. In drainage ditches located in the hills to the south and west of the *kuel*, textural classes and colors that confirmed the Lumaco Series to dominate the sector, with less intensive erosion than on the leveled site itself.

Three stratigraphic pedological profiles were described near the mound, according to the Schoeneberger et al. (2002) guidelines. They are identified as Test Pits 1, 2, and 3, located 20 m to the south and southwest of the *kuel* (see Chapter 7 for the location of pits). The description was made to a depth of 60 cm in order to identify the type of soil and the series to which it corresponds. Test Pit 3 was extended to a depth of 100 cm. When it is not indicated, the color is in wet condition; otherwise, we used a "d" suffix for dry condition and "w" suffix for wet condition after Munsell color notation. In 2005, the land on the north side of the mound was used for a new plantation of eucalyptus trees; the southern sector is used for growing annual crops.

Test Pit 1 0–13 cm: moderate, fine, and medium subangular blocky; light gray (10YR to 2.5Y 7/2) to dark grayish brown (10YR to 2.YR 4/2); 10% redox concentrations in filaments, brownish yellow (10YR 6/6) to strong brown (7.5YR 5/6); silty clay loam, moderately plastic and moderately sticky; few fine pores, cracks are common with a few fine roots, and clear, smooth boundaries.
13–20 cm: moderate, medium, and coarse subangular blocky; light gray (10YR 7/2) to light brownish gray (10YR 6/2); few diffuse redox concentrations, brownish yellow (10YR 6/6) to strong brown (7.5YR 5/6); silty clay loam, moderately plastic, very sticky; many fine pores, common cracks with few fine roots, and clear, smooth boundaries.
20–35 cm: strong, medium, and fine subangular blocky; dry color: 30% very pale brown (10YR 8/2) and 70% brown (7.5YR 4/2); wet: 30%, light brownish gray (10YR 6/2)d and 70% dark grayish brown (10YR 4/2)w; 10% iron (Fe) nodules, clear, brown (7.5YR 5/6) and manganese (Mn) nodules; silty clay, very plastic, moderately sticky; commonly seen are many fine pores with few cracks and fine roots, and clear, smooth boundaries.
35–40 cm: massive; grayish brown (10YR 5/2) to grayish brown (2.5YR 5/2); silty clay, very plastic, very sticky; common fine pores with few cracks and few fine roots; 20% of quartz gravel up to 0.5 cm in diameter, oxidized Fe on the surface; clear smooth boundaries.

40–62 cm: massive; light brownish to olive gray (2.5Y to 5Y 6/2); grayish brown to olive gray (2.5Y to 5Y 5/2); silty clay, very plastic, very sticky; common fine pores with few cracks; 5% of quartz gravel, oxidized Fe on surface, and clear smooth boundaries.

Test Pit 2 0–12 cm: moderate, fine, subangular blocky; light gray (10YR 7/2)d to brown (10YR 4/3)w and yellowish brown (10YR 5/4)w; few diffuse mottles, very pale brown (10YR7/4)d to reddish yellow (7.5YR 6/6)w and yellowish brown (10YR 5/4)w; sandy clay loam, moderately plastic, moderately sticky; many fine pores and many fine roots in the first 3 cm below the surface, few fine roots in the rest of the horizon, and clear, smooth boundaries.
12–30 cm: strong, medium, and coarse subangular blocky; light gray (2.5Y 7/2) d to olive gray (5Y 5/2)d; few clear mottles, brownish yellow (10YR 6/6)d, yellowish brown (10YR 5/6)w; silty clay loam, moderately plastic, very sticky; many

fine pores and common medium pores; few cracks and few fine roots and gradual smooth boundaries.
30–42 cm: moderate, coarse, subangular blocky, parting to moderate, medium and fine subangular blocky; brown (10YR 5/3)d and light gray (10YR 7/2)d; clear, strong mottles, brown (7.5YR 5/6) and Mn nodules; light brownish gray (2.5Y 6/2) d, brown (7.5YR 5/6)w; clay loam, very plastic, very sticky; common fine pores and very few fine roots; common fine quartz gravel and clear, smooth boundaries.
42–60 cm: massive; weathered parent material, similar to Pit 1; very abundant Mn nodules, few subangular cobbles, 10 cm in diameter; abundant quartz sand and gravel.

Test Pit 3 0–11 cm: weak, medium, and coarse subangular blocky; light yellowish brown to light gray (10YR 6/4–7/2)d and dark reddish brown (10YR 4/4)w; few diffuse mottles, reddish yellow (7.5YR 6/6)d to strong brown (7.5YR 5/6)w; sandy clay loam, moderately plastic, moderately sticky; many fine pores and few cracks with common fine roots; few quartz gravels and clear, smooth boundaries.
11–17 cm: erosive feature horizon, 2–12 cm thickness of subangular quartz gravel up to 1 cm in diameter, covered by fine sand; the thickness increases toward the *kuel*; in sectors flattened, common cobbles appear up to 8 cm in diameter; abundant mica; many fine pores; many fine roots and clear, smooth boundaries.
17–27 cm: strong, medium prismatic, parting to strong, medium subangular blocky; pink (5YR 8/4)d to pinkish gray (5YR 7/2)w; common clear mottles, red (2.5YR 5/6)d to red (2.5YR 5/6)w; clay loam, very plastic, very sticky; many fine pores and few fine roots and clear, smooth boundaries.
27–43 cm: weak, medium prismatic parting to strong, coarse, subangular blocky; white (7.5YR 8/1)d to light gray (2.5YR 7/2)w; common clear mottles, red (2.5YR 5/6)d to red (2.5YR 5/6)w; clay loam, very plastic, very sticky; common fine pores and very few fine roots and clear, smooth boundaries.
43–70 cm: very weathered rock, with a tendency to weak, medium, prismatic; gray (N6)w, with 50 % of clear mottles, reddish yellow (7.5YR 6/6)w; clay, very plastic, very sticky; few fine pores and few fine roots between cracks and gradual smooth boundaries.
70–100 cm: massive, weathered rock, giving the impression of being a micaceous schist; light greenish gray (l0Y 7/1)d to greenish gray (10Y to 5G 5/1)w, with abundant mottles in horizontal filaments, reddish yellow (7.5YR 6/8)d, yellowish red to reddish yellow (5YR 5/6 to 7.5YR 6/8)w; silty clay loam to silty clay, moderately plastic, moderately sticky; very few fine pores.

Beginning at 17 cm, the color of the matrix becomes very variable and the mottles are abundant but more homogeneous in color. The matrix from 17 to 27 cm has a 30 % of pale yellow (5Y 7/3)d to a pale olive (5Y 6/3)w. The horizon from 43 to 70 cm varies between 40 and 60 % light gray (5Y 7/2)d to gray olive (5Y 5/2)w.

Based on these descriptions, it can be concluded that the dominant soils of the site area, which constitute the ñichi platform, are of the Lumaco Series, but the leveled hilltop area on which the *kuel* was built has lost approximately the first

30–50 cm of its natural soil due to soils removed and placed in the artificial mound. The hilltop was thus, heavily modified primarily through deliberate removal of sediments and secondarily through subsequent natural processes of erosion and loss of organic matter (OM). This has resulted in lighter colors and different matrices from those described for the soil series. The Nahuelbuta Association is described as being derived from weathered metamorphic rock, but its colors are reddish and it is clayey at the surface. On the other hand, if the Lumaco Series is a deep soil, it is also derived from metamorphic materials, which are found at little depth on the site, precisely because of the removal of the top 30–50 cm of the soil. Both soils have abundant quartz in the profile, which coincides with the observations made in the field. However, nodules of Mn have been described only for the Nahuelbuta Association, as we observed in this case. Moreover, the Nahuelbuta Association is distributed on the mountains of the Cordillera de Nahuelbuta with steeper slopes than the Lumaco Series, which is found on remnant terraces with gentle hills. The colors and textural distribution are similar to the San Esteban Association, but the latter is derived directly from granitic material, varying gradually at depth to weathered rock with a sandy texture. In drainage ditches located on the hills which fade away to the south and west of the *kuel*, there are texture types and colors which confirm the Lumaco Series as dominant in the sector, with less intense processes of erosion and no cultural modification than are found on the ñichi platform itself.

Test Pit 3 presents a special case, since it was apparently integrated into the construction phases of the *kuel*. The first horizon does not coincide with the other test pits, and it is separated from the rest of the profile by a stratum (11–17 cm) below the surface with abundant clasts, whose thickness increases toward the *kuel*; below this depth, the soil corresponds to the parent material, and above 17 cm it corresponds to processes of erosion and deposition from the *kuel*.

Based on samples taken from the test pits, such as the case of altered (truncated) stratigraphy which conserves the subsoil characteristic of the Series, samples from nearby drainage ditches, which correspond to the Series, have less alteration. Measurements were also taken to compare the different samples for bulk density, color, and water stability and to establish their point of origin. The results are presented in Table 16.1. It should be kept in mind that the samples came from the area of activity influence of the *kuel* and its immediate environs, with a history of compaction by foot traffic from community ceremonies, plowing, and cultivation in the case of the sectors outside the limits of the *kuel*.

Inside the *kuel*, between 80 and 240 cm below the surface (Table 16.1), there is great variability in soil colors, dominating the 10YR hue in the first few centimeters and 2.5Y hue at the bottom. These soils are more related with those located in the valley floor, such as the Los Sauces, Romehueico, and Guadaba soil series. This was established in the field by visual observations in which volumes of soils (noncontinuous horizontally) with clear abrupt boundaries could be seen. The absence of mixing between colors suggests that the soils were moist at the time they were deposited on the *kuel*, since they remained cohesive and formed relatively short ovoid bodies. The supposition of high water content is reaffirmed by the presence of

Table 16.1 Bulk density (Db), color, and water stability of the samples taken from a column at *TrenTrenkuel*, near the test pits and drainage ditches (D1, D3).

Sample	Depth (cm)	Db (mg m^{-3})	Dry color		Wet color		Water stability[a]
			Principal	Secondary	Principal	Secondary	
Kuel	−20	1.46	2.5Y–10YR 4/1		2.5Y–10YR 2/1		Very stable
Column 1	−50	1.60	2.5Y 5/2		10YR 3/1		Unstable
	−80	1.67	10YR 6/3		7.5–10YR 4/3		Unstable
	−170	1.55	10YR 7/6		7.5–10YR 4/4		Very unstable
	−200	1.70	5YR 5/6	10YR 4/3	5YR 4/4	10YR 3/2	Unstable
	−215	1.75	2.5Y 8/2		2.5Y 6/3		Very unstable
	−240	1.83	2.5Y 7/3		10YR 4/2		Unstable
	−280	1.70	2.5Y 6/3–2		10YR 5/3	10YR 4/2	Unstable
	−330	1.82	5Y 7/2	10YR 6/8	5Y 5/2	10YR 5/8	Stable
Kuel	−235	1.74	7.5YR 6/6	10YR 4/3	5YR 4/6	10YR 2/2	Very unstable
Column 2	−260	1.73	2.5Y 7/3	5YR 5/8	2.5Y 4/2	2.5Y 6/3	Very unstable
	−265	1.78	2.5Y 7/2		2.5Y 5/3		Very unstable
Test Pit 1	−5	1.63	2.5Y 7/2		2.5Y 4/2		Very stable
	−25	1.73	2.5Y 7/2	10YR 6/6	5Y 5/2	10YR 5/6	Unstable
	−55	1.91	5Y 6/2	10YR 6/6	5Y 5/2	10YR 5/6	Stable
Test Pit 3	−5	1.76	10YR 6/4		10YR 4/4		Very stable
	−22	1.56	5YR 5–6/8	5Y 7/3	5YR 4/6	5Y 5/3	Very stable
	−35	1.60	5Y 7/3	7.5YR 6/8	5Y 6/3	7.5YR 5/8	Stable
	−56	1.76	5Y 7/2	10YR 7/8	5Y 5/2	10YR 5/8	Moderately stable
	−85	1.75	7.5YR 6/8	10Y 7/1	7.5YR 6/8	10Y 5/1	Moderately stable
D1	−5	1.68	10YR 5/4		7.5YR 3/2		Very stable
D1	−25	1.67	5YR 4/4		5YR 3/3		Unstable
D3	−5	1.82	2.5Y 7/4		10YR 4/4		Very stable
D3	−25	1.80	10YR 6/6		10YR 4/6		Moderately stable

[a] Water stability: percentage of aggregates between 1 and 2 cm, which remain intact one minute after the application of distilled water.
Very stable >80%
Stable 60–79%
Moderately stable 40–59%
Unstable 20–39%
Very unstable <20%

deep vertical cracks in the walls of the *kuel* over a period of 2 weeks. With some exceptions, the individual soil pockets or basket and poncho loads that were deposited on the *kuel* varied between 0.0156 and 0.0640 m^3 or 16 and 64 L which, assuming a density of humid soil, resulted in an average weight of between 25 and 110 kg. How transport was carried out must have depended on the distance to be covered from the point of origin of the soil sample. The sector where the colors changed markedly followed the topography of the *kuel*. The upper 80–100 cm of soil that

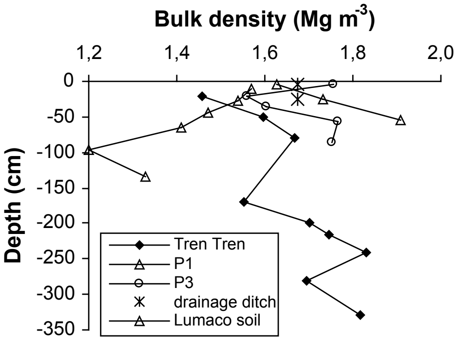


Fig. 16.6 Variation in the bulk density at depth of the samples from *TrenTrenkuel* and surrounding area.

covered the *kuel* are homogeneous and appear to have come from neighboring sites, although on the high part of the *kuel* it is highly eroded. At the 280-cm level, the colors are much more heterogeneous and present gradual variation toward the test pits. Given the important variations in the matrix between the test pits and the *kuel* (below 280 cm), it would be natural and would correspond to the parent material described for the Series. The humid colors in the test pits and the lower 50 cm of the *kuel* vary between 10YR 5/2–5/4 and 5Y6/1–6/3. It is not easy to interpret the presence of mottles at the bottom of *kuel* because oxidation would not be expected inside the *kuel*. The removal of soil in the sector of the test pits favors the alternation of cycles of wetting and drying within the soil, which would lead to the formation of mottles, but the presence of these in the interior of the *kuel*, although they are less abundant than in the test pits, would indicate that some time had passed before its construction, possibly indicating that soils were collected, transported, and stored near the construction area for several days.

The sequence of bulk density (DbAd) at depths for the different samples studied is given in Fig. 16.6; the values described for the Lumaco Series are included.

The general Db trend of all samples differs from the Lumaco Series, which at depth presents decreasing values of Db until it reaches the parent material, at which point it increases. The samples analyzed present denser soil at the surface compared to the Lumaco Series, with an increase of Db at depth. This tendency has already been discussed for the successive deposit of materials that have undergone processes of drying and wetting, in which case the upper strata apply pressure on the lower ones, increasing the Db. The changes in Db variation within the *kuel* (column 1) indicate construction events, although between 80 and 240 cm, there is a great mixture of soils; this sector could have had only one period of simultaneous construction, with the input of different soils from many different locations, which would explain its variation in characteristics. Column 2 in the *kuel*, 50 cm distant from column 1, has different values of Db and different colors (Table 16.1). This confirms the important mixture of soils in this sector, clearly transported from different places in the valley or beyond.

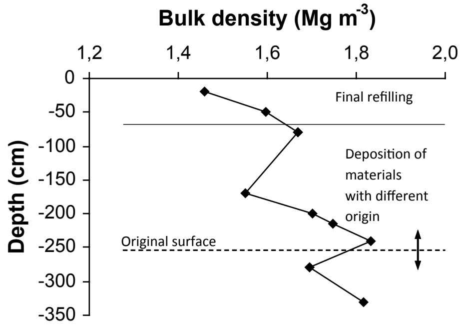


Fig. 16.7 Construction Phases of *TrenTrenkuel*.

The sequence of water stability does not provide much new information, since it presents gradual variations. It is a property that is strongly dependent on organic material. Thus, the only conclusion that can be reached is that the sample of 330 cm at some point in time (probably when it was built and used) was located near the surface, which permitted the incorporation of organic material. If it is accepted that this depth is horizontally continuous (based on its color and texture), then the material from that depth may be autochthonous; that is, it possibly corresponds to the sequence of horizons in the original soil and may not have been transported from another locality. Since, there appears to have been OM, this also may indicate that people placed vegetation on the mound or there was a short growing season of grass.

The sequence of Db from Test Pit 3 reveals its mixed origin: The first 10 cm are isolated from the deeper horizons by a stratum of gravel and cobbles whose thickness increases towards the *kuel*. The different horizons from Test Pit 3 may coincide with at least two sectors within the *kuel*. It is logical to suppose that the horizon from 43 to 100 cm from Test Pit 3 (see morphological description) corresponds to a continuum with the base of the *kuel*, from 280 to 350 cm (with reference to column 1), but since Test Pit 3 developed better conditions of aeration (because it was exposed and not buried like the 280–350-cm depth of the *kuel* section), the oxidized colors are dominant, preserving within the *kuel* the grayish-dominant colors. The soils from 0 to 27 cm from Test Pit 3 also presented similarities with the sector from 80 to 200 cm inside the *kuel*, but since in this case the soils were mixed, and Test Pit 3 had a lithologic discontinuity, it is more probable that part of the soil originally removed from Test Pit 3 had been used in the construction of the *kuel*, with the later events of erosion and deposition.

In conclusion, Fig. 16.7 presents the stratigraphic divisions within the *kuel*, corresponding to a column of 3.5 m, located inside the *kuel*. The soils used to build the *kuel* between approximately 80 and 250 cm depth are from the floor of the valley and probably correspond to the Los Sauces, Romehueico, and Guadaba soil series, with colors from a dark gray to dark grayish brown and their variations are greenish (between 10YR and 10Y), which are in direct relation with the material that is being transported by water from the surrounding hills.

Table 16.2 Distribution of particle size in the Lumaco Series and the materials taken from the *Maicoyakuel*.

Sample	Clay	Silt	Sand	Texture
Lumaco 0–20 cm[a]	32.5	19.6	47.9	Silty sandy clay
Lumaco 120–150 cm[a]	44.3	19.0	36.7	Clay
Kuel Maicoya 0–14 cm	21.7	41.0	37.3	Silty
Kuel Maicoya 130–140 cm	23.6	40.5	35.9	Silty

[a] Source: CIREN (2002)

Maicoyakuel

This is one of the most interesting *kuel*, given the heterogeneity of the materials used in its construction. The profile morphology is much deeper than the surrounding soil and lacks horizons in the nucleus, with abrupt changes in soil characteristics. Random samples taken at the surface and at depth show clear textural differences from the Lumaco Series (Table 16.2) and discontinuities in other characteristics in the interior of the same *kuel*.

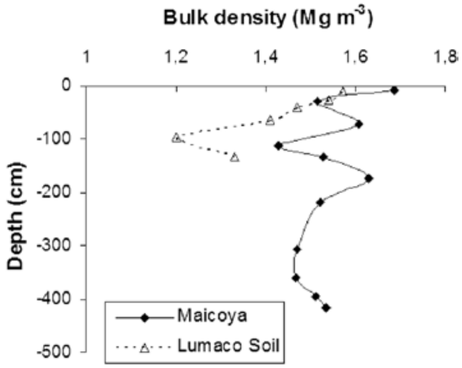
The field samples did not differ among themselves but the content of clay and silt differed significantly from the typical soil described for the Series. The difference between the surface horizon of the Lumaco Series and the samples from the *Maicoyakuel* sector can be considered within the range of variation for sites with different grades of intervention or erosion. This is not the case with the samples from a greater depth.

Within the Series and Associations described for the sectors on slopes, there are no antecedents for inclusions in the distribution of textures in the sample from 130 to 140 cm described in Table 16.2. Both samples from the *kuel* show a distribution of particle size similar to the Los Copihues Series, which is found on alluvial terraces on the valley floor.

In normally consolidated materials, the bulk density increases with depth because of the increase in the weight of the overlying layers (Hartge 1994; Brady and Weil 2000). Nevertheless, when evaluating density by the clod method, the formation of aggregates can give rise to denser units in the superficial horizon because of the more intense and more frequent processes of drying and wetting at the soil surface (Hom 1993), so that the bulk density of the aggregates decreases until it reaches the parent material. In any case, the tendency is maintained in increasing or decreasing fashion, unless there are in the profile compacted or cemented layers or an abrupt change in the parent material (as is the case in alluvial soils). For soils formed in situ, because of the homogeneity of the parent material, abrupt changes in density are expected only in the superficial horizons as the result of agricultural activity (Brady and Weil 2000; Ellies et al. 2000). Figure 16.8 shows the variations in bulk density determined by the clod method as a function.

The bulk density (D_b) corresponds to the relation between soil mass and the volume the material occupies in a structured condition, that is, it considers the

Fig. 16.8 Variation in the bulk density at depth of the samples from *Maicoyakuel* and surrounding area.



volume of the solids and their porosity as a whole. The value of bulk density is an indicator of soil porosity so that as D_b increases, the volume of the soil diminishes because of the loss of volume of the pores. In Fig. 16.8, it can be seen that the Lumaco Series shows a continuous decline of D_b until it nears the parent material, bedrock at about 130 cm where it again increases because of the lesser structural development of the soil. The samples taken from the *kuel* are denser in relation to the modal (type) soil (Lumaco Series), showing sectors of apparent high density at depths of 0–20, 60–85, and 165–180 cm. This distribution of densities, in a texturally homogeneous soil and without pedogenic processes that generate movement and precipitation of cementing (bonding) agents, is not achieved with a surface intervention. For this reason, it is very probable that the construction of the *kuel* took place in stages, with periods of use and compaction followed by deposition of new soil. The abrupt changes in bulk density reflect discontinuities associated with events of trampling and compaction; however, no important changes are seen below 200 cm.

The organic content (OM) of the soils is greatest at the surface because of the contribution of decayed plant material and diminishes at greater depth as the density of the roots declines. The soils have an equilibrium climax in the content of organic material that corresponds to the characteristics of the organics, the climate, and the type of vegetation growing on them (Post et al. 1875; Rosell 1996). Human activities affect these equilibria, causing, in general, declines in the OM content as a consequence of the removal or burning of plant remains or because of a higher rate of decomposition through cultivation (Kay and Angers 1999; Six et al. 1999). Nevertheless, the tendency for OM to decrease with depth is maintained. For the soils developed in the study zone (the majority are Inceptisols), the generative processes have not been sufficiently intense to bring about a greater concentration of OM at a given depth. Figure 16.9 presents the OM content of the *kuel* and the type profile of the Lumaco Series to a depth of 150 cm (right).

In general, it can be seen that the distribution of OM in the *kuel* is not homogeneous, showing important (significant) increases and decreases with depth. The OM

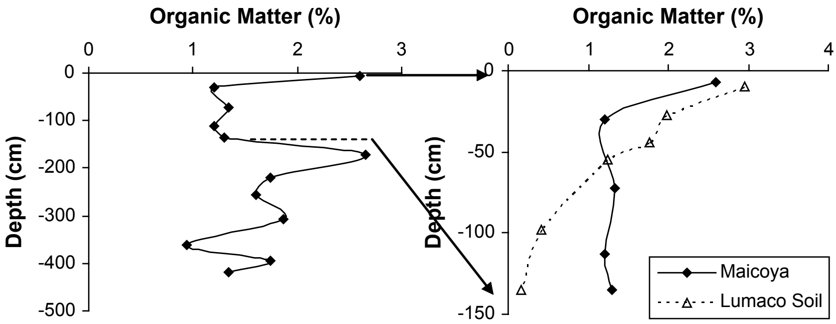


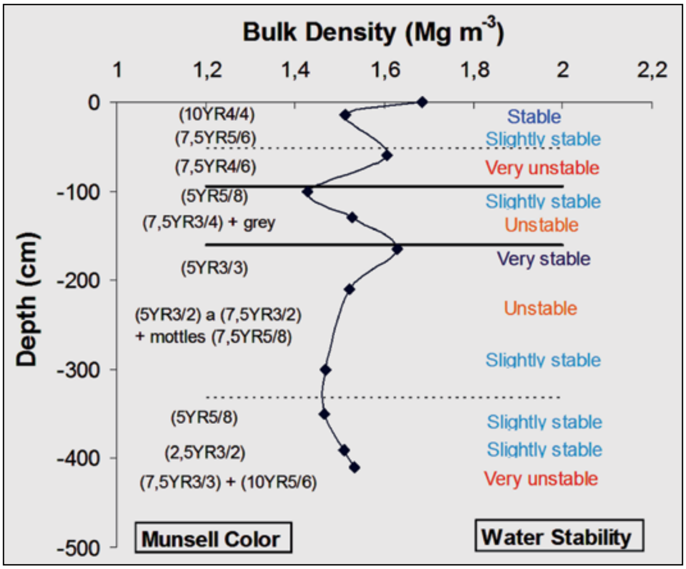
Fig. 16.9 Distribution of organic material in *Maicoyakuel*.

content at 170 cm is comparable to the surface horizon at more than 2 %, which is not logical for the soil distribution of a natural soil. As for the comparison with the Lumaco Series (Fig. 16.9, right), the difference in the surface horizon (0–25 cm) could be due to the natural variability of the soil or as the result of human intervention, but the values in the subsurface horizons do not correspond with the Series results, since they are significantly higher in the *kuel*.

Between 30 and 150 cm in depth, the OM content is maintained with a narrow range of variation, but below this depth the changes suggest differences in soils that make it possible to consider an alternation of soils from different points of origin or of different types. The increase in the OM content from 165 to 180 cm could indicate that the material present there was once on the surface and was able to accumulate OM or, rather, that the soil deposited there was on the surface at some point where it was able to accumulate OM, or else the soil which was deposited at that depth corresponded to a surface soil with a high level of organic remains (Fig. 16.9). The drastic change between 300 and 400 cm could also confirm a construction stage of the *kuel*, although the exact location of the surface is not so clear. Since these changes in OM content are restricted to the *kuel*, it is unlikely that they correspond to a paleosol, but rather to a soil transported by humans and placed exclusively in the *kuel*.

Another property of the soil that varies considerably within the *kuel* is soil color, which for soils with a common origin for the parent material (metamorphic rocks of granitic or granodioritic composition) present characteristic features depending on the conditions of development. In *Maicoyakuel*, the abrupt changes of color, some of them variegated (mixed colors) or with evidence of processes of reduced oxygen, that is, with evidence of prolonged flooding during the year, are typical of soils in the low-lying areas of the landscape and not of those located on hills. The sequences of textures in the *kuel*, in addition to their position on the landscape, assure good internal drainage, so that the change in the vertical distribution of the colors cannot be explained as the result of a natural process.

Finally, a simple test of soil stability was carried out to determining the percentage of stable aggregates (which did not break) in the face of a process of abrupt



Water stability (percentage of aggregates did not broke after fast wetting).

Very stable	>80%
stable	60-79%
Slightly stable	40-59%
Unstable	20-39%
Very unstable	<20%

Fig. 16.10 Characteristics of bulk density and water stability in *Maicoyakuel*.

wetting. The cycles of drying and wetting of the soils cause the contraction of the lenses of water with sufficient energy to generate an arrangement between the particles and maintain stability in the areas of contact (Kemper and Rosenau 1984; Hom 1993). The effect of a rapid entry of water into the aggregate is to generate air pressure that breaks the unions between particles (slaking) when these owe their order to processes of drying (Caron et al. 1966). When the soil is wet, it swells and the particles separate. When there have been cementing agents brought to bear, for example, OM, in the areas of contact, the unions are stable, even when the aggregate becomes wet rapidly (Tisdall and Oades 1982; Six et al. 2000). Thus, it is to be expected that a natural soil, because of the dynamic of the accumulation of OM at the surface, presents greater stability in the surficial horizon and that this diminishes with depth.

Figure 16.10 summarizes the characteristics of density, color, and water stability in the samples from *Maicoyakuel* with an interpretation of the possible surficial levels during the course of its construction. It should be borne in mind that the profile of the *kuel* does not display continuous horizons; rather, the samples are mixed, reflecting the different building processes. Nonetheless, the samples were collected in a vertical column, which makes the interpretation of the construction and use cycles of the *kuel* possible.

As indicated earlier, the color sequence contrasts sectors where the color change is strong, and, together with the bulk density and the OM, makes it possible to distinguish at least two levels in construction and use. The most clearly differentiated zone is found at a depth of 150 cm. Below this level, there is soil with a high OM content and surface densification through compaction. The grayish areas of overlying soil (130–150 cm) may be relict and not necessarily caused by the abrupt change in porosity.

Toward the surface of the *kuel*, there is another possible use surface at a depth of around 100 cm, which contrasts with the overlying material in color, soil stability, and bulk density. The increase in density between 100 and 140 cm is possible if the compaction or trampling took place on dry soil, where the tensions at the surface are transferred at depth, especially if there was a compacted horizon at 150 cm. The strong contrast in color between the materials included in this sector (from 5YR 5/8 to 7.5YR 3/4 with grayish tones) reflects a work complex in which very dissimilar soils were mixed; it was not possible to find either type of soil in the immediate surroundings.

Considering the changes in bulk density and OM (Figs. 16.8, 16.9), there could be two other stages in the construction of the *kuel*. The first of these is found at depth of around 50 cm in which, if there is no color contrast with the overlying soil, there is a higher bulk density and clear differences in soil stability. The other level is found between 330 and 360 cm, where there is an abrupt change in the content of OM, as well as a contrast in color, which does not have the abundance of dappling seen in the overlying sector between 200 and 330 cm.

Consequently, given the textural homogeneity of the soils, it is possible that the *kuel* was constructed with the surface horizons of the soils in the area, as described in CIREN (2002). There are indications that suggest that the transported soils presented different conditions of drainage and accumulation of organic material, as indicated by the presence of darker and browner colors, in addition to the alternation of the levels with dappling, and that some of them may have come from the valley bottom.

Considering the changes in the sequences of bulk density and relating these to the other properties, we may conclude that there were at least two instances when the soil level of the *kuel* was on the surface and at least one of these had received dense compaction (from trampling). None of the soils from the Lumaco–Purén region has a sequence of densities like that present in the *kuel*, nor is it possible to attain such a sequence with only intervention on the present surface of the *kuel*. As for the organic material, it presents a distribution that cannot be explained by pedogenetic processes, which supports the theory of the accumulation of soil in successive stages.

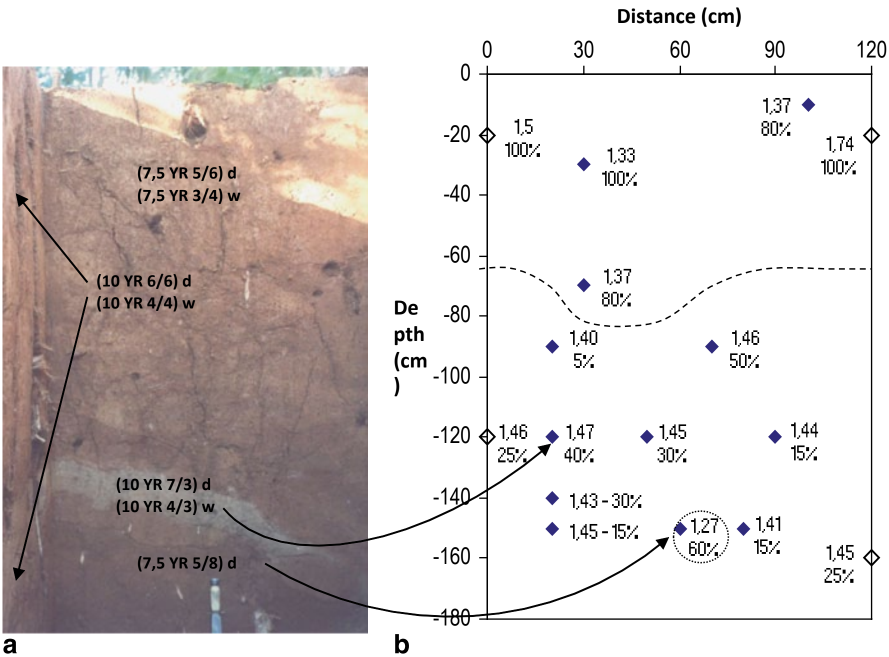


Fig. 16.11 **a,b** Photograph of central soil profile in *Boyoncokuel* and soil analysis.

Boyoncokuel or *Scheelkuel*

This is a smaller *kuel* than the previous ones (approximately 2 m high and 26 m in diameter). It is positioned on a terrace, reworked by water, with slopes of 5 % and falloffs toward the ravines of up to 30 %. The surrounding soil corresponds to the Lumaco Series, with the typical reddish colors and without surface stones. The *kuel* is made up of a mixture of different soils, which do not form pockets as is the case with *TrenTrenkuel*, but rather are in discontinuous layers of variable depth and disappear in the horizontal projection. The profile exposed in Fig. 16.11 corresponds to the center of the *kuel* from which samples of the soil were taken where changes in the soil could be seen. The texture, wet and dry soil color, the stability of the aggregates, and the bulk density are analyzed. The stability of the aggregates is based on the methodology described earlier.

The classes of texture do not vary in relevant fashion and correspond to the medium-fine classes (loamy, loamy clay-silty, loamy sandy clay). None of the samples corresponds to clay, which is a difference from the Lumaco Series, characteristic of the sector.

The analysis of aggregate stability shows two well-defined separated sectors at a depth of 70 cm (broken line, Fig. 16.11), with surficial samples (above 70 cm in depth) with a high water stability, which could be the result of biological activity

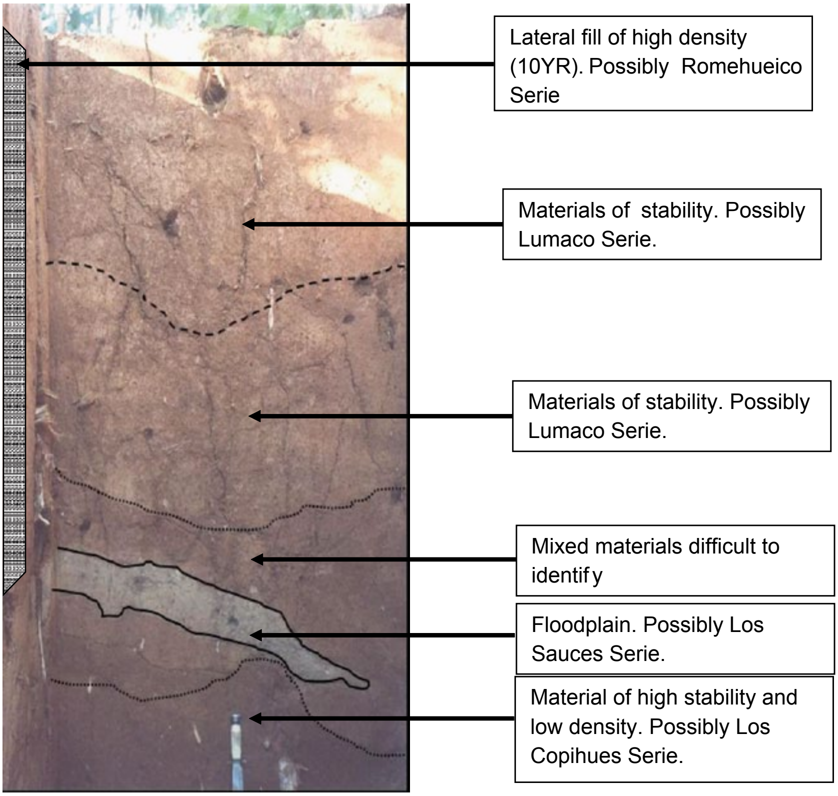


Fig. 16.12 Spatial distribution of different soils in *Boyoncokuel* and possible origin of different soils.

at the surface, and a sector of low stability (below 70 cm). Nevertheless, there is a sector at depth (marked by a circle in Fig. 16.11) with a low bulk density and a high structural stability and which possibly corresponds to a surface horizon, but not necessarily corresponding to the original surface of the Lumaco Series.

Samples collected at a depth of 20 cm from both walls of the trench (empty diamonds in Fig. 16.11b), although they have a high aggregate stability, show values for bulk density apparently greater than those of the core of the *kuel* and colors in hue 10YR, which could signify that the *kuel* shows differentiation of soils not only vertically but also horizontally. That is, there is a central "core" around which other soils of distinct composition were deposited. The lack of horizontal continuity between the different soils and the discordance in the characteristics analyzed with respect to the soils described in the sector of the placement of the *kuel* contribute to the clarification of the human origin of the mound, whose separation by possible material of origin is presented in Fig. 16.12.

Conclusions

Each mound reflects different soil and features that relate to cultural and natural variables. The stratigraphic and sediment from the three mounds also reveal major differences between the late pre-Hispanic period and the early Hispanic period, suggesting the incorporation of more local or surrounding soils in mounds during the latter period that resulted in greater structural and contextual homogeneity.

Appendix

Depth (cm)	Physical Characteristics and Morphology of Lumaco Soil Series (CIREN 2002)
0–20 A_1	Reddish brown (5YR4/3)w, brown (7.5YR5/4)d; silty clay loam; moderately plastic, moderately sticky; friable, slightly hard; strong, fine, subangular blocky; many fine and medium roots; many fine pores; clear, smooth boundary.
20–35 A_2	Dark reddish brown (5YR3/3)w; brown to dark brown (7.5YR4/4)d; silty clay loam; moderately plastic, moderately sticky; friable, slightly hard; strong, medium, subangular blocky, parting to strong, fine, subangular blocky; many fine roots; many fine pores; few angular quartz gravel; common krotovinas; clear, smooth boundary.
35–54 AB	Dark reddish brown (5YR3/3)w; brown (7.5YR5/4)d; sandy clay loam; moderately plastic, slightly sticky; friable; strong, fine, medium subangular blocky; common fine roots; many fine pores; common quartz gravel; common krotovinas; clear, smooth boundary.
54–75 B_{11}	Dark reddish brown (5YR3/3)w; reddish brown (5YR4/4)d; sandy clay; moderately plastic, moderately sticky; firm, hard; strong, fine, subangular blocky; common fine and very fine roots; many fine and coarse pores; many quartz gravel; clear, smooth boundary.
75–120 B_{12}	Dark reddish brown (2.5YR3/4)w; reddish brown (5YR4/4)d; clay; moderately plastic, moderately sticky; slightly hard; weak, medium, subangular blocky; few fine roots; many fine and coarse pores; many quartz gravel; common krotovinas; clear, smooth boundary
120–150 B_2	Dark reddish brown (2.5YR3/3)w; reddish brown (2.5YR4/4)d; clay; very plastic, very sticky; slightly hard; strong fine prismatic; very few fine roots in few cracks and occasionally into the peds; many fine and medium pores; many quartz gravel

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