Excavations at Yuthu
A community study of an early village in Cusco, Peru (400-100 BC)

by

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In memory of my father, Ralph Davis

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Chapter 1

Introduction

Cusco, Peru is best known for the development of the Inka Empire (AD 1300-1600). Each year Machu Picchu and other extraordinary ruins from this late period draw scores of visitors to the ancient capital. Because of the central role of the Inka in contemporary national identity and the economic importance of tourism, most resources for archaeology in Cusco have been invested in the restoration and maintenance of impressive roads, storage facilities, and palaces from later periods. In addition, the chronicles of Inka social and political life (written primarily by Spaniards) have been extensively studied and until recently have been the primary evidence used by many Andeanists to build a vision of the past. Obviously, the chronicles have little to say about pre-Inka periods and the earliest huts and camps do not leave impressive ruins on the landscape that attract tourists. Therefore, very little is known about the people who lived before the Inka.

This study is a first step in building a complete picture of early village life in Cusco 1000 years before the Inka. Prior to this project, no Formative period site in Cusco had been systematically excavated on a large enough scale to reveal houses and community structures. What little we knew from this period was based on systematic survey and small opportunistic excavations (for examples, see Bauer 1999, 2002; Bauer and Jones 2003; Chávez 1977, 1980, 1981a, b, 1982; Hey 1984; Kendall 1976, 1994; McEwan, et al. 1995; Mohr 1969; Patterson 1967; Rowe 1943, 1944; Yábar Moreno 1959, 1972, 1982; Zapata 1998).

From 2005 to 2007 I excavated Yuthu, a Formative period village located about 20 km northwest of the modern city of Cusco (see Figure 1.1). The site can be divided into two sectors separated by a small gully. The Southern Sector is a small artificial platform that contains ceremonial structures. In contrast, the Northern Sector consists of domestic structures and activity areas located on the natural slope with very little land modification (see Figure 1.2). The majority of the evidence used in this study comes from 156 m^2 of excavation divided approximately equally between the two sectors. These excavation data are linked to a larger regional picture of the Formative period on the surrounding plain, using settlement pattern data that I helped to collect in 2004-5 as a crew director with the Xaquixaguana Plain Archaeological Survey (directed by R. Alan Covey). In addition, Andean ethnography and ethnohistory provide a framework for understanding some of the human activities I identified in the archaeological materials.

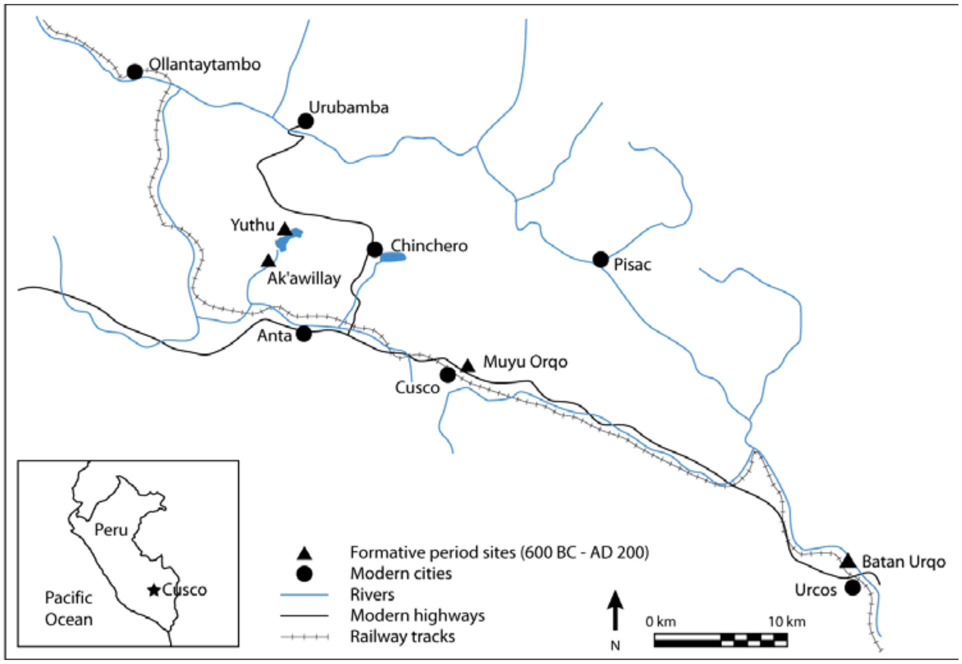

Figure 1.1: Yuthu is a single component Formative period village site northwest of the modern city of Cusco on the shore of Lake Huaypo. It is located on the plain of Anta near the modern towns of Chinchero and Anta.

This study aims to maintain a balance between specific historical particularities of Cusco and general questions relevant to the comparative anthropological study of sociopolitical organization. Both are central concerns of anthropological archaeology. Using a community approach, I have been able to build a holistic picture of village life during the Formative period that addresses both the specific and the general aspects of community studies.

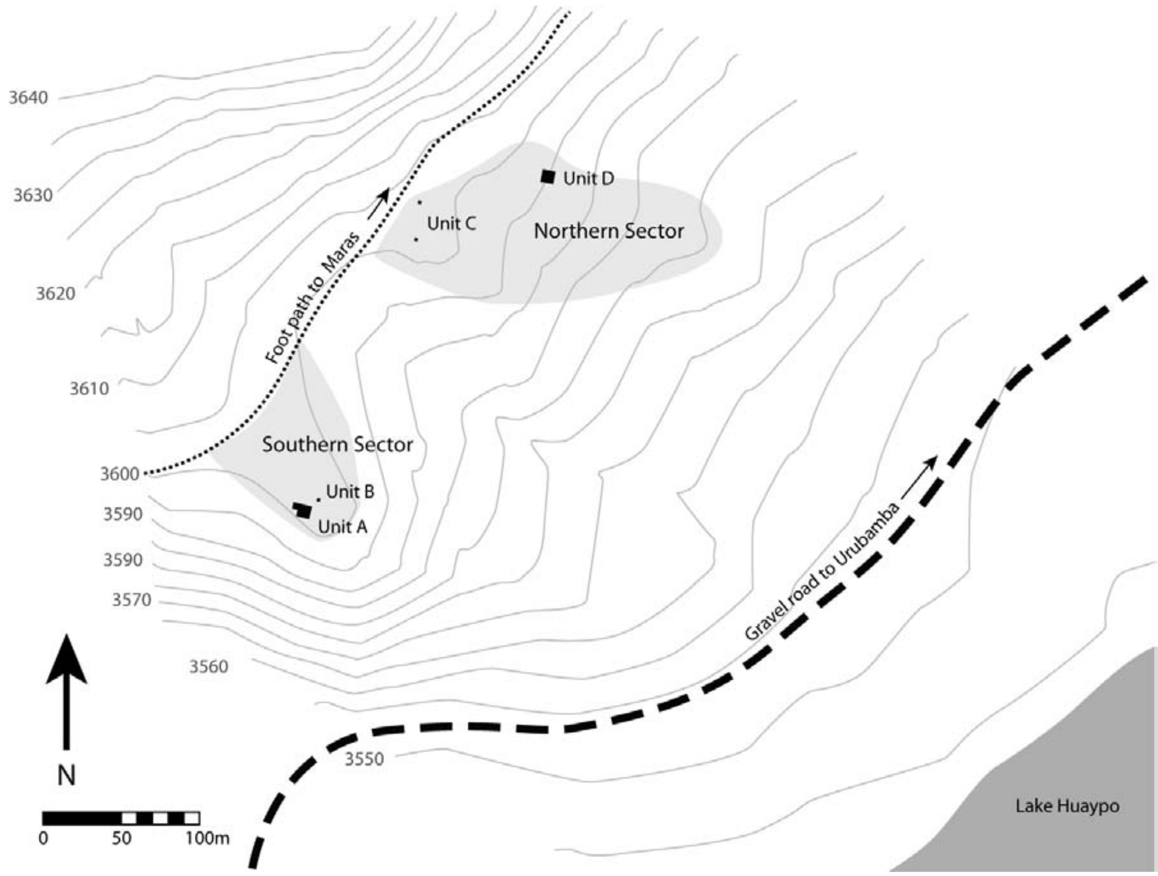

Figure 1.2: Yuthu can be divided into two sectors separated by a small gully. Excavations at the site included 84 m^2 in the ceremonial Southern Sector (Units A and B) and 72 m^2 in the domestic Northern Sector (Units C and D).

The Formative period and the origins of inherited rank and multi-settlement polities

Although it is hard to imagine in today's world of global empires and powerful corporations, societies without institutionalized hierarchy or inherited inequality were some of the most stable and enduring forms of social organization in humanity's past. For example, while the Inka Empire lasted only 300 years, egalitarian village societies endured around Cusco for as many as 2400 years. Similarly, while ancient Rome flourished 500 years, tribal Neolithic groups inhabited Southern Italy for nearly 3500 years. The endurance of these groups alone makes their study critical to an understanding of the history of any region.

One of the most important social and political transitions in human communities worldwide was the shift from autonomous villages organized according to egalitarian principles to multi-community political formations with hereditary status inequality. This shift was the critical threshold that made possible the ancient empires, modern nation states, and multi-national corporations that followed. In many parts of Latin America, including Mesoamerica and the Andean highlands, the period when this transition took place is called the Formative period. Although the name is shared throughout the area, the specific timing of these transitions varied from region to region according to local history.

Unfortunately, the term *formative* is not a very flattering or suitable adjective to describe one of the most enduring sociopolitical configurations in the history of humanity. How could the early villagers in Cusco who created and maintained such rich economic, social, political, and ritual lives be interesting only insofar as they were an ancestral stage in the formation of the Inka Empire? It is true that the social and political changes at this time made the development of the later empire possible; indeed, I have found that some practices known from later Andean states extended back to this time. I hope, however, that this study will show that the villagers of Yuthu are worthy of study independent of the great empire that formed many generations later.

The Formative period in Cusco includes the years from about 2200 BC to AD 200 in Cusco (following Bauer's 2004 chronology). Previous work suggests that the non-egalitarian multi-village polities probably arose by the end of this period (Bauer 2004; Zapata 1998; for further discussion see Chapter 2). Our understanding of that process, however, is in its infancy. To begin to understand the character of sociopolitical organization in any particular place or moment during the Formative period, anthropological archaeologists often ask two distinct questions: (1) did the society have inherited status or rank and (2) did polities include more than one village (following Flannery 1995)? This heuristic distinction is useful not only because the two phenomena are distinct, but also because the evaluation of each question calls for different kinds of evidence.

General theoretical and methodological approaches to addressing each question using only archaeological evidence were well developed primarily by processual archaeologists starting in the 1960s.

(1) Did society have inherited status or rank?

Although some kinds of inequality exist in all societies, in groups with inherited rank, status positions beyond those associated with age, sex, or family roles can be passed down in families (following Berreman 1981). Wason (1994) and Marcus (2008) provide good syntheses of material indications of rank found in the archaeological record. In this short discussion, I will highlight only a few.

Because archaeologists recover material things, most prehistoric studies of rank focus on differential access to *goods* that result from having higher or lower status. Commonly, the presence of prestige goods in the graves of only some individuals (e.g. Babić 2005; Binford 1972; O'Shea 1996; Saxe 1970; Song-Nai and Mong-Lyong 1992; Tainter 1977) or in the homes of only some families (e.g. Bermann 1994; Vaughn 2004; Winter and Pires-Ferreira 1976) is considered to be a good indication that a subset of people were of higher rank than others within their community. When high status burial treatments are given to infants, it is often a sign that status has been inherited since the baby would have been unable to earn prestige in his or her short life. Another common economic indicator of inequality is disparate access to adequate amounts of nutritious foods or access to special high status foods that can be measured in the human skeleton (Welch and Scarry 1995).

Though it is more difficult to identify archaeologically, the access to or influence over *labor* that disproportionately benefits one or a few families is an equally important consideration when studying the economic effects of rank (Wright 2000). Most often, archaeologists use the presence of one or several houses in a village that are significantly larger, more elaborate, or made of better materials to index unequal access to labor (Coupland 1985; Lesure and Blake 2002). If higher ranking people used their influence to convince others to plant, harvest, or herd on their behalf, it may be much more difficult to identify archaeologically. This point may prove to be particularly troublesome for highland Andean archaeologists because labor was a significant form of tribute for later polities (Murra 1975, 1980; Rowe 1946). Hereditary rank may also carry symbolic, ritual or social benefits that leave no material trace and are, therefore, invisible to archaeologists.

(2) Did polities include more than one village?

Unlike in autonomous villages where political decisions are made within each community, in multi-village polities, leaders living in one village gain so much influence and power that the social structure is transformed in such a way as to allow one village to assert political control over another. This loss of autonomy is rarely voluntary (Carneiro 1981).

In contrast with studies of rank, it is necessary to have information about more than a single settlement to identify multi-village polities. In the absence of data gathered from decades of excavation, the most common and expedient way to gain information about a region is through systematic survey that identifies all settlements within a large study area. When archaeologists find sites of at least two different size classes within a single region (that is, a settlement hierarchy with two-tiers), they often infer that the largest site was the seat of power in a multi-village polity (Bandy 2004; Johnson 1980; Parsons 1972).

Although this is a necessary and productive first step, low temporal resolution means that survey alone cannot reliably identify multi-village polities. Except in special circumstances, no absolute dating methods are suitable for surface artifacts. The time periods used by survey archaeologists are defined by changes in ceramic style which may occur infrequently. As a result, based on survey data alone, it is impossible to determine whether larger sites were contemporary with small sites (see Chapter 2 for further discussion of this problem in Cusco). Even if sites could be shown to be contemporary, size difference may not necessarily mean that the large village controlled the smaller villages. In addition, survey cannot identify social and political institutions that cross-cut multiple villages.

There are other ways to identify multi-village polities when special evidence is available. For example, Marcus (1976) has used hieroglyphic writing to show that lower order sites frequently refer to the site that was the center of power in Maya chiefdoms. In areas where pottery decoration is elaborate, a higher proportion of shared motifs or designs between central and dependent sites has also been used to infer multi-village polities (LeBlanc 1971; Plog 1976). In addition, archaeologists may be able to demonstrate that work gangs from small hamlets provide labor for constructions in the center when materials are also transported. For example, Flannery and Marcus have shown that stones were brought from a small hamlet to the paramount village to build a the temple in the chiefly center (Marcus and Flannery 1996).

The shortcomings of focusing only on comparative questions

Of course, focusing on these comparative questions has been critiqued for masking local variability and failing to consider the roles of individuals in change. In anthropological archaeology scholarship outside of the central Andes, variation in pre-state societies has long been recognized, and today most of the discussion about the emergence of multi-village polities focuses on the variability between them (Drennan and Peterson 2006; Earle 1987; Feinman and Neitzel 1984; Renfrew 1974). In other parts of the world, variability focused research builds upon decades of previous work that has provided an important baseline for more detailed and particularistic studies (for example highland Mexico, the American Southwest, and Southeast U.S.). In Cusco, this baseline does not yet exist and we are just beginning to scramble to catch up.

Only in the last 30 years has Cusco scholarship begun to address these two comparative anthropological questions for the Formative period. Beginning with Bauer's 1980s survey work in Paruro (Bauer 1992, 1999), these questions were usually addressed as a small part of larger projects that aimed to understand the long pre-Inka culture history in the region in order to demonstrate that Inka state formation was a long process, rather than a single historic event. Because the research interests of scholars doing this kind of work have been primarily in Inka State formation and the Inka Empire, fieldwork designed to address issues central to the Formative period has been rare.

As a result, settlement patterns from survey are the largest dataset available to address comparative anthropological questions. As the previous section illustrated, however, a large and diverse dataset involving excavations at several Formative villages will be necessary to identify either rank or multi-village polities archaeologically. Settlement patterns are only one of many lines of evidence that speak to the presence of multi-village polities and are not at all applicable to the study of inherited rank. Unfortunately, such extensive data are still not available for Cusco or many other parts of the Andean highlands.

As a scholar I am indebted to and appreciative of the work that has been done before my own entry into Andean studies. Without knowing that Chanapata pottery was associated with the first settlement hierarchy, I could not have chosen a site with any hope that it would provide data on the origins of hereditary inequality or multi-village polities. While this work has provided an important foundation, it relies too heavily on ceramic typologies and surface data.

In a recent summary of the Formative period in the valley of Cusco, Bauer (2004) described the society of the Middle Formative period (1500-500 BC). This period is known archaeologically from very small excavations at the site of Marcavalle (now buried under Centro Juvenil de Marcavalle, a rehabilitation and detention center for young boys in the modern city of Cusco). Although Marcavalle has a distinct pottery style, no contemporary sites were identified by survey. Either similar pottery was not found during fieldwork or the project did not distinguish the style from other Formative pottery during laboratory analysis. Either way, settlement pattern data is not available for the Middle Formative. Bauer proposed that all contemporary villages were probably small like Marcavalle and asserted that inhabitants lived in undifferentiated villages run by Big Men.

Big Man societies are a type of egalitarian group in which individuals (specifically men) can gain status, prestige, and influence through competition framed in terms of reciprocity (especially of material goods) and through favored distribution to his own faction. These societies are known ethnographically from Melanesia. In this system, increasing competition between ambitious men may lead to a particular type of multi-village polity with hereditary rank in which self-aggrandizing individuals become wealthy and manipulate power through wealth and redistribution of goods (Sahlins 1963; Wiessner 2002).

This model is appealing to archaeologists because political economy, prestige goods, and trade networks are very amenable to archaeological study. Big Man systems are not, however, the only way that egalitarian villages can be organized. In fact, scholars often remark that egalitarian autonomous village societies are incredibly varied, and that, as a result, the paths to hereditary inequality and the emergence of multi-village polities are multiple and diverse (Marcus 2008; Wiessner 2002). The Big Man society cannot be assumed to be the sociopolitical starting point for the emergence of rank and multi-village polities in the Andean highlands or anywhere else.

Figure 1.3: A view of Wimpillay and the conspicuous Muyu Orqo, or "round mountain" in Quechua, from the Inka site of Sacscaywaman visible in the foreground. The red roofs are the tops of houses and buildings in the modern city of Cusco. The complex of two archaeological sites was probably the center of a multi-village polity during the later part of the Formative period in the Cusco Valley. Although they have both been the site of excavation and field training for archaeology students from the University of San Antonio Abad of Cusco, little is known about these sites. Today, they are mostly destroyed by the expansion of the modern city. As a result, study of the Formative period in the Valley of Cusco itself would be difficult if not impossible.

In the following phase, the Late Formative period (500 BC – AD 200), Bauer identified a settlement hierarchy of sites with Chanapata style pottery on the surface. Sites were separated into five size categories, including a single large center. Based on this and the presence of sunken court architecture at the central complex of Wimpillay and Muyu Orqo, a notable round mountain near the modern Cusco airport (see Figure 1.3), and at Batan Urqo, a similarly large and central site outside of his survey area, Bauer proposed that parallel processes of chiefdom formation were probably happening in many regions of Cusco. He goes on to say that, "If this model of the Late Formative Phase is correct, excavations at Wimpillay should find evidence of sumptuary goods, elite burials, and gradients in household status, craft production, and additional public works projects" (Bauer 2004: p. 45).

A multi-settlement polity with those five characteristics is typical of models of chiefdoms that emerge from Big Man societies. Like the Big Man concept, this type of chiefdom is also based on Sahlins work in the Pacific (Sahlins 1963), but was further articulated in terms of archaeological correlates by processual archaeologists (e.g. Carneiro 1981; Earle 1977; Peebles and Kus 1977). While most of these archaeologists acknowledged that any particular chiefdom may or may not have all the traits of the ideal type, others who applied those models have sometimes ignored this important point in order to try to build a complete picture of a society without sufficient archaeological data.

In that tradition, for both the Middle and Late Formative periods, the sparse available data in Cusco have been paired with typological categories in an effort to create a more complete view of life during the Formative period. This kind of typological reasoning has long been recognized as flawed. No single variable or trait, whether archaeological or cultural, can imply the existence of others (Feinman and Neitzel 1984; Wylie 2002). Despite this, the use of the Big Man model and the corresponding chiefdom model endures among archaeologists trained in anthropological traditions in North America who are committed to understanding long term processes of cultural change, but do not specialize in the study of pre-state societies[1].

In some ways, this study is a necessary step back. Even though I have access to many more data than scholars who came before me, at the conclusion of this project I am less confident about the answers to two comparative questions that are central to the study of Formative period societies: (1) when did hereditary rank develop and (2) when did multi-village polities emerge? And, I am more aware that we need additional excavation data from many more villages. With this in mind, rather than theoretically framing my work in terms of these two sociopolitical transformations, I have chosen to take a more social approach to the study of Yuthu. Rather than identifying *whether or not* the transition to ranked multi-village polities happened, I have focused on identifying

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[1] Bauer is far from being the only scholar that has used the Big Man society as the model of sociopolitical organization in Andean egalitarian villages. See also:
Stanish, C.
2003 *Ancient Titicaca: the evolution of complex society in southern Peru and northern Bolivia*. University of California Press, Berkeley.

particular social and political traditions and institutions at Yuthu from 400 to 100 BC. With that focus, I hope that someday we may understand *how* those important transitions took place.

The archaeology of communities

The goal of a community approach is to understand a human group living in a particular place and time in a holistic way – incorporating ecology, subsistence, social and political institutions, social identities, and factions. The approach does not require prior knowledge or assumptions about the presence of inherited rank or multi-village polities. Likewise, the success or failure of the project does not depend on answering those questions. Therefore, this approach is well suited to the current project in part because of the lack of previous research in Cusco discussed above.

Beginning with the publication of "The archaeology of communities" in 2000, many archaeologists have framed their research in terms of "community" (e.g. Canuto and Yaeger 2000; Janusek 2004; Knapp 2003; Owoc 2005; Peterson and Drennan 2005; Wernke 2007). Discussions often contrast "natural" and "imagined" concepts of community (*sensu* Isbell 2000), but many fail to make an important distinction. Within a single article or book, the term "community" may be used to refer to both (1) a heuristic type of human group that is desirable for holistic study of human society, and (2) a universally applicable definition of an emically meaningful social group. Although these two conceptions of community are not directly comparable things, they have been contrasted as if they were. In fact, an emically meaningful social group is only one aspect of society that might be studied employing a community approach.

The "natural" community concept is typically attributed to early anthropological and sociological works that outlined methodologies for research, including that of Murdock, Redfield, Arensberg, and Greer from the 1940s to the early 1960s (Arensberg 1954, 1961; Arensberg and Kimball 1965; Arensberg and Kimball 1968; Greer 1955; Minar and Greer 1969a; Murdock 1949; Murdock, et al. 1945; Redfield 1955). Current discussions summarize the work as having elaborated a definition of a universally recognizable human social unit that was a bounded, homogeneous, slow-changing group that was self-sufficient and based on face-to-face interaction. In truth, the characteristics listed above were criteria for selecting a *place* (usually a small sedentary village) for a certain type of ethnographic study with the aim of understanding a human whole. Early scholars believed that a small community with those characteristics could be a manageable research unit that was suitable for the study of the intersection of society and culture. The creation of such a wish-list of desirable traits makes it clear that they did not believe that all communities could be defined in this way. As Isbell points out, however, it is probably true that over time the heuristic type became conflated with definition of community as a socially meaningful unit (Isbell 2000).

The “natural” community is often contrasted with what is referred to as an “imagined” community. The term has been borrowed from the historian Benedict Anderson (2006 [1983]), though Knapp rightly points out that the archaeological version is only loosely related (Knapp 2003). Anderson described and theorized the emergence of modern national identities after the fall of religious communities and in conjunction with vernacular language and the technology of the modern printing press. Certainly, his “imagined community” in a strict sense cannot be extended deep into prehistory. When most archaeologists use the term, however, they reduce it to the basic idea that individuals can imagine themselves to be part of a community of people that they will never interact with. This purportedly removes the criteria of face-to-face interaction from the definition of community, replacing it with the notion of emically perceived group identity and affiliation. This substitution is not valid, however, if scholars recognize that face-to-face interaction was only meant to be a desired characteristic of an ideal heuristic type (see further discussion below).

The adoption of the “imagined” community concept in anthropological and archaeological study occurred in part as a response to many criticisms of the original concept when perceived as a definition rather than a heuristic type. Substituting a definition based on emic social identity for a heuristic type has transformed discussions of the community approach from elaborations of effective methodology into debates over the proper definition of a particular type of human group. This implicit conversion makes the “natural” and “imagined” community concepts incomparable. From my perspective, “imagined” community is just one kind of group identity that might be studied using a community methodology – though it is certainly an important one.

Nevertheless, scholars who prioritize the study of community identity have incorporated decades of advances in social theory which bring valid critiques of the original method and offer important advances. The new identity-focused conception of the “imagined” community is frequently coupled with practice theory, which refocuses the study of society from units such as villages to individuals. The approach draws on concepts like Bourdieu’s *habitus*, or the representation of social structure in the schema and sensibilities in the minds of individuals (1972) and Giddens’ structuration which adds a mechanism for change by emphasizing that individuals act within existing structures but also shape them (Giddens 1984).

The original goal of using community study was to understand the interrelationship between culture and the social by observing everyday activities and interactions within a “whole.” The prospect of achieving this goal is greatly improved by the addition of practice theory as a way to understand the process by which it happens. In addition, structuration introduces change as a potential in every social interaction. To be fair, early anthropologists did recognize that some communities changed, but they naively hoped to be able to select one for study that did not.

For archaeologists, the incorporation of the importance of change, in this case in terms of the recursive relationship between structure and agency, is an important contribution. Practice theory, however, always presents a special challenge to prehistorians because very few individuals are visible in the archaeological record. Despite that, we understand that the trade networks, subsistence systems, and social identities that we study were created and changed day-to-day by individuals acting within existing frameworks.

Some of the critiques of the original community approach have been misplaced. For example, early anthropologists did not always assume internal homogeneity. In fact, the seminal texts of many of the most critiqued authors recognized factions within communities (Murdock 1949; Redfield 1955) as well as social distinctions based on class, gender, or age (Redfield 1955). So, rather than being an improvement over the original concept, the inclusion of the study of factions and social groups is an important, but not a new, part of community study.

One of the most commonly critiqued aspects of early anthropological concepts of community has been a definition limited to people who regularly interact face-to-face (but see Yaeger 2000). Certainly, this was a key part of Murdock's definition in the 1940s (Murdock 1949; Murdock, et al. 1945). And, many archaeologists continue to advocate this definition because of its perceived straightforward application to archaeological data (Peterson and Drennan 2005). But, even by the 1950s, many anthropologists recognized that their "little communities" were parts of larger ones – which did not involve or require face-to-face interaction (Minar and Greer 1969b; Redfield 1955).

This became particularly apparent as the types of societies that anthropologists studied began to change and anthropologists struggled to transfer community-based participant observation methodology from the supposedly "primitive" societies for which it was developed to societies that they deemed "modern" (Steward 1956), or in other words, as the anthropological objects of studies became more and more culturally similar to the anthropologists themselves. Certainly, by the 1960s, Murdock's face-to-face definition was out of fashion with proponents of the community study method like Arensberg and Kimball who made a critical comparison stating that, "It is in fact as if a zoologist should require of a beehive that it not be one unless he knew every bee to brush wings with every other bee" (1965, p. 47).

Some aspects of the original conception of community method that are particularly useful for archaeological study have received little attention. First, the heuristic community was a sedentary village. In that sense, it was a spatially defined research unit. Archaeologists must link spatial analytic units like houses, sites, and regions to socially meaningful units such as families, moieties, villages, and polities (Marcus 2000). From my perspective, archaeologists may use a village site comprised of many households and supra-household structures as a meaningful unit of analysis whether or not we conceptualize any or all of the nested group identities of people living in the village as being correlated with a single place.

In addition, early anthropologists advocated studying larger institutions as they played out within a small village. With this approach, archaeologists digging a single site can study multiple levels of social identity and a variety of social institutions so long as the associated practices leave material remains in the village being studied. Yaeger (2000) took advantage of this aspect of community study to examine three levels of shared identity in the classic Maya sites of San Lorenzo and Xunantunich in western Belize.

Early scholars advocated choosing a community that was representative of the greater society. In some cases, this was phrased as a self-sufficient community that could provide for all or most of its own needs (Redfield 1955). But in other cases, it was expressed in terms of being representative, complete, and inclusive. This meant that the village had enough people to fill all roles in society, including some specialists (though a specialized community would be undesirable), and including representatives of larger social institutions outside the local village (Arensberg and Kimball 1965). When the functionalist aspects of self-sufficiency and reproducibility are removed, something important is still left. Choosing a community that has a sufficient breadth of households, ritual structures, and other archaeological deposits will lead to a richer understanding of the larger society.

Early methodologies also advocated studying the community as a whole (Steward 1956). Redfield maintained that the community should not be "atomized", but that the investigation of any single aspect will invariably lead a scholar to study another (1955). In his own experience, he set out to study the ecological system of a Maya village, but once he began farming alongside villagers, he found it necessary to study ritual life because it was inseparably tied to subsistence practices. Similarly, Arensberg advocated the study of social questions *in vivo*, that is, in relationship with all other aspects of behavior, culture, and social structure within a whole. Like Redfield, he believed that a single research question could not be isolated from the whole (Arensberg 1961). Although neither ethnographers nor archaeologists can address all facets of community life in a single study, the integration of multiple facets (such as ecology, social structure, and ritual) will produce a much more complete view of society (e.g. Flannery 1976).

Finally, early community approaches attempted to balance the interests of comparative research and historical particularity. Steward (1956) stated that being historical and comparative were two of the three characteristics of the community approach[2] (see also Redfield 1955). He was concerned that in the 1950s, the practice of ethnography in area studies had become too particular and narrowly focused. Balancing the comparative and historical interests of social science continues to challenge scholars today.

Flannery (1995) has recently summarized this tension as it is felt by anthropological archaeologists interested in long-term change. He builds on Spencer's (1990) work to observe that archaeologists can study change in two equally valuable ways: (1) as general social evolution, using cross-cultural types like chiefdoms and states with the goal of being comparative, or (2) as specific social evolution elaborating the unique history of social change in a particular place without appealing to types. Studying only general social evolution undervalues the richness of life and privileges poorly understood universal processes over the roles of local people. In contrast, limiting study to specific social evolution can prevent comparative study of what it means to be human. The rewards and risks of each are significant and must be balanced in anthropological research.

In this study, I employ a modified community approach. While I do not claim that this method will be suitable for all archaeological projects, it is a particularly good approach to study a small village when little is known and great variation is possible. Elements include:

(1) The research focuses on a spatially defined unit that is a small village that includes a wide selection of structures and activity areas that probably indicate the presence of many different people, activities, and social institutions.
(2) The project aims to be holistic and does not isolate a single aspect for study. Of course, the breadth of topics addressed will always be limited by the material remains recovered, and the resources available to conduct the study.
(3) Particular attention will be paid to social factions or other mechanisms that allow, create, or result in change.
(4) The spatially defined research unit will be used to study any or all of the nested social institutions and group identities to which local people belong.

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[2] The third characteristic was that the community approach was ethnographic in the sense of studying all components of life by qualitative and, to a lesser extent, quantitative observation as discussed in the previous paragraph.

(5) The study will attempt to balance historical and comparative inquiry.

<u>The cultural and historical particularities of Andean communities</u>

Two characteristics of highland Andean communities known from ethnography and ethnohistory have been particularly influential in framing my research questions and my interpretations of the archaeological record. Both are related in some way to the dramatic mountain landscape in and around Cusco (see Figure 1.4). First, I am intrigued by the possibility that the villagers living at Yuthu were part of a spatially dispersed and vertically integrated mountain community. Second, I am interested in the relationship between community identity, territoriality, ancestor veneration, and sacred landscape.

Figure 1.4: A landscape view in the province of Paruro, just south of the modern city of Cusco. Although this is an exceptionally dramatic example of mountainous terrain, it is easy to see how Andean community identity might be conceptualized in relationship with the surrounding features of a sacred landscape such as these dramatic peaks and river valleys.

Spatially dispersed vertically integrated mountain communities

In the Andes, ethnographically and ethnohistorically known communities were often comprised of more than one settlement with each practicing a special production strategy determined by ecological variations that correspond roughly to elevation (e.g.

Bastien 1978; Flannery, et al. 1989; Flores Ochoa 1985; Guillet 1981; Murra 1968; Webster 1971, 1972). People living in distant and distinct resource zones often think of themselves as part of the same community. For example, a single group may have some members living in high grasslands grazing llamas, some living a bit lower growing potatoes and grains, and a settlement in a lower zone growing important ritual crops like maize or coca. Similar systems are common in alpine environments around the world. They provide a means to diversify subsistence strategies and manage risk (Goldstein and Messerschmidt 1980; Rhoades and Thompson 1975).

Today, the landscape may be conceptualized as the head, trunk, and foot of both the community and the mountain (Bastien 1978). Or, the high parts of the community may be associated with Indians and demons while the low parts are associated with friendly spirits and "civilized" Spaniards (Fioravanti-Molinië 1982). Although the details vary according to a particular time and place, the important thing to note is that the vertical system is not understood in terms of economic necessity, but is tied into a sacred conceptualization of the landscape.

John Murra developed the best-known model of this type of Andean community, "the vertical archipelago" using Spanish census materials and chronicles from a variety of settlements inhabited at the end of Inka rule and the very beginning of Colonial rule from AD 1460-1560 (Murra 1968, 1972, 1985a, b). In this model, the core settlement of the community was located in the mid-altitude zone. Family members living outside that core zone still considered themselves part of that community even while living alongside other families who considered themselves members of different core communities. Exchange among kin living in all zones explained the movement of goods between resource zones in the absence of markets. This ethnographic model describes a vertically integrated community in terms of both ideology and day-to-day economic reliance.

Murra speculated that because this strategy is so widespread and has endured so many political upheavals that it might extend far back into prehistory, and thus he challenged archaeologists to discover the time-depth of this tradition. In fact some have identified similar multi-settlement communities exploiting multiple resources in the Late Intermediate period (AD 1000-1450) (Stanish 1989) and the Middle Horizon (AD 600-1000) (Mujica, et al. 1983). However, the time-depth of the "vertical archipelago" model has been doubted by some who regard it as a strategy used by the Lupaqa elite to manage tribute demands of Spanish colonial administration (Van Buren 1996). In addition, it has been noted that some scholars apply this model to explain archaeological patterns that could be produced by other activities such as transhumance or llama caravans of independent merchant traders (Dillehay and Lautaro Núñez 1988).

This study does not aim to identify a “vertical archipelago” in Formative period Cusco. Rather, I will independently address two important aspects of a vertically integrated community: (1) the economic integration of multiple resource zones and (2) the conception of community identity larger than a single village.

Community identity, territoriality, and resource rights conceptualized in terms of ancestors and the sacred landscape

Historical and ethnographic accounts describe agricultural and pastoral communities who understood and described their shared group identity and territorial rights as having been established by ancestors who travelled through subterranean waterways and emerged from springs or lakes to claim a physical and social place for their descendants. These mythical ancestors established group rights for all members of a particular community (Allen 2002 [1988]; Flannery, et al. 1989; Gelles 2000; Gow, et al. 1976; Mariño Ferro 1989; Sherbondy 1992). In addition, veneration of real remembered ancestors established political and resource rights for certain families, thus excluding others (Dillehay 2007; Rowe 1946; Salomon 1995; Sherbondy 1992). Invoking ancestors to create a sense of shared identity and exclusive (and often unequal) access to resources is common in many parts of the world (Helms 1998; Liu 1999; McAnany 1995).

Like the vertically integrated mountain community, shared identity which was conceptualized in terms of ancestors and the landscape was so widespread in the Andes that it is possible that some version of it existed very early in time. Archaeologists have found evidence of ancestor veneration among several pre-Inka societies including above ground mortuary structures in the Late Intermediate period highlands (Isbell 1997) and ongoing manipulation of human remains associated with public architecture in the Formative period outside of Cusco (Dulanto 2002; Hastorf 2003).

This study considers the possible role of ancestors and the sacred landscape in the conception of a particular type of community identity that was related to territorial and resource rights.

Community study of Yuthu, an early Andean village

Taking these Andean particularities into consideration, the elements of the community approach can be restated in terms that are specifically applicable to the present study.

(1) The majority of the data in this study comes from the village of Yuthu which was neither the largest nor smallest contemporary village. It was large enough to contain several households and it has ceremonial architecture.

(2) The study includes a description of the local environment, subsistence practices, craft activities, social identity, ritual practices, and other activities that left material traces at the site and were recovered in 156 m^2 of excavation. Of course, this study cannot be exhaustive. Over time, continued research at Yuthu will improve our holistic understanding of the village.

(3) The study will consider how rituals of ancestor veneration tied to the landscape allowed large groups to express their shared identity even as it served as a venue for factional competition.

(4) Crops and animals available from particular ecological zones will be used to determine whether the village might have been part of a spatially segregated vertically integrated community.

(5) The specific details of village economy, ritual, and politics at Yuthu will be used to discuss general theory on the origins of hereditary inequality and multi-village polities.

Outline of chapters and their contribution to the goals of the study

Chapter 2: The regional setting

Chapter 2 provides the regional setting of Yuthu including not only the environmental and ecological setting, but also the social setting. I will establish that, as in other parts of Cusco, settlement patterns on the Plain of Anta suggest that a multi-village polity probably formed by the end of the Formative period. Furthermore, during the Formative period, settlements were concentrated on the high plain ecological zone (rather than being dispersed throughout the lower warm valleys and high puna). This settlement pattern will be compared and contrasted with actual evidence for resource utilization presented in Chapter 3 in order to evaluate if and how multiple ecological zones were exploited or integrated into the community.

Chapter 3: Activities at Yuthu

As part of the holistic study of Yuthu, this chapter describes the activities that left material traces recovered by excavation from 2005-2007. These included activities that shaped the annual cycle and were tied to seasonal environmental variation (such as farming and herding), activities that occurred every day or nearly every day (like cooking and fuel collecting), and other activities that were carried out periodically when necessity or interest arose (such as human burial and stone tool production). This chapter continues to evaluate the evidence for a vertically integrated community even as it prepares the reader for the description of excavations presented in Chapters 4 and 5.

Chapters 4 and 5: Excavations in the Northern and Southern Sectors (respectively)

Chapters 4 and 5 present the excavation data that allow and limit the breadth of the community study at Yuthu. The chapters present all cultural materials recovered context by context so that the entire suite of artifacts can be considered when attempting to infer which activities took place in each location. In addition, the chapters describe the questions that influenced fieldwork decisions such as the placement of excavation units at the site.

Chapter 6: Domestic and ceremonial spaces

This chapter contrasts the structures and related activities in the Northern and Southern Sectors. While the Northern Sector was the locus for daily domestic activities, the Southern Sector was a space used periodically for ceremonial activities. The community created distinct spaces for quotidian activities and periodic integrative practices. This indicates that the creation and maintenance of a community-level group identity was important to villagers at Yuthu.

Chapter 7: Group identity, the sacred system, and politics

The Southern Sector held a ceremonial structure that was used periodically to establish group identity as tied to the landscape and community level ancestor veneration. Architectural remodeling of this structure indicates that perceived relationship between the community and the landscape was not static, but shifted over time. This egalitarian social structure was the starting point from which complex societies developed in Cusco. Later during the occupation of Yuthu, mummy-focused ancestor veneration shifted the focal point of rituals of group identity from the community level to factions within the community, most likely lineages. Access to resources was probably also restructured to run along family lines. Community and lineage focused ancestor veneration were two potentially conflicting integrative practices that existed alongside each other for some time. This ideological shift was a key transformation in social institutions that legitimized the emergence of inherited rank and the development of multi-village polities.

Chapter 8: Conclusion

The concluding remarks will summarize the holistic study of this Andean village. The specific economic, social, ritual, and political practices at Yuthu can help us understand the particularly *cusqueño* context for the emergence of hereditary inequality and multi-village polities.

Chapter 2

The regional setting

No community exists in isolation. Therefore, the study of Yuthu would be incomplete without a consideration of the larger social and environmental context. This chapter will address two questions highlighted in the introduction: (1) could a multi-village polity have formed during the Formative period? (2) Did early Andean agro-pastoralists incorporate more than one ecological zone in subsistence practices? These questions cannot be answered with data from a single site; they require a regional perspective. At present, detailed excavation data from Formative period sites (other than Yuthu) do not exist, but there is ample settlement pattern data collected by R. Alan Covey's Xaquixaguana Plain Archaeological Survey of an area covering 630 km^2 surrounding the site of Yuthu. As a member of this project, I was able to refine the Formative period ceramic chronology and identify a settlement hierarchy. By combining survey data with excavation data, I have been able to detect differential use of ecological zones, demonstrate the importance of the link between the plain and the nearby valley, and suggest the presence of a Formative period road.

The Xaquixaguana Plain Archaeological Survey

The survey area included two sub-regions: (1) rolling hills around Chinchero and Maras and the Plain of Anta and (2) a lower and wetter flat plain surrounding Anta and Izcuchaca. The full coverage systematic survey identified sites from the earliest camps of Archaic period hunter-gatherers to elaborate Inka period terraces and storage facilities. Teams of archaeologists walked across the landscape at 50 m intervals. Sites were identified based on surface scatters of artifacts (such as pottery or chipped stone tools) or visible architecture.

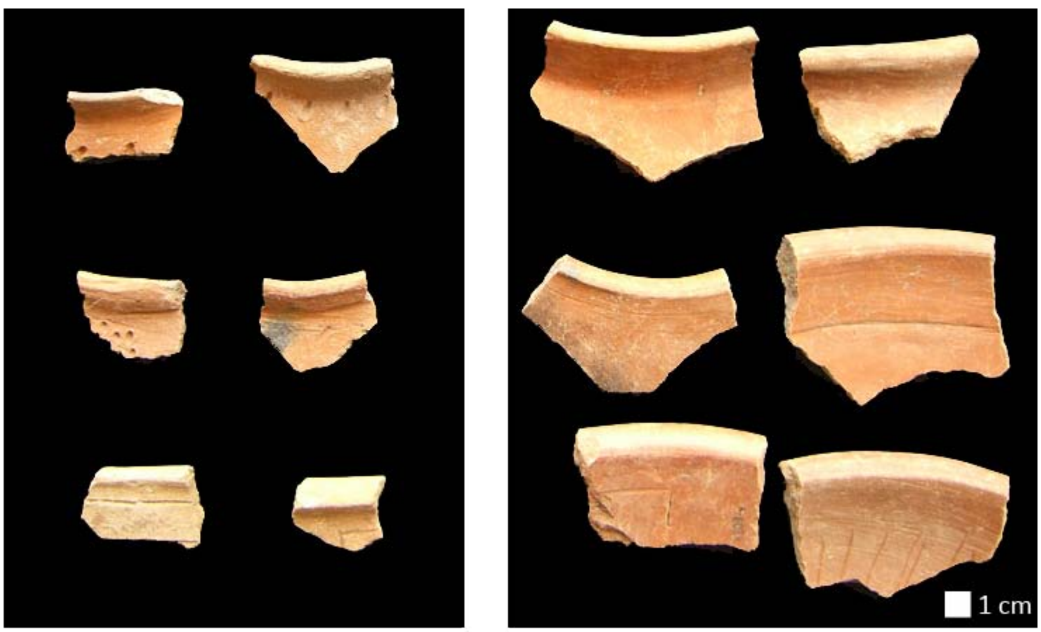
Although many variables were recorded for each site, I will focus on elevation, location on the landscape, and site size. Location and elevation were recorded with GPS devices. Total site size was estimated based on the extent of the surface scatter of artifacts when each site was first identified. We returned to sites larger than 1 ha to make intensive collections. All artifacts within a 50 m^2 area were collected from units laid out on a 50 m grid (a 2% sample). In the case of Formative period, few single occupation sites were large enough to merit intensive collections. These collections were most useful for determining the Formative component of large sites that were occupied in multiple periods. For example, the site of Chiquq is a large Inka site near Maras. The total size was recorded as 24 ha during the first visit to the site. Based on intensive collections, however, the Formative period surface scatter covered only 2 ha.

Prior to this survey project, the ceramic sequence used by survey projects in and around Cusco had only one Formative chronological unit 2400 years long. Like previous surveys in Cusco (see Chapter 1), we identified sites by that generic Formative pottery style – meaning that the sites dated somewhere between 2200 BC and AD 200. When analyzing Formative period ceramics in the laboratory, however, I noticed there were two distinct styles that did not co-occur at sites. For the first time, Formative period sites identified by the Xaquixaguana Plain Archaeological Survey could be divided into an early and a late phase.

The most common style was similar to Chanapata pottery and dates from 600 BC to AD 100. This pottery is burnished and may have incising. Decorated vessels are commonly painted with red, cream, and with sparkly hematite pigments. The most common vessel forms are globular ollas with and without necks and large open bowls with painted decoration on the interior. Rims are often thickened as a result of folding the clay over and smoothing the seam. I expected to find this common pottery style that had been found previously in the survey area (Bonnett Medina 1998; Kendall 2000; Rowe 1944) and throughout the Cusco region (Bauer and Jones 2003; Chávez 1980; Dwyer 1971a, b; Hey 1984; Kendall 1976; McEwan, et al. 1995; Mohr 1969; Rowe 1944, 1956; Yábar Moreno 1959, 1972, 1982; Yamasaki, et al. 1966; Zapata 1998).

In addition to this familiar Chanapata style, I found another kind of pottery that was not decorated with paint, but only with punctations and incisions. The ollas had very short necks and pointed rim profiles. Bowls had straight walls that met the bases at an approximately right angle and were decorated on the exterior. This style was very distinct from Chanapata (see Figure 2.1). Because there have been no excavations at sites with this pottery style in the Xaquixaguana survey region, there are no radiocarbon dates available to assign it to an absolute date range.

This style, however, is very similar to pottery that Rowe (1944) found at the site of Chanapata in the lowest excavation levels. He called similar vessels Chanapata punctuate and Chanapata incised black. There were no radiocarbon dates from this early excavation to anchor these styles in time, but K. Chávez found similar pottery at the site of Marcavalle (see Chávez 1977, 1980, 1981a, b). Because she referred to this style as "Marcavalle," that is the designation that I will use to distinguish it from the classic Chanapata style. Based on radiocarbon dates from her excavations, I would suggest that this pottery dates to a similar period from about 1000-600 BC. Unfortunately, this assignment is tentative and only future excavations will be able to confirm or reject it. With that in mind, discussions in this chapter will distinguish earlier and later Formative sites based on this difference in pottery style. Therefore, it is important to remember that this characterization may be revised when radiocarbon dates for the earlier style are available.



Early Formative pottery similar to Marcavalle (tentative date 1000 - 600 BC)

Later Chanapata Formative pottery (600 BC - AD 100)

Figure 2.1: Two distinct pottery styles found during the Xaquixaguana Plain Archaeological Survey. The earlier style consists of short rimmed ollas with pointed rim profiles and punctation decoration (top four sherds) and straight-walled bowls with incised exterior decoration (bottom two sherds). The later well-known Chanapata style includes ollas with necks (top two sherds) and without necks (middle left), and open flaring bowls decorated on the interior by burnishing or painting (lower two sherds). Rims of both ollas and bowls are often thickened by folding over and smoothing the clay.

Settlement hierarchy and population growth in the later Formative period

Changes in settlement patterns between the early and late part of the Formative period suggest a significant change in social and political life on the plain. The survey identified 7 sites with the early pottery style. All of those sites were smaller than 1 ha. In contrast, the survey identified 68 sites with Chanapata style pottery, and these sites ranged in size from very small (150 m^2) to very large (over 30 ha). They can be divided into three groups based on size. Small sites were less than 2.2 ha and medium sites were between 3 and 9 ha. One very large site was 33 ha—more than three times the size of any other village (see Figure 2.2).

By comparing the sizes of earlier and later settlements, two important changes become apparent. First, the increase in number of sites and the size of sites indicate population growth on the plain during the Formative period. Second, whereas earlier sites were all similar in size, in the later part of the period the population became concentrated in a single large village and a few medium-sized sites. This apparent development of a regional center is similar to the contemporary emergence of Muyu Orqo in the Cusco Basin and Batan Urqu in the Lucre Basin (Bauer 2004; Zapata 1998). The concentration of population into a single settlement and the emergence of a three-tiered settlement hierarchy may signal the development of the first multi-village regional polity in this area, though further excavation will be necessary to determine whether large sites were the centers of multi-village polities or whether the population became aggregated for another reason.

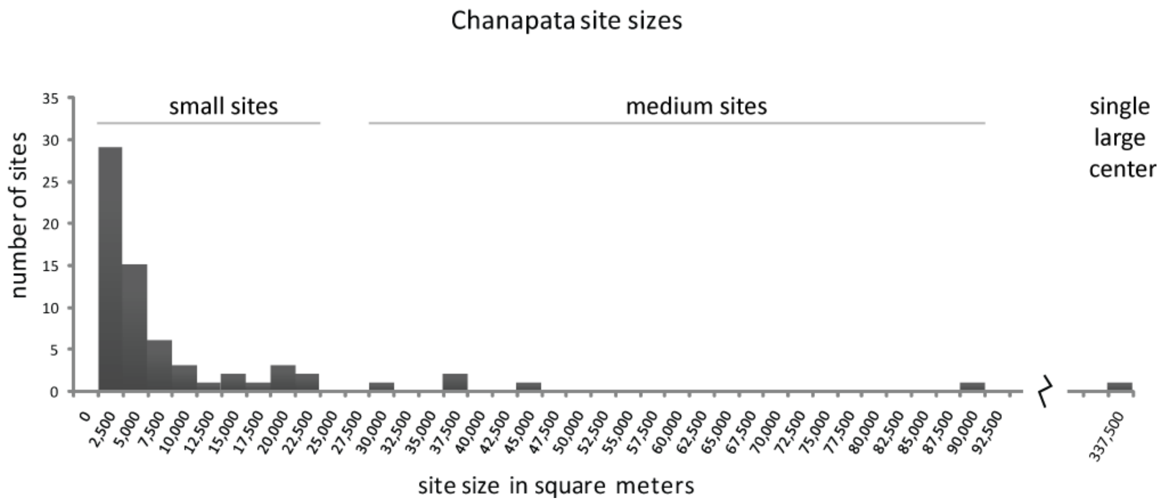


Figure 2.2: Sites in the Xaquixaguana Plain survey area with Chanapata pottery on the surface can be divided into three groups based on size: small (< 2.2 ha), medium (2.2 – 9 ha), and a single large center, the site of Ak'awillay which is 33 ha. It is possible that this concentration of population into a single village may signal the development of the first multi-village polity in this region.

Histograms used to demonstrate site-size hierarchies (like Figure 2.2) do not capture some of the most interesting aspects of the regional settlement pattern in the Xaquixaguana Plain study area. In highland Peru, one cannot imagine settlement pattern data laid across a flat surface like a map on a table. The dramatic mountain topography and varied elevation must be taken into account. This is particularly true for two factors that influenced settlement location: (1) subsistence practices tailored to ecological variation that roughly correlated with altitude and (2) travel along natural routes in rugged topography.

<u>Ecological variation and the Formative period agro-pastoral system</u>

In the Andes, drastic changes in altitude within relatively short distances create a diverse array of microclimates within small regions. Subsistence strategies often take advantage of this variety to manage risk and provide a more diverse diet. In order to understand site location in the Xaquixaguana Plain study area, I consider the available ecological zones in light of what I have learned about subsistence practices from excavation of Yuthu.

By the beginning of the Formative period around 2200 BC, pastoral-agricultural traditions had been established for many generations. Throughout the Andes, highland people managed herds of camelids by 3500 BC (Lavallée, et al. 1984; Wheeler, et al. 1995; Wheeler Pires-Ferreira, et al. 1976). Guinea pigs were kept in pens by 5500 BC (MacNeish 1983; Stahl 2008). Potatoes and other tubers were domesticated by 8000-6000 BC (Hawkes 1990), and common beans were found in the highlands by 8000-7500 BC (Kaplan 1980). Gourd, quinoa, squash, coca, lúcuma, and maize were present by 4400-3100 BC, and peppers and achira were introduced by 3100-1750 BC (Pearsall 2008).

Prior to this project, little was known about early subsistence practices in Cusco because very little faunal and ethnobotanical research had been carried out. At the Archaic site of Kasapata (4400-3100 BC), people used wild camelids and guinea pigs, but they did not keep domesticated animals (deFrance 2007). They also ate wild deer and birds such as the tinamou (or *yuthu* in Quechua) (deFrance 2007). Subsistence data from the Formative period come from the site of Marcavalle. By the early Formative, camelid herding was a very important economic activity (Chávez 1980; Miller 1979). People kept domesticated guinea pigs and wild animals were a very minor component of the faunal assemblage (Chávez 1980). Beans were present by 800 BC and corn by 200 BC (Chávez 1980). Other plants were not identified.

Excavations at Yuthu (400-100 BC) included the first systematic recovery of macro-botanical remains using flotation for the Formative period of Cusco. Based on these data, villagers relied heavily on quinoa. Maize was a smaller, but significant, portion of the diet. There were no preserved remains of potato, a species that is very difficult to identify archaeologically. However, the presence of *Solanum sp.* seeds suggests that the classic Andean root crops were probably important. In addition, villagers focused heavily on herding both llamas and alpacas. They also kept guinea pigs in their houses, but they used almost no wild animal resources (see Chapter 3 for further discussion).

When examining Formative period settlement patterns with the goal of understanding how people used the diverse ecological zones that were available, the needs of an agro-pastoral system that incorporated at least quinoa, corn, and camelids must be considered. In comparison, wild resource utilization is not an important factor. This section examines two factors that affect resource use: (1) the land that was available to Formative villagers living in the area that met their needs, and (2) the labor required to maintain each crop or domesticated animal.

The Xaquixaguana Plain study area includes a large, low, and often rather wet pampa in the southwestern part of the survey region near the modern city of Anta and higher rolling hills with two large lakes in the northern part near Maras. Higher mountains that reach over 4000 masl surround the area to the south and east. Small areas of *puna* are located to the east and northwest. The Sacred Valley borders the northern and western edges of this region. The valley floor is 2800-2900 masl. Large parts of the valley floor are currently used for intensive maize agriculture while the higher plain is used to pasture sheep and to grow grains and tubers (see Figure 2.3).

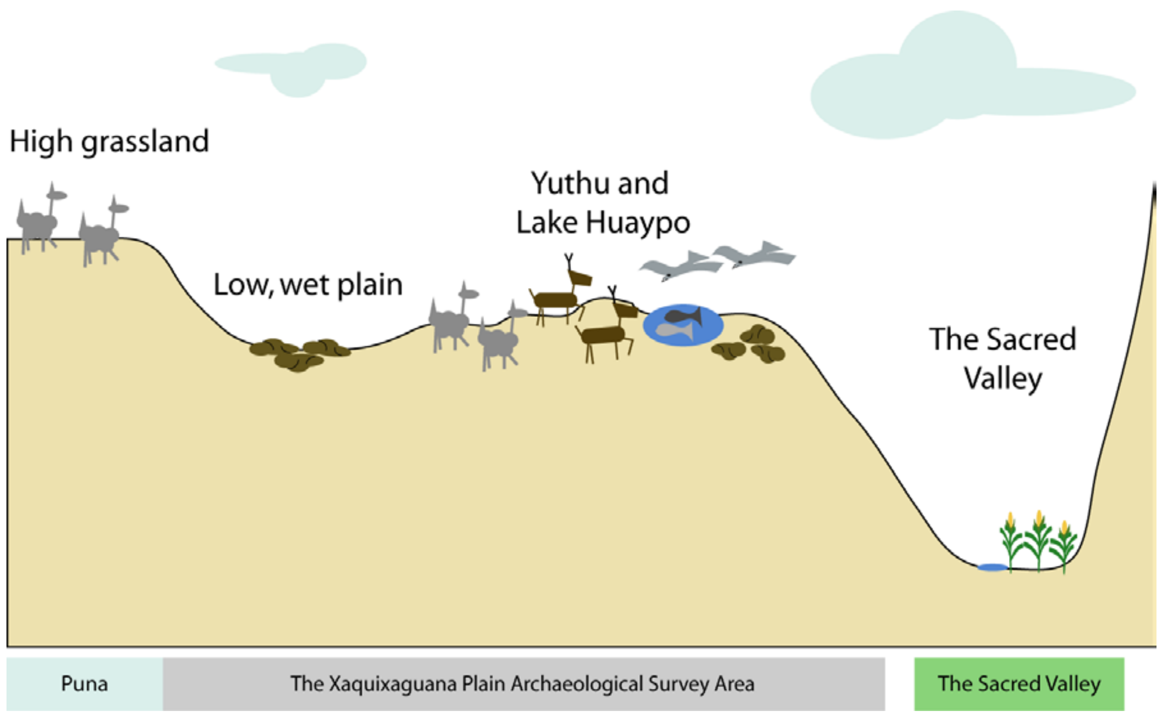


Figure 2.3: The resource zones available to sites in the Xaquixaguana Plain survey area include: a high rolling plain with marshes and lakes, the low warm Sacred Valley, and high grassland *puna*.

Today, llamas and alpacas are only herded above 4000 masl. Flores Ochoa (1982) has suggested that both species were herded as low as 3300 masl in prehispanic times and that the pampa of Anta was the primary pasture for Inka Cusco. Tribute pressures placed on local people by the Spaniards who preferred European products probably resulted in the absence of camelids on the plain today. Therefore, access to the puna to maintain herds may not have been important in the Formative period. In fact, no

Formative period sites were found in a recent survey of the puna area east of the Xaquixaguana Plain survey area (personal communication R. Alan Covey).

The labor requirements for herding camelids vary by species. Alpacas require constant monitoring and attention. They must be moved between pastures, protected from predators, and supervised during breeding (Webster 1971). Alpacas prefer grasses that grow in wet environments and must often be moved to new grazing areas during the dry season (Bonavia 2008; Flores Ochoa 1979 [1967]). In contrast, llamas can be herded with less care. They happily graze in a wide variety of pastures and can be left unattended, though they prefer dry pasture (Bonavia 2008; Webster 1971). Depending on the species, camelid herding could have placed constant demands on everyday labor during the Formative period (Webster 1971). Unfortunately, faunal data from excavation do not clarify which species were more important. Llamas might have preferred the high rolling hills around Maras while alpacas might have been moved from the drier rolling hills in to wetter pastures in the marshy areas near Anta in the dry season. Either way, it would not have been necessary to take them to the puna as long as crowding was not a problem. It is likely that Formative villagers spent a large portion of their time on the plain tending their herds.

Planting, tending, and harvesting crops had to be integrated with herding practices. The proximity of the plain and the nearby valley provides the opportunity to grow diverse crops that are adapted to different climates, which would allow communities to manage risk, be self-sufficient, and have more diverse cuisines. There is a second advantage to having access to multiple ecological zones. In a single zone, the planting and harvesting seasons for all crops often overlap. As a result these two periods of intensive agricultural labor can limit production even when land is abundant. Access to fields in multiple zones can allow a family to grow additional crops with different growth cycles or the same crops on an offset agricultural schedule (Zimmerer 1996). As a result, farmers can avoid the labor bottlenecks during planting and harvesting and produce more crops than they would be able to grow in only one zone (Mitchell 1978).

In and around the survey area today, most crops are grown during the same agricultural cycle with planting from October to December and harvest in May and June. Some crops, however, are grown on an "early" cycle. For potatoes, this is called *maway* and for corn it is *miskha*. In the high plain of the Xaquixaguana Plain study area, many varieties of potatoes, beans, and native pseudo-cereals can be grown on the normal cycle. Near Maras, however, there is an early potato planting area (Kimura 2000).

Crops like corn that cannot grow on the plain because of the short growing season and risk of frost can be grown in the neighboring Vilcanota Valley during the normal cycle. In addition, there are two important early planting zones in the part of the valley that borders the plain (Gade 1975). From Ollantaytambo to Lamay, potatoes can be planted and harvested early. In addition, the stretch from Yanahuara to just west of Calca is an early corn area (see Figure 2.6).

Given that archaeological evidence suggests that quinoa and corn were both important parts of the Formative diet, the possibility that farmers could have scheduled agricultural labor for these crops in diverse climate zones is intriguing. Today, the main quinoa and potato crops are planted in late September and October and harvested in June and July. The early corn planting in the valley is in August and harvest is in January and February when little labor is required for crops on the plain. Early potatoes are planted in the valley in June and July and harvested in October and November—the reverse of the normal schedule of crops on the high plain. Early potatoes would not carry the same advantages as early corn in terms of avoiding labor bottlenecks, but they may have been valuable because little fresh food is otherwise available at this time (see Figure 2.4).

Did Formative villagers take advantage of diverse zones to manage labor shortages and increase the diversity of crops that they grew? Did they make distinctions such as "early" and "late" growing areas within the high plain of the survey area? Given that corn was a significant part of the diet for villagers living too high to grow it, how did they obtain this important food? Did each family or village have direct access to multiple ecological zones or were they part of a spatially dispersed and vertically integrated mountain community? In order to evaluate how Formative period villagers might have incorporated multiple ecological zones, I have asked two questions using available survey data: (1) is there evidence for different activities at high and low sites? And (2) does the location of sites suggest direct access to multiple zones or a trading relationship between villages on the plain and in the valley?

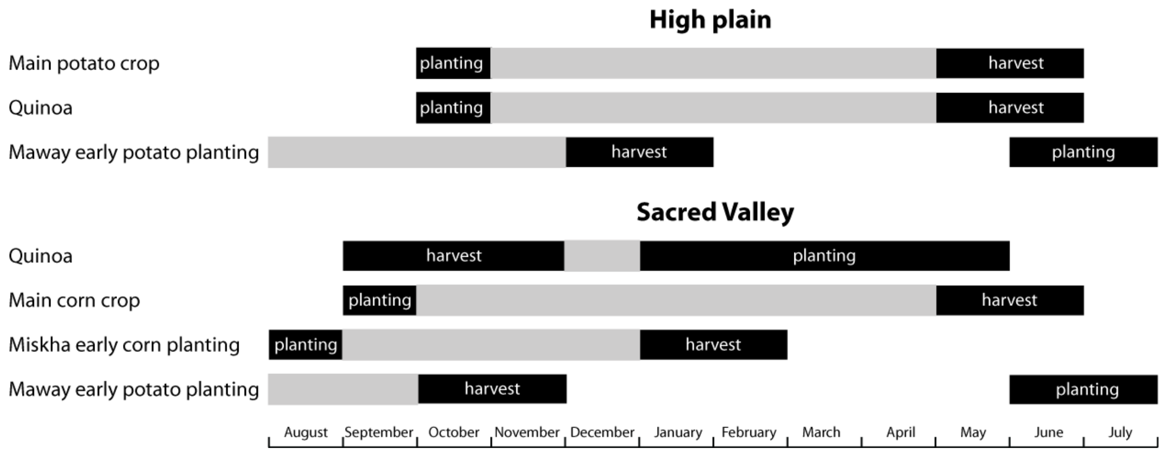


Figure 2.4: Labor schedule for planting and harvesting major crops on the high plain and in the Sacred Valley. By incorporating early planting zones in the valley, agricultural labor can be more evenly spaced throughout the year. Data are taken from Gade (1975), Kimura (2000), and Zimmerer (1996).

Elevation and site function

If villagers made distinctions between ecological zones in the Xaquixaguana Plain survey area, it is likely that they would have carried out different activities in locations that were "high" compared with those that were "low." Survey data have the advantage of providing information from many sites within a region, but they cannot provide the details of daily activities that excavation provides. Using the available data, I considered the diversity in ceramic vessel shapes as a rough proxy to the breadth of activities carried out at a particular site. This approach relies on the assumption that different ceramic forms were used for different activities, though those activities are not known. Although this is a crude measure, it does indicate different uses of high and low altitude zones that may be further tested with future excavations, household by household.

In order to avoid complications due to the different forms made in earlier and later Formative ceramic styles, this discussion includes only sites with Chanapata pottery (600 BC - AD 100). The ceramics were grouped into five basic forms: (1) restricted vessels with a neck, (2) restricted vessels without a neck, (3) open vessels with flaring walls and a rounded base, (4) open vessels with straight walls that meet the base at (approximately) a right angle, and (5) lids (see Figure 2.5).

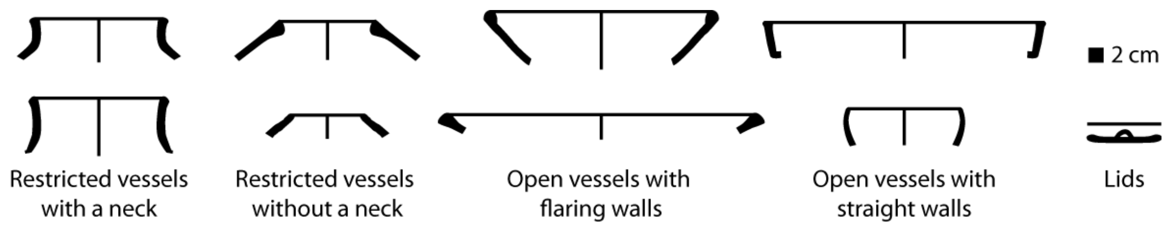


Figure 2.5: Chanapata pottery ceramic forms identified in the Xaquixaguana Plain survey region. Lower-altitude sites had a wider diversity of forms than higher sites. High sites did not have restricted vessels without a neck. Therefore, it seems likely that a more limited subset of activities were carried out at higher sites.

The Xaquixaguana Plain does not include puna or valley ecological zones. Therefore, the plain was divided into only two possible zones, high and low. Sites were divided two different ways. The first was based on natural limits on subsistence activities according to the environment. Cold, frost, water logging, and pests vary with altitude and limit which crops can be grown. In this region, 3500 masl marks the transition between irrigation agriculture and dry farming. It is also the upper limit for maize agriculture. Using this division, I found no statistically significant differences in the vessel forms found at sites above and below 3500 m.

Since this division did not show any variation in activities at high and low sites, I also tried to divide the sites in a way that might have approximated the “emic” Formative classification. Cultural distinctions of ecological zones do not mirror exactly the biological limits for cultivation of certain crops (Brush 1976; Zimmerer 1996). For example, the very same field may be classified as *quechua* by people living above it and as *puna* or *quechua* by those living below it (Fonseca Martel 1966). In Cruzpata today, people often refer to fields that are on the plain but at an altitude higher than their residence as being high. Designation as a high or low ecological zone may be relative to the location of the village with the primary residence.

With this in mind, I tried a second method to divide sites into high and low zones. Most of the population during the Formative period probably lived in the largest settlements and may have considered lands located above their own as high. The highest large community (largest 10%, > 2ha) was located at 3660 m. Therefore, we could separate all sites above 3660 masl as high settlements and those below 3660 masl as low settlements. In addition, the division is similar to one based on statistical analysis. The average elevation of all Formative sites was 3503.16 masl. If we consider sites more than

1 standard deviation above the mean as high, high sites would be those above 3649.39 masl—nearly the same elevation as the highest large site used to infer the “emic” division.

Using this method, there were significant differences in vessel form diversity. High sites (n=7) had a mean of 1.43 forms per site and low sites (n = 57) had a mean of 2.56 forms per site ($p > |t|$ .008). Although sites above 3660 m were very small (less than 1 ha), size alone does not account for the less diverse ceramic assemblage. Among sites from all elevations, there is no significant difference between the mean number of forms per large site and the mean number of forms per small site (mean large = 2.14, mean small 2.4, $p > |t| = .7114$).

Regardless of size, the sites at lower altitudes had a more diverse ceramic assemblage. This diversity in vessel forms may indicate a wider range of activities carried out at lower sites—including more kinds of storage, cooking, and processing. In contrast, sites at higher altitudes were small and had a more limited artifact assemblage. Significantly, these sites did not have restricted cooking vessels without necks. Overall, these vessels were very common at Formative sites. They were present in 48.44% of all sites in the survey and 54.39% of low altitude sites. The function of these vessels is not known, but it is probably related to food preparation.

In excavations at Yuthu, restricted vessels without a neck were more common in hearths located inside houses and restricted vessels with a neck were much more common in outdoor hearths (see Chapter 3). Therefore, it is possible that more cooking took place outside at high-altitude sites. Of course, it is impossible to know for sure without further excavation. Regardless of the particular activities, however, these survey data do indicate that people divided their landscape into higher and lower zones and that their activities varied accordingly.

<u>Site location and direct access to two ecological zones</u>

The placement of sites on the landscape demonstrates which zones were important to Formative period villagers. The survey area included mostly high plain that is useful for growing native grains, potatoes, and herding llamas. However, the neighboring valley and puna areas have also been surveyed. The puna to the east has no

Formative pottery on the surface and the stretch of the Sacred Valley from Calca to Yanahuara contains only a small number of sites and none of them are larger than 2 ha (personal communication R. Alan Covey and Brian Bauer). By far, most of the Formative population was concentrated in the high plain.

This is not surprising given that the excavation data have shown that herding camelids and growing quinoa were the most important subsistence activities. It does not account, however, for how villagers obtained the corn that was a significant part of the diet (8.78% of all carbonized plant remains at Yuthu). Closer examination of the placement of sites on the landscape does provide a hint as to how lower altitude crops were available to residents of the high plain.

I began this chapter by establishing that there was a pronounced settlement hierarchy by the end of the Formative period. The location of the large and medium sites does not, however, follow the expectations of central place theory which suggests that the central site should be surrounded by secondary centers in evenly spaced polygonal shapes (Banning 2002; Christaller 1966 [1933]). Central place theory was developed with the assumption that all settlements were located on an undifferentiated plain. Clearly, this assumption does not hold in the high Andes. Mountain topography and ecological variation must be considered in explaining the location of the largest sites in the Xaquixaguana Plain survey area.

Preference for certain features of the landscape sometimes accounts for choices people make about where to live. For example, Formative sites in the Sacred Valley (R. Alan Covey, personal communication) and the Valley of Cusco (Bauer 2002) were usually located on prominences or hilltops. This was not the case in the Xaquixaguana Plain survey area. In fact, four of the eight largest sites were located on a pampa. Three were located on the sides of valleys; only one was on a hilltop. Although several of the large Formative sites were clustered around Lake Huaypo, the lake itself does not explain their location. The Laguna Piuray (located in the eastern part of the survey area) is equally large but there are no large Formative sites there. Therefore, site location cannot be explained by a preference for visibility or defense provided by hilltops or by a desire to utilize lacustrine resources. In fact, no local fish and very few water birds were recovered from Yuthu which is located on the shore of Lake Huaypo.

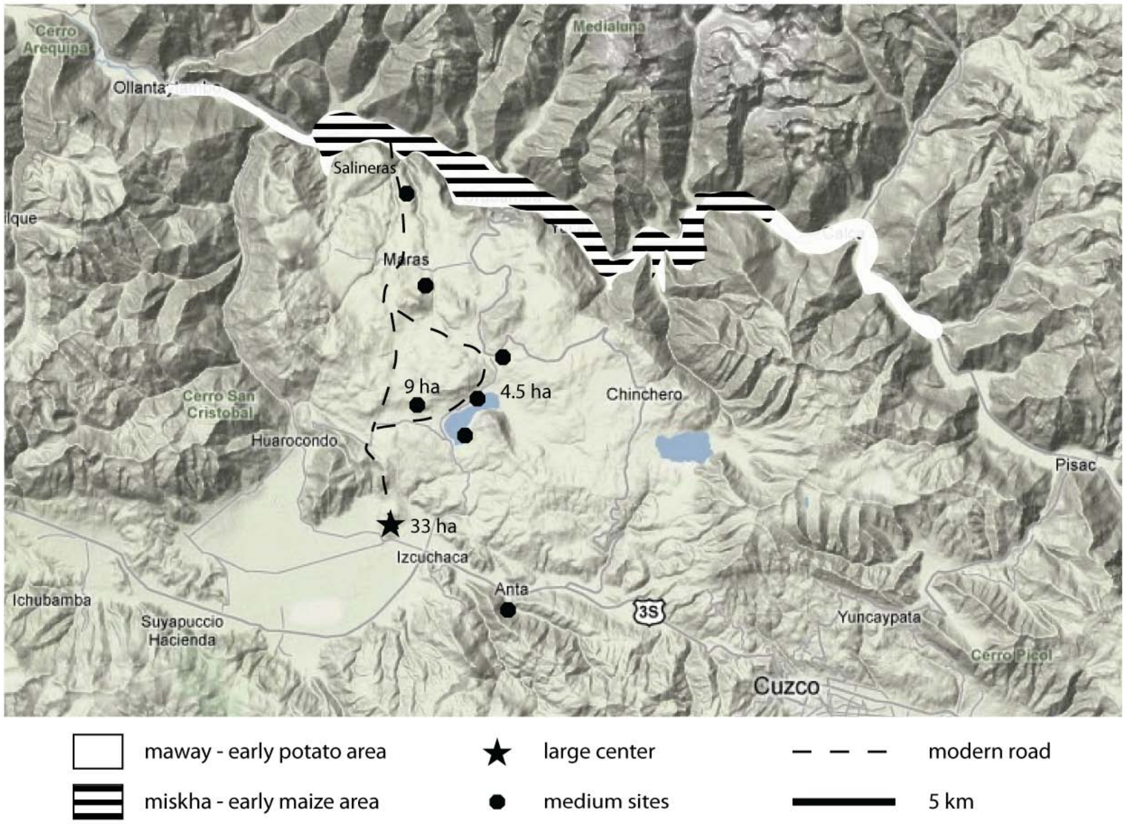


Figure 2.6: Location of the largest Formative sites and the early planting zones in the Sacred Valley. The topographic map image is © 2010 Google – map data © 2010 MapLink/Tele Atlas.

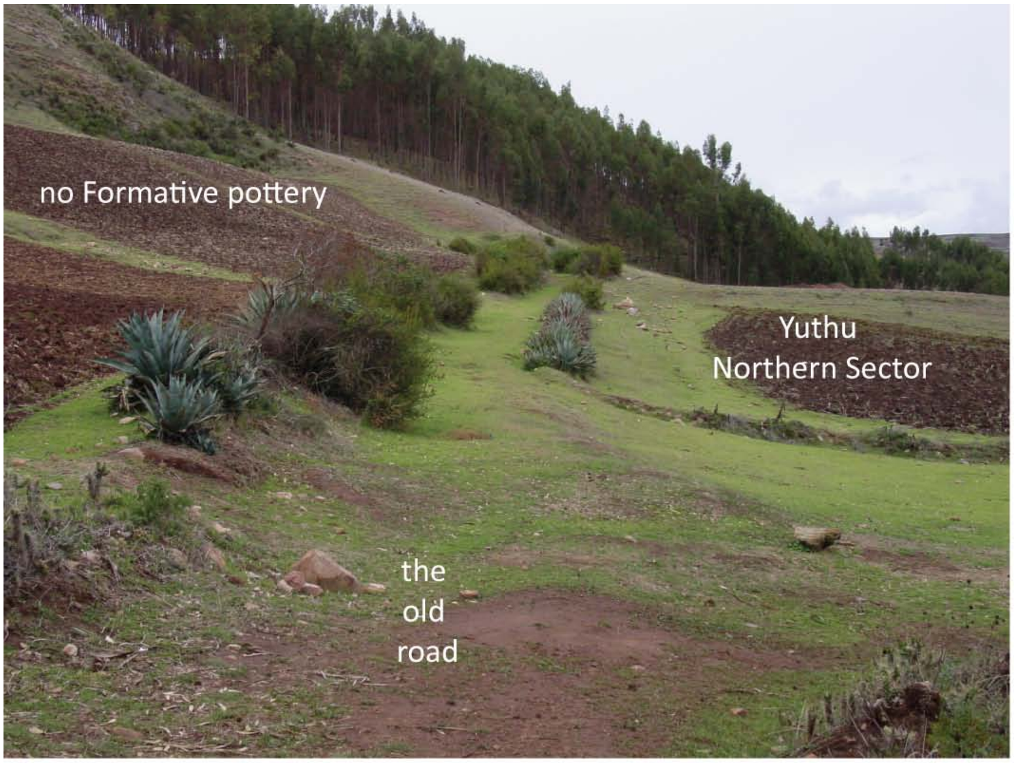
Rather, when the locations of the largest sites are considered against the local topography, it becomes clear that the medium and large sites with Chanapata style ceramics (top 10 %, > 2 ha) were located along a natural route from the wetter part of the plain to the Sacred Valley (see Figure 2.6). Starting at Ak'awillay, a 33 ha site located on the high plain overlooking the Pampa of Anta, the route passed by Lake Huaypo where Yuthu is located. After that, the route continued through the Salineras of Maras, a natural salt spring that has been used at least since Inka times to produce salt and continues to be used today. Sites gradually became smaller moving north along the route *away* from the probable regional center. The second largest site was 9 ha (X-170); Yuthu, the third largest site, was 4.5 ha**.** This linear arrangement resembles the dendritic pattern for down-the-line trade proposed by Renfrew (Banning 2002; Renfrew 1975). This type of pattern is common when sites are located along rivers, roads, or other fixed routes along which exchange takes place.

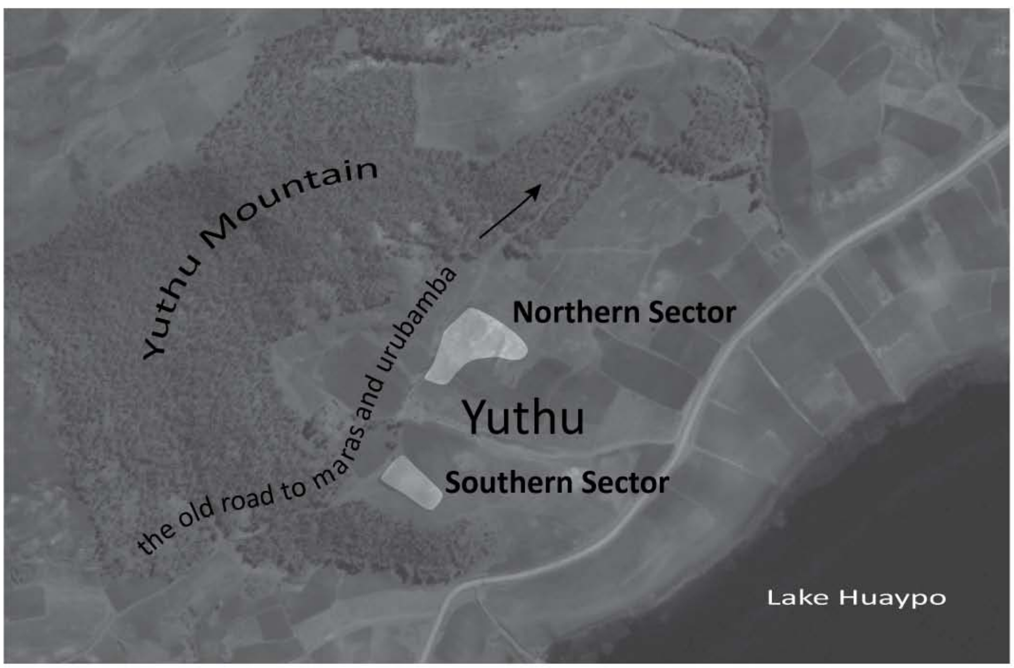
The route descends to the Sacred Valley in a location that is an *early* planting zone for both corn and potatoes (Gade 1975) (see Figure 2.6). The location of the largest sites along a route to the Sacred Valley indicates that both the high plain and the lower valley were important ecological zones. Living in a place with direct access to at least two ecological zones is common in archaeological and ethnographic Andean communities. Most often, settlements are located on the border between the *puna* and the *quechua* (Brush 1976; Flores Ochoa 1985; Perry, et al. 2006). In this case, each of these zones is located within a ½ day walk from the other. This kind of configuration has been described as the "compressed type" of Andean ecological zonation (Brush 1976).

In modern contexts, when resource areas are so close together, migration and exchange are not necessary to exploit multiple zones. Instead, farmers have direct access to fields in each area (Brush 1976; Flores Ochoa 1985). This seems like the most likely scenario for the Formative period on the plain. Direct use of both of these zones by villagers living on the high plain would account for the presence of corn in sites on the high plain and could have eased pressures on labor by spacing out planting and harvesting throughout the year. Of course, if villagers were also part of a larger multi-settlement community dispersed over several kilometers such as the "archipelago" or "extended" types described by Brush (1976), these survey data could not detect it.

Were there Formative period roads?

When I first noticed this linear settlement pattern, I realized that it closely followed footpaths that people refer to as the "old road" to Maras and Urubamba (see Figure 2.7). Since then, walking along this road from Yuthu to the Sacred Valley has become one of my favorite ways to pass a sunny Sunday morning. Could a formal road have existed in the Formative period as well? I suspect that it probably did. The "old road" from Lake Huaypo to Maras and Urubamba passes just above the site of Yuthu. It does not cut through the middle of the site. Rather, it provides a northwestern limit to both the Northern and Southern Sectors (see Figure 2.7). Therefore, it is possible that at least part of this important route to the Sacred Valley was a formal road by 400 BC when Yuthu was settled. Future excavation at Yuthu should clarify whether the road might have been formalized with built features like pavement, stairs, or drains.





The old road to Maras and Urubamba is visible in the arial photo (below).
It is the northwest limit of the Northern and Southern Sectors of Yuthu (above)

Figure 2.7: The old road to Maras and Urubamba is the limit of both the Northern and Southern Sectors at Yuthu. No Formative pottery was found in the fields northwest of the road. Therefore, it is likely that this section of the road existed in the Formative period (by around 400 BC).

Routes like this were probably precursors to the larger and more famous Inka road system (for a description see Hyslop 1984). Many scholars have already argued that a system of roads in the Andes extended back in time to the Wari Empire in Cusco (Isbell 1978; Isbell and Schreiber 1978; McEwan 2005) and elsewhere (Lumbreras 1974). On the north coast, formal Early Horizon roads connected valleys to each other (Beck 1979). In Cusco, Ann Kendall (2000) has suggested that the section of the Inka road from Maras to Urubamba was used by about 800 BC based on the abundance of Chanapata pottery along the route. It seems likely that in many cases the Inka may have simply elaborated existing routes with formal paving and road markers. It is interesting to note, however, that the major Inka road that was the primary caravan route to the Chinchaysuyu (which passed along the southern part of the survey area) does not have Formative sites clustered alongside it.

What role might roads have played in this early period? For the Inka, these roads were important for political administration of the vast empire. Although communication might have been important in the Formative period, administration was probably not a major concern in a time when the first multi-village polities were only beginning to form. Within the survey area, the route links two key ecological zones, but beyond the survey area, it may connect even more distant areas. The Inka road that follows the proposed Formative route from Maras to Urubamba continues across Sacred Valley, to the coca lands of Occobamba (Kendall 2000). It seems likely that these early roads facilitated long-distance trade carried out by llama caravans. In fact, villages in the Xaquixaguana Plain survey area were certainly linked into long distance trade networks. Exotic goods like obsidian, a peccary tooth, and a fish from the jungle were found at Yuthu (see Chapter 3). In addition, these villagers kept large herds of camelids which included llamas that could have been used as pack animals in trade caravans.

In other parts of the highlands, many scholars have suggested that power and wealth during the Formative period resulted from the control of long-distance exchange. In this scenario, the fortunes of a particular village depended on the importance of the llama caravan routes along which it was located. Exceptional wealth resulted from transit taxes in locations that caravans had to pass through. This was true for the well known centers of Chavín de Huántar (Browman 1975; Burger 1992) and Chiripa (Bandy 2005).

It may be the case that llama caravan trade along this ancient route across the Xaquixaguana plain played an important role in the emergence of the first complex societies in Cusco as well.

Discussion

This chapter outlines the regional setting that serves as a backdrop, providing a regional context for studying the village of Yuthu. The agro-pastoral subsistence system incorporated diverse ecological zones. Regional survey data indicate that inhabitants of this plain distinguished distinct ecological zones within the high plain. Only a restricted set of activities were carried out at sites higher than the primary residence of most villagers. In addition, the largest Formative sites were located along a route from the wetter part of the plain to the early planting area of the Sacred Valley. While inhabitants probably spent most of their time herding and farming quinoa and tubers on the high plain, they probably used this route to directly access maize fields in the valley. The placement of sites along a route that continues to be an important road today suggests that long-distance trade carried out by llama caravans may have played an important role in the development of the first complex societies in Cusco.

Chapter 3

Activities at Yuthu

In order to understand past social systems, it is necessary to identify the activities that filled the lives of men, women, and children each day, week, and season. Such activities structure social interactions, even as they are shaped by cultural necessity, expectation, and tradition. As archaeologists, we can only identify the activities that leave behind material traces. Only in exceptional cases do we overcome this limitation and recover data on such important practices as gossiping, singing, and non-violent conflict resolution. And, many other facets (like gender relations, violence, and the calendar cycle) can be only partially understood.

In this chapter, I describe those activities that did leave material traces at Yuthu. These are diverse, ranging from subsistence practices to craft production to ritual activities. Many of these activities are not well understood because of fragmentary evidence, and some interpretations remain preliminary. Nevertheless, this chapter should be considered the first step toward creating a more complete characterization of village life during the Formative period.

The chapter is organized by the frequency or periodicity of activities. I begin with activities that shaped the annual cycle, those tied to seasonal environmental variation. Then, I describe activities that happened every day. Finally, I list activities that were carried out periodically when necessity or interest arose.

Activities that shaped the annual cycle

The Andean practice of exploiting multiple ecological zones is a key factor in social organization (see Chapter 1 for introductory discussion). In fact, throughout the world, people who live in mountain environments take advantage of the ecological diversity with mixed agro-pastoral systems, and some populations could not survive if they exploited only one zone (Rhoades and Thompson 1975). The way that societies combine trade, transhumance, and direct exploitation determines how and when social interactions occur. In order to understand the effect of scheduling farming and herding activities on the lives of villagers at Yuthu, we must (1) identify which resources were available nearby and which were located some distance from the settlement, and (2) identify material evidence that demonstrates that some or all community members were present at Yuthu at particular times in the year.

Farming

People at Yuthu relied heavily on domesticated crops; 86.57% of all carbonized plant remains were probably domesticates (n=2634, see Figure 3.1). Farming was one of the most important activities. The most common crop recovered was quinoa (87.62% of domesticates). The importance of native grain cultivation is not surprising given the high quantity of European grains like wheat and barley grown around Yuthu today. In fact, the site of Yuthu itself is planted in barley when we are not excavating. Therefore, quinoa farming was likely a local activity. Although the evidence is scarce because of difficulties in identification and poor preservation, potatoes (*Solanum sp.*) and oca (*Oxalis sp.*) were probably also grown locally on the plain, as they are today. Yuthu is located just above the upper limit for *kiwicha* cultivation (3500 masl), but some nearby farm fields might have been adequate for growing some of this native grain (*Amaranthus sp.*).

Corn was the second most common crop (8.78%). In general, the plain of Anta is too high and too cold to grow corn. Despite this, villagers today in Cruzpata do grow some corn around the edge of Lake Huaypo where ample water and the insulating effect of the lake create a small suitable microenvironment. They all agree, however, that their corn is much smaller and less tasty than that grown in the Sacred Valley, a warm river valley 600 meters lower in elevation and only a 4 hour walk from Yuthu. Many families grow some corn for household consumption, but buy the majority from farmers in lower altitude areas.

As demonstrated in Chapter 2, most of the largest sites on the high plain are located along the natural route from Yuthu to the valley. There are no large Formative period sites at lower altitudes. Although I cannot say for sure, it seems likely that villagers at Yuthu may have kept maize fields at lower altitudes about ½ day’s walk from the village.

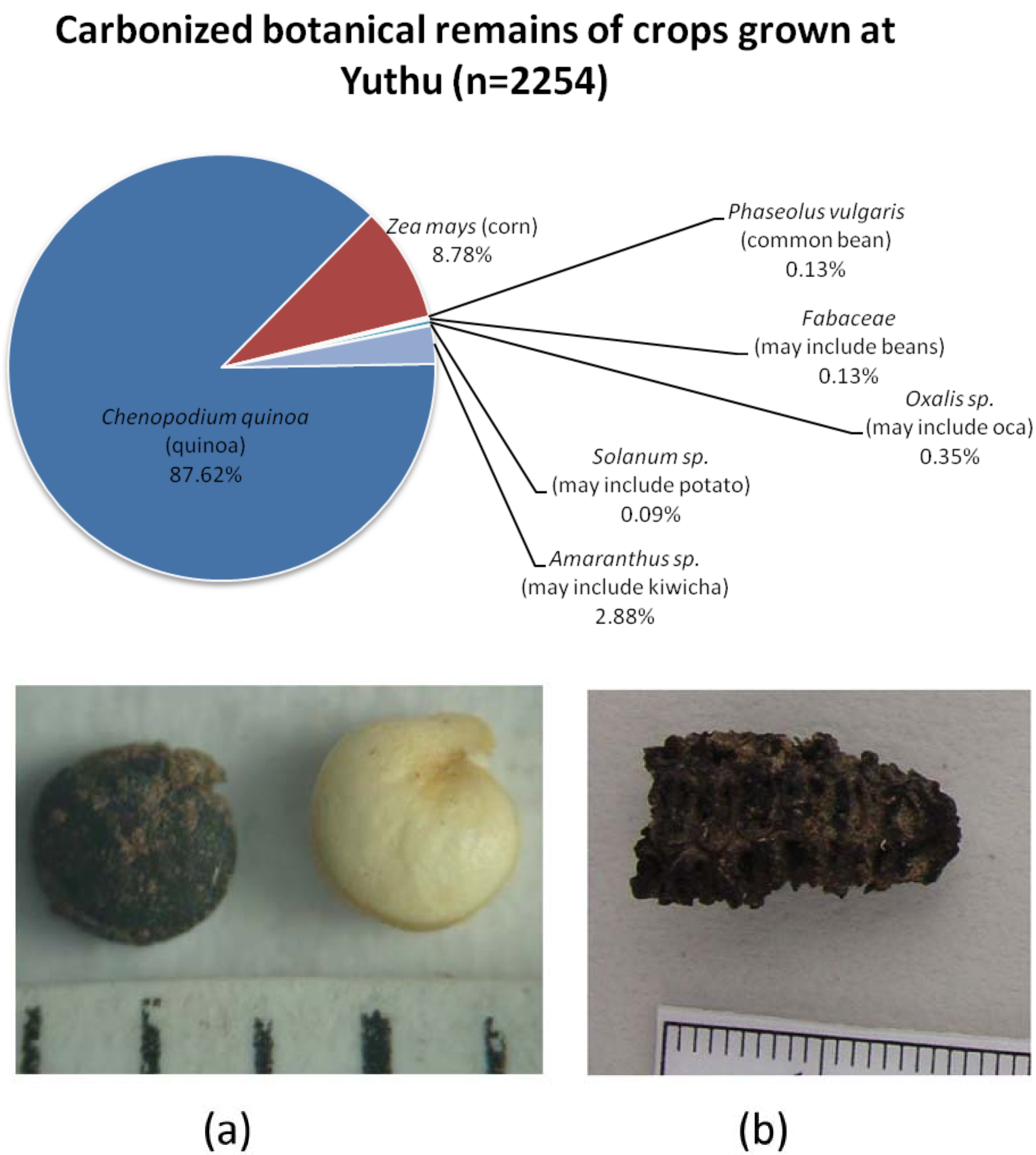


Figure 3.1: Crops grown at Yuthu. Plants recovered from Yuthu were carbonized remains recovered during flotation. Quinoa (a) and corn (b) were the most common domesticates. There is also some evidence of bean, potato, oca, and kiwicha. Photo (a) courtesy of Victor Vásquez Sánchez.

In addition to botanical remains, some tools for farming were found at Yuthu (see Figure 3.2). A groundstone biface found resting on the floor of a pit house (Intrusion I) might have been the blade of a traditional foot plow that cuts the soil vertically and is then used as a lever to turn it over (*chaki taklla*). A second possibility is that it may have been the blade of another agricultural tool that attaches at an angle to the handle in order to cut the soil horizontally (*allachu*) (Rivero Luque 2005). In addition, we found several broken fragments of doughnut-shaped stones that are attached to a handle and used to break clumps of dirt (*wini* or *warmiq p'ananan*). This tool is used today alongside the *chaki taklla* for secondary preparation of the soil (Rivero Luque 2005). Finally, we found one unmodified deer antler. Ethnographically, deer antlers are used to harvest small tubers (*qachi*) (Rivero Luque 2005). These tools have also been found at the Formative period site of Lukurmata in Bolivia (Bermann 1994).

Figure 3.2: Possible farming tools: (a) the blade of a foot plow, (b) a clod-breaker.

Herding

By 2500 BC, at least 2000 years before villagers moved to Yuthu, camelids had already been domesticated in the *puna* of Junín (Lavallée, et al. 1984; Wheeler Pires-Ferreira, et al. 1976). There is also evidence that herding was an important part of the Cusco economy at least 1000 years before Yuthu was inhabited. At Marcavalle, camelids were the primary source of animal protein (Miller 1979). Clearly, villagers at Yuthu continued an already strong herding tradition in the Cusco area.

As at Marcavalle, camelid was the most common animal bone identified at Yuthu (37.90% NISP). This number probably under represents the true proportion of camelid bones. Based on size, most of the unidentified mammal bones were probably camelid (45.76 % NISP). Therefore, the true percentage of camelids was probably closer to 80%. Considering that frogs and mice (two economically unimportant species) made up 11.38% of the faunal sample, camelids were clearly the most important animals at Yuthu (see Figure 3.3).

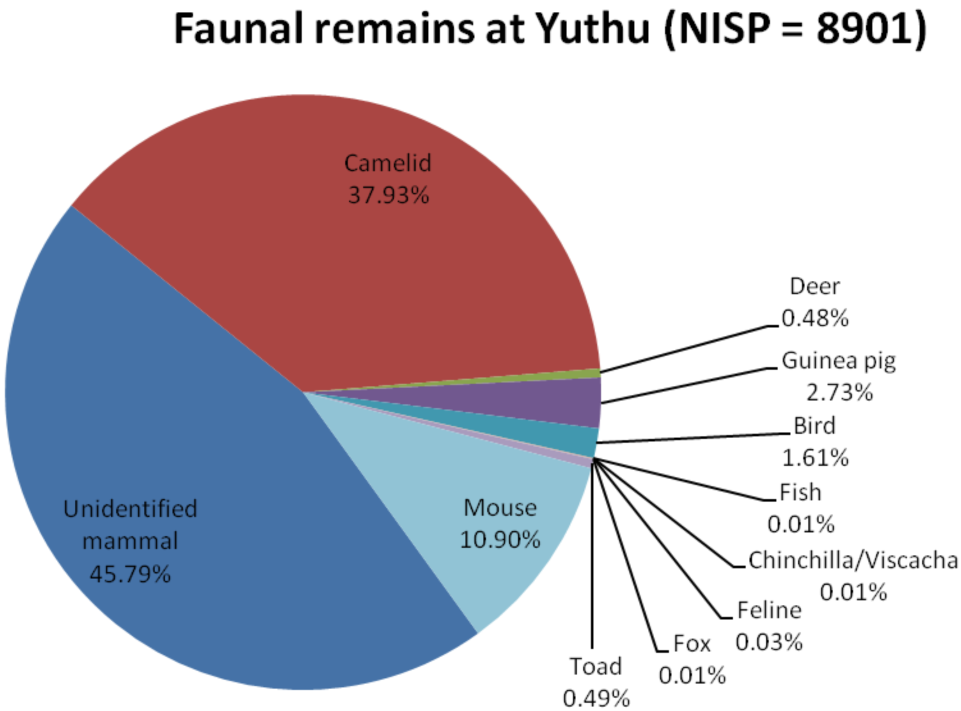


Figure 3.3: Faunal remains at Yuthu. Percentages are based on the number of identified specimens for each species.

Vásquez Sánchez and Rosales Tham were able to identify both llamas and alpacas at Yuthu by examining two anterior first phalanges and nine posterior first phalanges (methods developed by Kent 1982, 1988). The phalanges fell into two size groups, but the large and small groups did not correlate neatly with the species classification; some large animals were identified as alpacas, while some small animals were identified as llamas (see Figure 3.4). The same pattern was observed for contemporary herds at Wat'a (about 20 km away) (Vásquez Sánchez and Rosales Tham 2008). Vásquez Sánchez and Rosales Tham suggest that these animals were hybrids, the result of cross breeding thereby creating "*alpacunas*" or "*llamunas*". It seems unlikely that villagers purposefully maintained mixed herds because llamas prefer to graze on dry bunch grass while alpacas favor moister plants from highland bogs (Wheeler 1993); nevertheless, hybridization does occur frequently when herds are not managed carefully (Wheeler, et al. 1995).

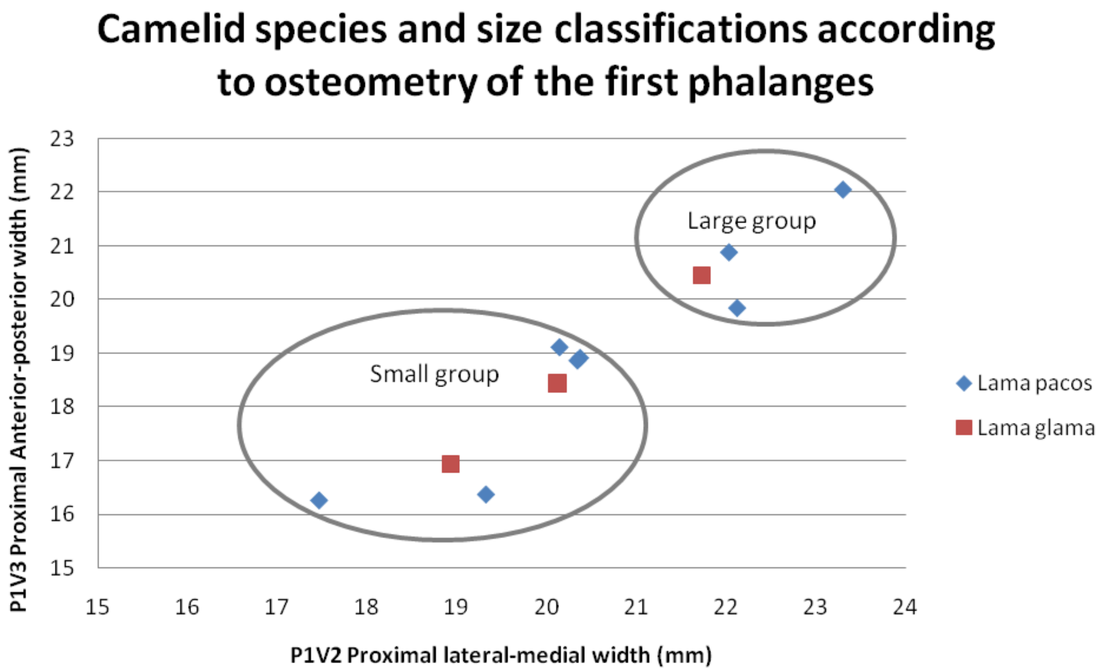


Figure 3.4: Camelid species and size classifications at Yuthu. Note that some phalanges identified as llamas fell in the small group, while some identified as alpacas fell in the large group (redrawn from Vásquez Sánchez and Rosales Tham 2009).

In order to understand herd maintenance strategies, age was recorded based on the degree of wear on superior and inferior teeth (using methods developed by Puig and Monge 1983; Wheeler 1982). Vásquez Sánchez and Rosales Tham examined 26 animals (MNI). Although both alpacas and llamas were present at Yuthu, all of the aged specimens were probably llamas based on the presence of enamel on both sides of the mandibular incisors. Only llamas (*Lama glama)* or guanacos (*Lama guanacoe)* have enamel on both sides; alpacas have it on only the labial side.

Most llamas died or were killed as sub adults or adults (older than 1 year), the largest subset between 3 and 6 years of age (see Figure 3.5). Many of the older adult llamas had very worn teeth indicating that they may have been slaughtered when they were no longer able to graze effectively or carry burdens on llama caravans (Vásquez Sánchez and Rosales Tham 2009).

It is difficult to compare this pattern directly with other samples from Cusco, not only because of the small sample size, but also because the only other study that addressed age curves was based on fused vs. unfused bones. It is still worth noting that the attrition curve at Yuthu is unlike that of Marcavalle (a sample that includes

Marcavalle and Chanapata period occupations), where Miller (1979) found mostly juvenile animals, possibly selected for their tender meat (51% of the bones were unfused and 30% of the camelids had died by 1 year of age). Nor is the pattern at Yuthu exactly like the one from the Inka period site Qhataq'asallaqta where most animals were slaughtered only after they had passed their prime as wool sources and caravan pack animals. At that site, 23% of the bones were unfused and only 2% of camelids died by 1 year of age. The pattern at Yuthu seems to be closer to that of the Inka period site, but with the addition of some younger adults who had reached maturity. Perhaps herders at Yuthu selected some young (yet mature) llamas to maximize the meat from each animal. Alternatively, they may have slaughtered young males to maintain a desirable sex ratio in the herd and encourage breeding of the best quality animals.

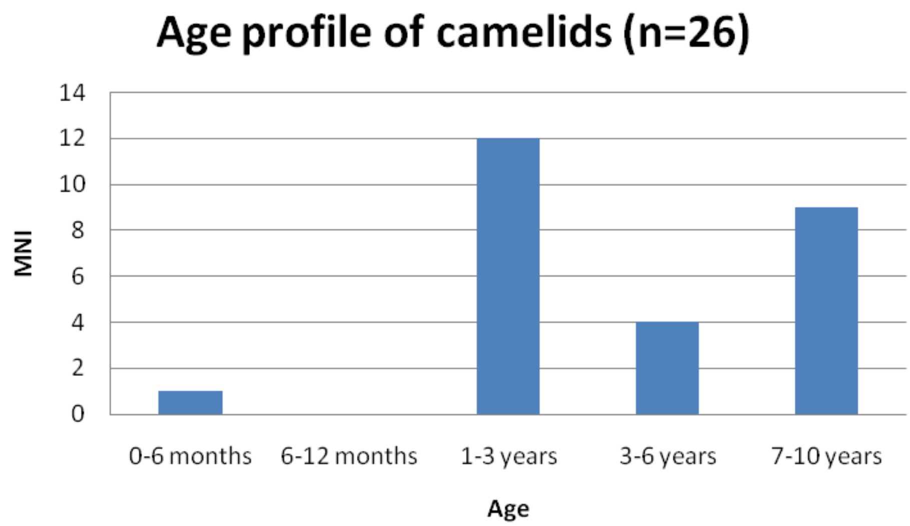


Figure 3.5: Age profile of camelids at Yuthu based on degree of tooth wear. The presence of enamel on both sides of the mandibular incisors indicates that all animals included in this chart were probably llamas. Most llamas were slaughtered or died shortly after reaching maturity or in old age (redrawn from Vásquez Sánchez and Rosales Tham 2009)

Storage

There were two kinds of storage features in the domestic Southern Sector at Yuthu. Both were simple pits dug into the soil with roughly vertical sides and flat bottoms (see Figure 3.6). The more common storage pit type was shallow with vertical walls and a slightly rounded bottom (Figure 3.6.a). When I asked men and women from the village, many said that these pits were like potato storage pits that they line with eucalyptus leaves to preserve the potato. Unfortunately, if potatoes or another tuber had been stored, no remains would be preserved. Eucalyptus is not native to Peru. However, Gade (Gade 1975) found that in the 1960s peasant farmers used the native species *muña* (*Minthostachys spp.*) to line storage pits. Pits had to be lined to prevent potatoes from sprouting upon contact with soil. In addition, *muña* has properties that discourage fungi, bacteria, and larva much like the acidic eucalyptus.

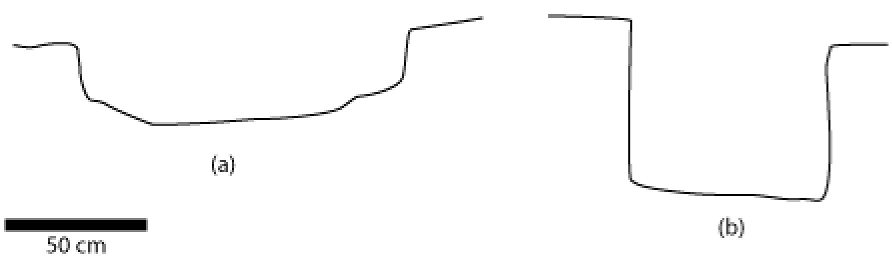


Figure 3.6: Two types of storage pits in the domestic sector: (a) a shallow, straight-walled pit with a rounded bottom and (b) a deeper straight-walled pit with a flat bottom.

These features held large quantities of carbonized botanical remains, but it is difficult to determine with certainty which plants were stored and which might have been incorporated into domestic trash that filled the abandoned pit. Many pits probably had two stages of use: (1) primary use to store potatoes or other foods and (2) secondary use as a trash pit once it was no longer suitable to store food. Overall, these pits contained many carbonized plants (listed here from most to least common): quinoa, corn (seeds and cupules), *Galium sp.*, *Ambrosia sp.*, and one seed of *Amaranthus*, *Trifolium,* and *Verbena*. In addition to plant remains, these pits also contained animal bones (listed here, beginning with the most common): un-identified mammal (small fragments from flotation), field mouse, guinea pig, and llama. These remains are probably domestic trash from the secondary use of the pit.

In Intrusion C, I found two layers of soil. The lowest was a ring of burned soil along the sides of the base. Above that, soil mixed with domestic trash filled the rest of the pit. It is possible that villagers burned the stored contents of the pit after it had become infested with pests and could no longer be used. If that were true, the carbonized remains in the lowest layer of soil may be from plants that were actually stored during primary use. These included: *Chenopodium quinoa*, *Galium sp.*, *Verbena sp*., and *Ambrosia sp.*

The second type of storage feature was a deeper pit with straight walls and a very flat base (Figure 3.6.b). Carbonized remains recovered from the pit included (from most to least common): quinoa, *Ambrosia*, corn, *Poaceae*, *Verbena*, and one seed of *Galium* and *Scirpus*. Animal bones included unidentified mammal, field mouse, llama, one duck bone, one unidentified bird bone, and one deer bone. These were probably also domestic trash from the secondary use as a storage pit.

The most common carbonized plant recovered was quinoa. Therefore, it seems likely that quinoa was often stored in these pits, though it may not have been the only thing. The common occurrence of field mice is probably the result of those rodents eating stored foods or domestic trash. It seems especially likely that the deeper pits that included a wide variety of plant and animal remains were intentionally filled with domestic trash.

Discussion of activities that shape the annual cycle

The high proportion of quinoa indicates that farming fields in the high plain that is suitable for growing the pseudo-cereal was a major factor shaping the annual cycle. Planting probably occurred in November to December with harvest around April to June. Corn was a smaller, but still significant part of the diet. It seems most likely that farmers living at Yuthu planted and harvested their own fields located about a 1/2 day walk from the village. Because the climate of the Sacred Valley and the growing season for corn differs from that of quinoa and potatoes, it is likely that these activities could be scheduled to complement farming in fields closer to the village. Harvested crops were stored in small pits for use throughout the year and to use as seed for the next year's planting.

The faunal evidence shows that camelid herding was an equally important part of life at Yuthu. How did villagers incorporate this activity into daily life? Herding is a major activity that affects mobility, settlement systems, community structure, and scheduling. Ethnographically, herders in the high altitude *puna* have more than one residence, frequently including (1) a main residence with rooms around a patio surrounded by corrals, (2) seasonal huts in herding sectors, and (3) an infrequently used house in town with a central patio and corrals (Flannery, et al. 1989; Flores Ochoa 1979

[1967]; Göbel 2002; Tomka 1993). Herders have more than one residence because in the harsh *puna*, herds have to be moved to different pastures in order to feed the flock year round. The main residence is usually located between summer and winter pastures.

These herders are neither fully sedentary nor nomadic. Some family members stay in the main residence year-round while others visit temporary houses in higher dry-season pastures or agricultural posts in lower-altitude zones. In southwestern Bolivia, Tomka found that the seasonal homes were no more than 8 hours from the main residence and that while most of the family may move to the farming home during planting season, only 1-4 family members would go to the herding station at any one time (Tomka 1993).

These ethnographic descriptions of herders raise the question that people at Yuthu might have been similarly mobile, with multiple residences at different altitudes. Ethnographic studies generally describe herders living in very poor environments that are not adequate for agriculture. Many of these groups may have been pushed up into such marginal locations after Spanish pressures effectively altered the indigenous economy (Flores Ochoa 1979 [1967]). Although it is too high to grow large quantities of corn, Yuthu differs from such cases because it is not located in a poor agricultural zone.

Today, people living on the plain of Anta do not herd llamas and alpacas. They tend sheep and keep small numbers of cattle for agricultural work. Camelids are restricted to the high *puna* above 4000 masl that surrounds the plain. In contrast, Flores Ochoa uses ethnohistoric documents and some archaeological evidence to demonstrate that this area was the main pasture of Inka Cusco before the Spanish invasion. He argues that the rapid transition from llama and alpaca to sheep herding was the result of new taxes implemented by the Spaniards who culturally preferred sheep over native alpacas. Although the plain surrounding Yuthu is certainly well-suited to herding camelids, cultural preference has changed so that modern farmers no longer keep these animals (Flores Ochoa 1982). On this agriculturally fertile plain, seasonal movement with herds may not have been necessary as long as the population was not too high.

The Formative period settlement pattern and village plan are unlike those of ethnographic herders. In those cases, the main residences tend to be scattered, but close enough to see each other on the horizon each other. Each *estancia* has its own central patio, corrals, and sometimes even a ceremonial corral. In contrast, at Yuthu the houses are clustered close together and the ceremonial sector seems to be shared by the entire village. The small area excavated did not recover any evidence of corrals. It is possible that the very small sites with Chanapata pottery identified by the Xaquixaguana Plain Archaeological Survey might have been temporary herding stations (see Chapter 2). It will not be possible to understand herding practices until many more Formative sites and households are excavated.

<u>Daily activities in the village</u>

Though there is not yet sufficient evidence to be sure, as of now, it seems that villagers lived at Yuthu year-round. Daily life was full of many activities, some of which would have been carried out every day.

Raising guinea pigs

After camelids, guinea pig bones were the second most common economically useful animal (2.73 % NISP). Ethnoarchaeological studies have shown that guinea pig (*cuy)* bones are often underrepresented in archaeological sites because many are eaten outdoors and the discarded bones are consumed by scavengers (Valdez and Valdez 1997). Therefore, it is likely that guinea pig was an even more important part of the diet than the number of recovered bones suggests.

There was no evidence of a special structure to raise *cuy* at Yuthu. This is not surprising considering that in highland houses today most guinea pigs are raised in kitchens, in close range of cooking scraps like potato peels, and close to the warm hearth. Though an ethnoarchaeological study found that a kitchen that had been used to raise *cuy* for 50 years was swept clean leaving no evidence for an archaeologist to recover (Valdez and Valdez 1997), I found a guinea pig coprolite in the early levels of occupation debris inside the earlier pit house (Intrusion H). Therefore, rather than having a special structure for raising guinea pigs, it seems that guinea pigs were kept inside homes, close to the cooking hearth where they were fed and cared for every day.

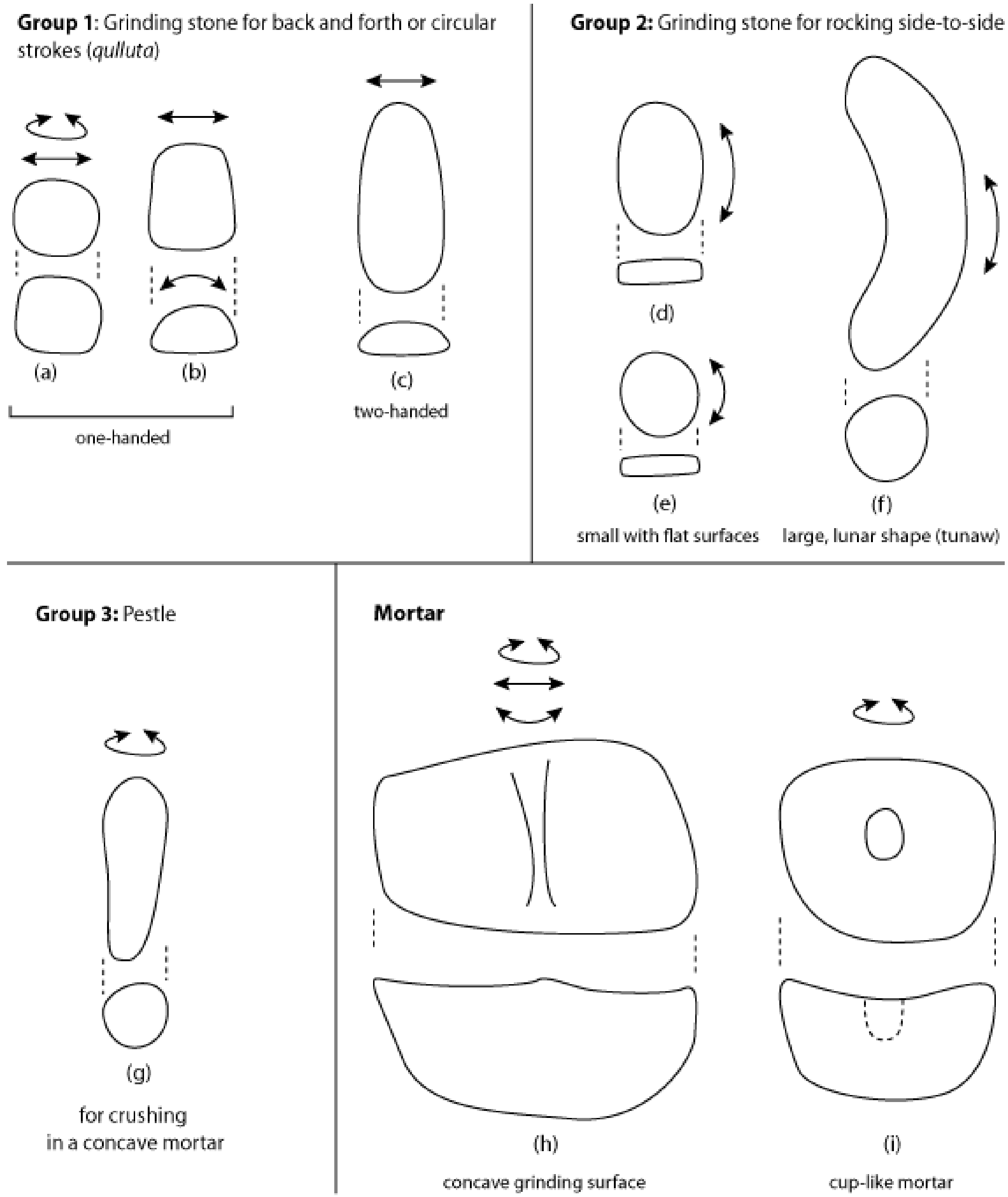


Figure 3.7: Typology used to classify grinding tools at Yuthu: Group 1 includes stones used to grind with back and forth or circular strokes. Group 2 includes stones used to grind by rocking the stone side-to-side. Group 3 includes pestles for crushing. Mortars had concave surfaces or cup-like basins. Not to scale.

Grinding

Food preparation was certainly a principal daily activity. Grinding plant material was an important part of food preparation at Yuthu. Most likely, this was true at many contemporary sites, but prior to this project no typology for Formative period grinding stones had been developed. My experience in many Andean kitchens (as *sous chef* or curious observer) has led me to believe that no grinding stone has ever been used exclusively for a single purpose. Informal interviews with women who helped to excavate Yuthu tend to support this belief. When we found grinding stones, I would often ask them, "What would you do with this stone?" The most popular response for the small hand-sized stones (*qulluta)* was simply "I would grind condiments." When pressed further, women could think of many other things to do with the stones. Grinding grains, seeds, and condiments were the most common suggestions, but I have also seen kitchen stones used as hammers and paperweights.

Therefore, the typology developed to classify grinding stones from Yuthu is based not on the particular task that the stone was used for, but on the shape of the stone and how it might have been used in a mechanical sense. Grinding stones were distinguished by two main characteristics: (1) The size of the stone. Did it fit into one hand or would two hands have been necessary to use it? (Even smaller groundstone objects are discussed below). (2) The motion that produced the grinding surfaces. Was the stone pushed back and forth or in a circular motion against the lower surface? Or was the stone rocked from side to side against the lower surface?

Types of grinding stones found at Yuthu (Figure 3.7)

<u>Group 1: Stones for grinding with back and forth or circular strokes</u>

These stones had one or more flat surfaces that were produced by grinding against a flat or slightly concave surface. Today, stones similar to these are called *qullutas.* In addition to flat grinding surfaces, many of these stones had pock marks that indicate that they were also used for pounding or hammering.

Type A: Roughly spherical stones that fit into one hand with one to several flattened surfaces created by grinding with back and forth or circular strokes. Many also had pecked surfaces.

Type B: Oval to rectangular stones that fit in one hand and have a plano-convex cross section. While the flat surface was created by grinding back and forth, the convex surface of some of these stones could have been used to grind with a rocking motion.

Type C: These stones were similar to subtype B, but large enough to fit in two hands.

<u>Group 2: Stones for grinding by rocking side-to-side</u>

These stones have curved edges that were rocked side-to-side against a flat or concave surface. Similar rocker grinders called *tunaw* or *k'utuna* today.

Type D: Oval stones with rectangular cross sections. These stones were primarily rocked side-to-side along their edges. Figure 3.8 shows a modern example. The green herbs along the edge of the hand stone and on the mortar show which surfaces are used most often for grinding. It is also possible that the flat sides were used to grind with back and forth motion or were used as small grinding slabs.

Type E: These stones were similar to Type D, but they were circular instead of oval.

Type F: Large, lunar shaped stones with round cross sections. To grind, each end of the stone is held in one hand and the stone is rocked from side to side against a flat or slightly concave surface. Today, this type of stone is called a *tunaw* and is commonly used to grind corn. It is interesting to note that the only example of this kind of stone was found at Yuthu. It was not recovered from a domestic context. The *tunaw* had been incorporated into an alignment of stones that was made after the site was no longer occupied.

<u>Group 3: Pestles</u>

Type G: Long stones with a round cross section. These stones often had pecked marks in the end and were used for crushing and grinding in a cup-like mortar.

Figure 3.8: A modern example of a small grinding stone that is oval in shape with a rectangular cross section (Type E). This type of stone is primarily used by rocking it back and forth along its edge against a grinding slab with a slightly concave surface.

Grinding slabs and mortars (see Figure 3.7)

These large stones were very heavy and used as bases for the grinding described above. Grinding slabs similar to these are called *maran* or *qhuna* today.

Type H: These stones had one or more slightly concave grinding surfaces and could have been used with back and forth, circular or rocker grinding stones.

Type I: These stones had a concave surface and an additional deep cup-like grinding surface. They could have been used as mortars for pestles.

Although the typology described above does not address function, the stones have been stored unwashed for future analyses of phytoliths, starches, or other microscopic remains that might establish a range of grinding activities for each “type.” For now, I cannot say for sure, but I suspect that many were used to grind grains such as quinoa or corn, freeze-dried potatoes (*ch’unu*), and condiments like wakatay (*Tagetes terniflora* H.B.K).

Because the stones were unwashed, I could not identify the raw material for each object. In general, these tools were made from smooth river cobbles comprised of igneous rocks like dacite, andesite, diorite, and granodiorite which are not part of the local geology and would have been collected from rivers or streams. There were also some tools made from the sedimentary rocks that may have been available nearby or en route to the higher *puna* zone or the cornfields below.

Polishing, smoothing, or pulverizing

Some of the groundstone objects found at Yuthu were small enough to be held between the thumb and fingers. I have separated these from tools used to grind foods based on size. It is very difficult to assign specific functions to these stones, but they may have been used to polish or smooth pottery, pulverize pigments, or grind condiments and medicines. These activities may have been carried out daily or periodically.

The typology for these stones is based only on their form, taking into consideration two primary characteristics: (1) How the stone could be gripped. Can the object be held between the thumb and the four fingers? Or would it be grasped with a pinch-grip? (2) The shape of the stone.

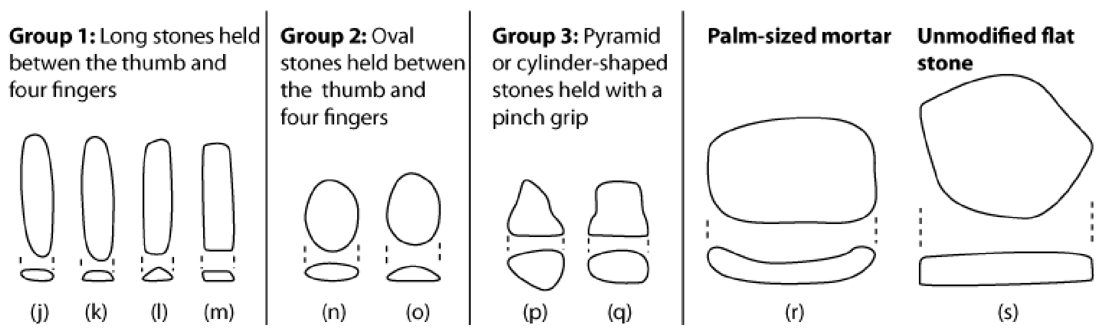


Figure 3.9: Typology for small grinding stones that could be held with the fingers. Group 1 included long stones that could be held between the thumb and four fingers. Group 2 included round pebbles that could be held between the thumb and four fingers. Group 3 included stones that could be pinched between the thumb, index finger, and middle finger. There were also some palm-sized flat and concave stones that might have been used as small mortars. Not to scale.

Types of small polishing or grinding stones

<u>Group 1: Long stones held between the thumb and four fingers</u>

These stones were narrow and long, approximately the width of a human palm or slightly longer. Most had between 1 and 4 flat surfaces that indicate they were rubbed back and forth across a hard surface. Many of these types may represent different phases in the "reduction" of a single class of tool during its use life.

Type J: These stones did not have a flat surface, but may have been stones that were only beginning to be used.

Type K: These stones had a plano-convex cross section with only one surface flattened from wear.

Type L: These stones had a triangular cross section with three surfaces flattened from wear.

Type M: These stones had a rectangular cross section with four surfaces flattened from wear.

<u>Group 2: Oval stones held between the thumb and four fingers</u>

These stones were oval river pebbles shorter than the stones in Group 1. Some had a single flat surface.

Type N: Oval stones that did not have a flat surface, but may have been stones that were only beginning to be used.

Type O: Oval stones with a plano-convex cross section and a single surface flattened from wear.

<u>Group 3: Pyramid or cylinder-shaped stones held with a pinch grip</u>

These stones were very small and shaped so that they could be "pinched" between the thumb, index, and middle finger.

Type P: Roughly pyramid-shaped stones with a flat, worn base.

Type Q: Cylinder-shaped stones with a flat, worn base.

Flat or Concave stones

Type R: Palm-sized mortars. These stones were thin (less than 5 cm) and about the size of a human palm. They had one concave surface that may have been used as a base for small grinding tasks.

Type S: Unmodified flat stones. There were some unmodified flat stones about the size of a human palm. Though it is hard to determine with certainty, these stones may have also been used as the basal surface for pulverizing or small grinding projects.

Gathering fuel

Gathering fuel for cooking was probably an activity that was carried out every day or nearly every day. *Ambrosia arborenscens (markhu)* is a woody shrub that grows in the Cusco area. The high proportion of *Ambrosia sp.* in hearths (12.86% in hearths inside houses and 7.07% in outdoor hearths compared with 6.72% overall), indicates that it may have been collected and used for fuel at Yuthu as it is today in nearby Chinchero (Franquemont, et al. 1990). Many other kinds of fuel may also have been used. Today, the stalks of quinoa are frequently burned as fuel (Gade 1975). This practice may explain the very high proportion of carbonized quinoa seeds throughout the site. In addition camelid dung and guinea pig droppings are used today in homes without kerosene stoves (Franquemont, et al. 1990). These droppings could be gathered from the kitchen or camelid grazing areas.

Cooking

Cooking took place many times each day. The largest cooking hearths were located in the domestic sector in open areas outside of structures. These hearths were deep pits with sloping walls and were filled with multiple layers of ashy soil and trampled surfaces that accumulated on top of each other (see Chapter 4). These hearths contained the carbonized botanical remains from many possible food species including quinoa, corn, and possibly kiwicha (*Amaranthus sp.*), wakatay (*Asteraceae*), and potato (*Solanum sp.*). These hearths included llama, guinea pig, birds (duck, coot, unidentified bird), deer, and unidentified mammal bones.

Smaller cooking hearths were located inside domestic structures. They had vertical walls and no trampled surfaces. Rather than being filled with accumulating strata of ash, these hearths were filled during use, dug out and filled again with new ash. These hearths contained carbonized botanical remains from many possible food species including quinoa, corn, wild greens (*Brassica sp.*), and possibly oca (*Oxalis Sp.*). They also included camelids, guinea pig, heron, hawk, and unidentified mammal bones.

At present, the sample of botanical and faunal remains are too small to detect significant differences in the species represented that may help us to understand how cooking practices varied inside and outside of structures. In contrast, pottery vessel forms in hearths located inside and outside of the houses differed in statistically significant ways (χ^2=47.285, df=4, p < .001; see Table 3.1). More specifically, cooking and storage vessels were found in differing proportions in these hearths. Restricted vessels with a neck were much more common outside; restricted vessels without a neck were more common in indoor hearths. In contrast, open serving vessels occurred in both areas in similar numbers. This indicates that the kind of cooking done in each context was different, though it is hard to specify in which ways.

Table 3.1: Ceramic vessel forms found in hearths inside and outside of structures.

	Restricted vessels with a neck	Restricted vessels without a neck	Open vessels	Open vessels with diameter larger than 30 cm	Lids
Hearth in house	58 (47.93%)	42 (34.71%)	17 (14.05%)	1(0.83%)	3 (2.48%)
Open air hearth	295 (71.43%)	40 (9.69%)	60 (14.53%)	10 (2.42%)	8 (1.94%)

It is most likely that restricted vessels (both with and without necks) were used to soak, boil, and toast food. Many sherds had thick organic residue on the interior (Figure 3.10, right). Others had thick white residue that did not taste salty (Figure 3.10, left). These sherds have been kept unwashed for possible further analysis of food preparation in both indoor and outdoor contexts. Unfortunately, since the pottery is globular, it is not possible to identify the form of the vessel from the body or base sherds that contain this residue.

Figure 3.10: Residue on the inside of pottery sherds may someday provide additional information on cooking practices at Yuthu. Black organic residue was the most common (right) though some pots had a thick white residue that was not salty (left).

Processing and cooking camelid

Camelid bones were found throughout Yuthu in hearth and domestic trash contexts. Burning data were collected for camelid bones by Vásquez Sánchez and Rosales Tham (Vásquez Sánchez and Rosales Tham 2009). Only 9.73% of the camelid bones that could be identified to skeletal element were burned (NISP = 2,385). These included parts of the neck, trunk, limbs, and feet. The head was never burned.

Based on Miller's (1979) ethnoarchaeological study of camelid processing, the most common breakage and burning at Yuthu suggest some cooking practices. This low proportion of burning is not surprising given that meat is often boiled and served in stews in the Andes, though it may be occasionally roasted. Miller found that parts of the head were almost always boiled, never burned. The most frequently burned elements at Yuthu were scapulae, patellae, and third phalanges. Miller mentions that lower limbs are often laid in a fire to singe off all the hair before further butchering. Then, the hoof (including the first and second phalanges) is cut off and set aside to boil. It is possible that a similar cooking technique resulted in the burned phalanges at Yuthu. Unfortunately, data are not available to examine which skeletal elements were found in indoor and outdoor hearths.

Table 3.2: Camelid cut marks and burning by skeletal element (from data in Vásquez Sánchez and Rosales Tham 2009)					
Skeletal Element	NISP	Cut	Burned	% Cut	% Burned
Cranium	117	0	0	0%	0%
Hyoid	5	0	0	0%	0%
Maxilla	11	0	0	0%	0%
Mandible	58	0	1	0%	1.72%
Teeth	35	0	0	0%	0%
Cervical vertebrae	178	1	15	0.56%	8.43%
Thoracic vertebrae	184	0	13	0%	7.07%
Lumbar vertebrae	39	0	1	0%	2.56%
Coccyx	10	0	0	0%	0%
Sacrum	13	0	0	0%	0%
Ribs	409	4	52	0.98%	12.71%
Sternum	15	0	0	0%	0%
Scapula	93	1	29	1.08%	**31.18%**
Humerus	183	0	17	0%	9.29%
Radius-Ulna	154	0	17	0%	11.04%
Metacarpal	191	1	29	0.52%	15.18%
Carpal	28	0	3	0%	10.71%
Pelvis	78	0	8	0%	10.26%
Femur	174	1	9	0.57%	5.17%
Tibia	174	0	13	0%	7.47%
Patella	10	0	3	0%	**30.00%**
Metatarsal	33	0	4	0%	12.12%
Tarsal	6	0	0	0%	0%
Calcaneus	20	0	1	0%	5.00%
Astragalus	34	9	5	**26.47%**	14.71%
1st phalange	94	1	6	1.06%	6.38%
2nd phalange	34	0	5	0%	14.71%
3rd phalange	5	0	1	0%	**20.00%**
Total	2385	18	232		
Percent		0.75%	9.73%		

Personal ornamentation

Very few objects used for personal ornamentation were found at Yuthu (despite sorting the heavy fractions from 1,012 liters of flotation samples). The few items included: (1) clothing pins made of metal and bone that probably held together garments and (2) beads made of bone, greenstone, and shell (see Figure 3.11). Villagers probably wore these beads and pins during daily life. It is interesting to note that none of these items were found in burial contexts; personal ornaments for the dead were not recovered.

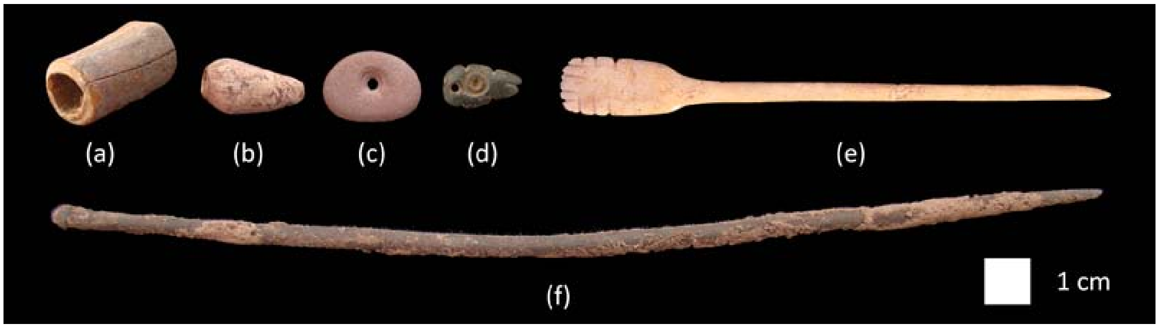


Figure 3.11: Objects used for personal adornment included: beads made of bone (a), shell (b), and stone (c and d); and clothing pins made of bone (e) and metal (f).

Cranial modification

Cranial modification is a practice that is carried out every day by mothers and children. And, the shape created by modification may mediate social interactions throughout life. Every individual buried at Yuthu (with the exception of Burial 2) had a modified cranium. According to Spanish chronicles, the intentional reshaping of the head served as an indicator of group identity within the Inka Empire, but was also practiced before the Inka rose to power (Cobo 1990 [1653]; de las Casas 1875 [1561]; Marroquín 1944). The notion that *intentional* cranial modification marked ethnic identity has been valuable for understanding cases of cranial modification in earlier Andean states (e.g. Blom 2005; Hoshower, et al. 1995). These societies were intensely hierarchical, geographically expansive, and ethnically diverse. In these socio-political contexts, marking group identity was important: (1) in conflicts between ethnic groups over territory, resources, and status, and (2) as a mechanism for the state to impose order over myriad subjugated groups. Among the Inka, at least, visible markers of ethnicity such as dress and hairstyle were important imperial strategies for tracking and managing the diverse populations within the empire (Mannheim 1991).

Most bioarchaeologists have used these ethnohistoric descriptions as the principal guide to structure research on cranial deformation for all time periods in the Andes. In most approaches, head shape is treated as if it were just one of many objects recovered from a grave, though with the special advantage of being an immutable characteristic of the individual throughout their life that endured in death (Blom 2005; Gerszten 1993; Torres-Rouff 2002). Different shapes are classified into broad categories based on form so that "types" can be correlated with other archaeological data (especially ceramic types and strontium signatures) in order to identify ethnic groups according to statistically significant correlations among these variables.

This approach effectively masks some of the most interesting aspects of cranial modification. I would like to propose an alternative approach in which *cranial modification is considered the material marker of a social practice that involves interaction between people with different social identities during a particular phase in life (caregivers and very young children).*

Although it receives less attention in the literature, there is evidence as to what this social practice was like in certain Andean contexts because dry desert conditions have preserved the device used for modification. On the north coast, a Late Intermediate period cradleboard that included a device for binding the infant's head was recovered (Verano 1997). On the south coast, an infant was found with a set of three modification devices: one that he was wearing, and two that would have been used as the child learned to crawl or walk (Allison, et al. 1981). In addition, there has been some attempt to infer methods based on the shape of the skulls themselves (Pomeroy, et al. 2009). These studies point to a variety of methods used and the duration of the practice during prehistory. While cradle boarding may have been used only a short time until the child learns to walk, the system of headdresses with flat boards, cords, and ropes could be used for much longer, perhaps until the skull bones had all fused. Therefore longer processes lasting throughout childhood may result in more standardized shapes while short-term practices may result in higher variability.

A comparative study of cranial modification in Eurasia and the Andes has suggested that homogeneity of head shaping emerged with increasing state influence in both regions, citing the potential advantages of emulation of the powerful state as well as the imposition of standard shapes by imperial powers in order to distinguish and classify groups within the empire (Torres-Rouff and Yablonsky 2005). Additional studies in the Andes support the proposition that cranial modification was more standardized in state-level societies (Allison, et al. 1981; Pérez 2007). The lack of standardization within and between Formative Cusco villages raises the question of whether non-standardized cranial modification in pre-state societies may have resulted from practices with goals other than signaling ethnic affiliation.

How can we think about differing kinds of interactions between caregivers and children in terms of whether or not the caregiver is trying to mark the ethnic group of the child? Could the shape be entirely unintentional? Indeed, modification from cradle boarding in the Andes has been considered unintentional. Ethnography in North America, however, has demonstrated that mothers are conscious that placement of the infant on the board and particular types of binding will create certain head shapes (Logan, et al. 2003). The North American case demonstrates that the term “unintentional” is misleading. It may be more accurate to think of cranial modification in these situations as a secondary effect rather than “unintentional.”

Rather than trying to infer intentionality, it is more productive to focus on the practice in terms of the goal of uniformity. In the archaeological examples above, the elaborate set of headdresses worn by the child raised in a state indicates that the main purpose of those objects was to create a specific head shape. It is likely that changing to a new headdress may have gone along with important rites of passage, or steps in becoming a full Wari person. In contrast, the short period of cradle-boarding in a non-state society indicates less concern with creating a specific shape. In that case, the primary goal may have been mobility of the mother, allowing her to easily transport the infant with no direct concern about modifying the head shape, or a more general and difficult to recognize goal of “proper child rearing.” While this discussion has been limited in scope, I would like to emphasize that ethnic marking was not the only possible function of cranial modification in the ancient Andes.

The social practice of cranial modification at Yuthu

Formative villagers of Cusco practiced a single “type” of cranial modification. The frontal and occipital bones were compressed in an anterior-posterior manner that resulted in the non-uniform expansion of the parietal bones, often forming two distinct lobes on either side of the sagittal suture; the lobes were frequently asymmetrical in size and angle (see Figure 3.12). The particular type of asymmetrical “bilobed” modification found at Yuthu is often subsumed into a general category of fronto-occipital/tabular oblique modification that is contrasted with the general category circumferential/annular style in order to make broad comparisons (Blom 2005; Pomeroy, et al. 2009). This lumping makes this type of deformation appear to have been uniform, though it rarely was. Conventional scholarly practice has masked the important variation that might be linked to the particular practice that created this form (see Hoshower, et al. 1995; Pomeroy, et al. 2009).

Figure 3.12: Cranial modification at Yuthu: a view from the top. Note the asymmetry and total lack of uniformity in head shape.

At Yuthu, there was a true lack of uniformity of asymmetry and degree of modification suggesting that the cultural practice that created this "type" may have involved less standardized methods or may have lasted for a shorter period of the child's life when compared with the more complicated series of headdresses known from the ethnohistoric record. It is possible that cranial deformation at this time was a secondary, though not necessarily unintentional, consequence of a certain child-rearing practice that lasted only as long as the infant was carried by his or her mother. The type of deformation at Yuthu was not the flattened posterior typically produced by cradle boarding, though it is possible that a stronger binding of the infant to the board could have resulted in this more extreme shape. It is more likely that swaddling produced this shape. In fact, certain swaddling devices employed by the Wari were the first of several steps in creating a similar, but more standardized, shape (Allison, et al. 1981).

Was head shape an ethnic marker? Valerie Andushko (personal communication) reports that this modification type and the high degree of variability within it were common throughout the Cusco area during the Formative period. Given that, it is unlikely that head shape was an important marker of group identity in day-to-day interactions. If, however, villagers from Yuthu encountered people with unmodified or markedly different shaped heads while traveling, or when visitors came from distant places, they would take note of it. In those scenarios, the shape of their own heads would become a visible marker of group membership (sensu Wobst 1977; Wobst 1999). Outside of a multi-ethnic state, these kinds of encounters may have been less frequent, and may have involved fewer conflicts that required expression of group membership.

Discussion of daily activities at Yuthu

Many activities structured everyday life at Yuthu. These included not only those activities related to maintaining the body, but also practices that were part of the creation, expression, and negotiation of social identity within the community. We still lack evidence that would allow us to understand how these tasks were divided among family members or community workgroups. Moving forward, future research focused on understanding the social structure of daily life will be particularly important.

Periodic activities in and around the village

Some activities were neither major undertakings that shaped the annual cycle nor quotidian tasks that filled life every day. Rather, these activities might have been performed as need arose, or as time allowed. The frequency of these practices probably varied—based on season, access to resources, and skill. Some subsistence related activities like hunting, plant collecting, and butchering were probably fairly frequent. A subset of craft production activities likely filled spare moments during most days (like spinning wool, or making bone tools), while others were probably shorter-duration events of concentrated efforts (like pottery production or chopping wood).

Other activities were rare, and created (or were required by) significant moments in public and/or family life in the village. These included construction of houses and community structures, interpersonal violence, and certain rituals.

Hunting and trapping

Hunting and trapping wild animals was not an economically important activity at Yuthu, though it may have been important for social or ritual reasons (see bird related ritual section below). Hunting was also a minor activity at Marcavalle, the only other Formative site for which we have comparable data (Miller 1979). At Yuthu, wild species made up 15.18% of the fauna at Yuthu (NISP). Excluding frogs and mice (12.85%), only 2.33% were animals with economic or social value.

The majority of animals were probably hunted relatively close to the village. The most common were birds (1.63%). Most bird remains were not identified to species, but of those that were, duck was most common, followed by eagle hawk, coot, owl, hawk, heron and macaw. Water birds like duck, coot and heron were probably hunted in or around Lake Huaypo, while hawks and owls are common predators on the surrounding plain. All of these species are year-round residents in Cusco (Schulenberg 2007), so it is not possible to specify in which season they were hunted. Deer comprised 0.54% of the total faunal remains. Compared to the total camelids (36.88%), it is clear that deer were a very small part of the diet. Other locally available small mammals such as fox, chinchilla, and viscacha were recovered in small numbers. Predatory cats were present at Yuthu only as single skeletal elements; a puma was represented by an upper M3 tooth and a pampas cat by a humerus.

Species from the lowland forests were probably obtained by trade rather than direct exploitation. The macaw is a bird from the jungle of the departments of Cusco or Puno. A large fish jaw fragment (the only fish bone recovered) was not identified to species, but Vásquez Sánchez and Rosales Tham suggest that it may also be from a jungle river.

The total absence of local fish at Yuthu may seem surprising given the proximity of the site to Lake Huaypo. Though it is possible that very small fish were ground and made into stew leaving no archaeological trace, it is also possible that villagers did not eat fish. In fact, the Inka did not exploit fish resources from the surrounding lakes and rivers (Kendall 1973).

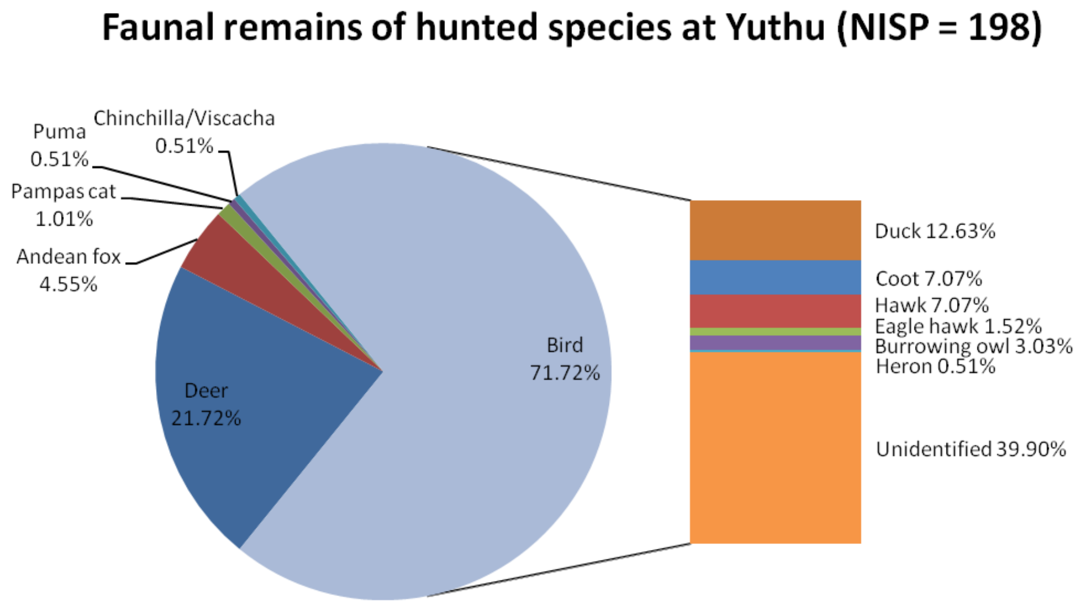


Figure 3.13: Wild species that were hunted or trapped. These species account for only 2.22% of faunal remains at Yuthu.

There is little evidence as to how people might have hunted. Obsidian projectile points may have been used as darts. It is also possible to hunt birds and small mammals with nets or other kinds of traps made of perishable materials, but none have been recovered at Yuthu.

As a final note, it is curious that although the name of the archaeological site is the Quechua word for a tinamou, or Andean partridge, not a single *yuthu* bone was found at Yuthu.

Wild plant collecting

Although the villagers of Yuthu relied primarily on domesticated plants for food, some wild plants were also important (17.12% of all identified carbonized plant remains were probably wild species). These plants were probably used for food, as spices, as medicine, to thatch houses, to make baskets, and to make dyes.

Vásquez Sánchez and Rosales Tham (2009) identified carbonized plant remains from Yuthu. In many cases, plant identifications were not specific enough to identify plants to the species level. Therefore, it is not possible to determine with certainty which plants were used or whether the plants were domesticated or wild.

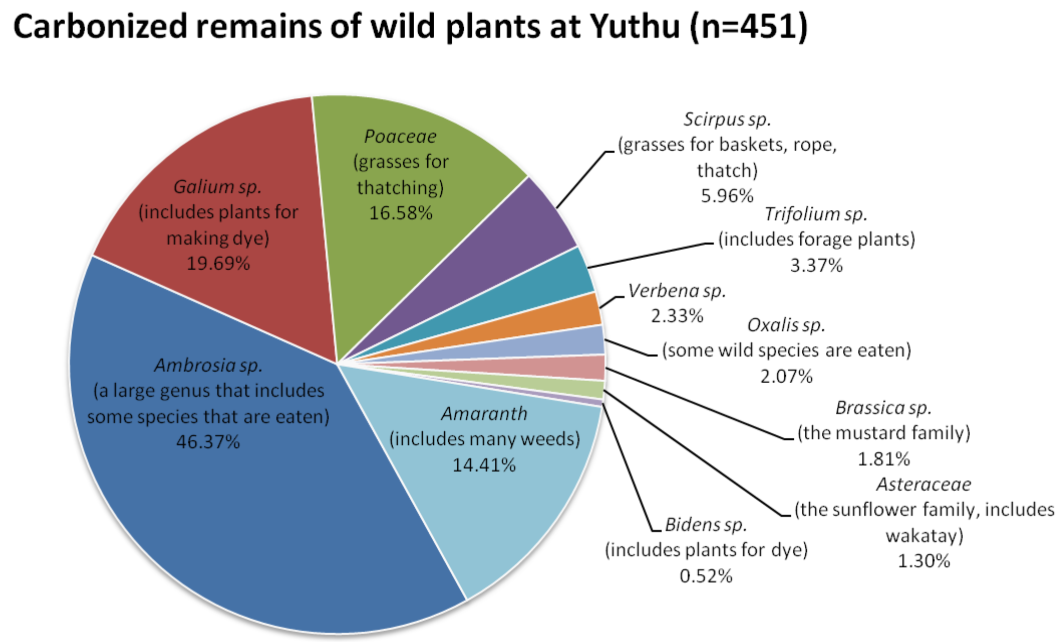


Figure 3.14: Wild plants collected at Yuthu may have been used for food, as spices, as medicine, to thatch houses, to make baskets, and to make dyes. Only 17.12% of all carbonized plant remains were probably wild species. Note that some plant identifications were not specific enough to determine with certainty whether the specimen was wild or domesticated.

Some wild plants were most likely weeds that either were used for fuel or animal fodder or were not exploited economically. Amaranths include many wild species that are considered weeds as well as the domesticated grain kiwicha. Amaranths are part of *Asteraceae*, the sunflower family. It is the largest family of flowering plants and also includes *wakatay*, a popular savory herb for cooking. *Fabaceae*, or the pea family, includes *Phaseolus* beans as well as *Trifolium* which includes some forage plants (Ugent and Ochoa 2006). *Ambrosia* is the ragweed genus of flowering plants and weeds. It was the most common wild species identified at Yuthu. The only species of Ambrosia that is widespread in Cusco is *Ambrosia arborescens*, which is a woody shrub, not a weedy plant (Chepstow-Lusty, et al. 1998). Its wood was probably used for fuel (see gathering fuel).

Other wild plants were probably used as food or condiments. *Brassica*, a part of the mustard family, includes many wild plants used for condiments, to make salads, and to cook as greens. In Peru, there is also a species that produces a tuber that is eaten as food (Ugent and Ochoa 2006). *Oxalis* is a large genus comprised of several species, including domesticated oca (*Oxalis tuberosa*) and a wild species that modern herders in

Chinchero eat (Franquemont, et al. 1990; Ugent and Ochoa 2006). *Verbena* is a large genus of fragrant and medicinal plants, in Cusco some species are used to treat headache and hangovers (Franquemont, et al. 1990).

Grasses were probably used to thatch houses. The family *Poaceae* includes domesticated corn, many wild forage plants, and grasses used today to thatch roofs in Chinchero (Franquemont, et al. 1990). Similarly, *Scirpus* is an aquatic grass-like plant that can be used to make baskets, mats, ropes, and to thatch roofs. It is also the material used to make the famous totora boats of Lake Titicaca (Ugent and Ochoa 2006). We recovered no evidence of watercraft at Yuthu, and the lack of fish remains makes it seem unlikely that boats would have been used on the small lake.

Vegetable dyes were probably made from wild plants. *Bidens* includes many weeds, but it also includes a genus used for dye. *Galium* also includes plants for making dyes (see below for further discussion).

Practicing medicine

Some of the wild plants collected at Yuthu may have been used as medicine. The frequency with which medicine was practiced probably depended on the health of the community, perceived supernatural ailments, social conflict, and even the frequency of celebrations. A few of the genera present at Yuthu include medicinal plants used today in Chinchero. Unfortunately, no medicinal plants were identified to the species level, and many of the genera contain plants that are used not only for medicine, but also for food, dye, or fuel.

<u>Plants that may have been used as medicine at Yuthu (from Franquemont et. al 1990)</u>

Galium sp.

> *Galium weberbaueri* (*rata rata* or *pisqu sisaq*) is used to make tea and refresco. It may be ground and rubbed on a child's tongue when it turns white or rubbed on the eyes for eye problems.

Verbena sp.

Verbena hispida (Quechua name not reported) is boiled to treat a headache (usually from drinking too much alcohol). Alternatively, the entire plant is rubbed on the body to cleanse and give strength for running.

Bidens sp.

Bidens andicola var. *andicola* (*p'irka*) is made into tea to treat pneumonia.

Ambrosia

Ambrosia artemisioides (markhu) leaves are heated in a pot and rubbed on stomach for pain.

Butchering animals

Llamas and alpacas may have been slaughtered during annual festivals, when animals were no longer useful, or as needed for food. In order to understand butchery related to llama and alpaca pastoralism, cut marks were recorded on camelid bones by Vásquez Sánchez and Rosales Tham. These marks were very rare (only 0.75% of camelid bones), and they were generally found on the plantar side of the astragalus and on the first phalange (see Table 3.2). These kinds of cuts are associated with secondary dismemberment and hide removal. The overall dearth of cut marks suggests that dismemberment may have been carried out primarily with hatchets or hammer stones, resulting in crushing of the bones rather than cutting. Along with other cooking practices such as boiling and pounding, this type of processing may account for the high proportion of unidentified mammal remains which are mostly splintered long bone fragments of large mammals.

Textile production

Today, weaving is an important source of income for many highland communities. In fact, one of the most famous modern weaving cooperatives is in Chinchero, just a few kilometers east of Yuthu. Tools, dyes, and fibers from Yuthu show that weaving was also an important activity during the Formative period. Weaving tools were found in both the Northern and Southern Sectors. The most characteristic tool was the beater (*ruk'i* or *wich'uña* in Quechua, Figure 3.15.a) which is used to pound down the weft when using either a backstrap or horizontal loom (see Figure 3.16). These tools were made from camelid metacarpals or metatarsals. Although this tool is commonly used for weaving, some archaeologists have referred to it more generically as a "bone awl" which could have been used for other activities such as basket making.

Figure 3.15: Possible weaving tools found at Yuthu: (a) a beater (*ruki)*, (b) a possible bobbin (*minikuna)* or weaving sword for a belt (*k'allawa), (*c and d*)* possible broken tips of pick-up sticks (*pallana)*.

Two more bone tool types may have been used for weaving. Long tools with rounded and pointed ends might have been pick up sticks (*pallana* in Quechua, Figure 3.15.c and Figure 3.15.d). And, it is possible that some long smoothed bones were used as bobbins (*minikuna*) or weaving swords for making small belts (*k'allawa)*. Unfortunately, the tools could have been used for other activities (like husking corn or punching holes). Many other tools necessary for spinning and weaving were not found at Yuthu. This is most likely because looms, spindles, whorls, weaving swords, and bobbins were made of wood or other perishable material, just as they are today in Cusco (Callañaupa Alvarez 2007, see Figure 3.15).

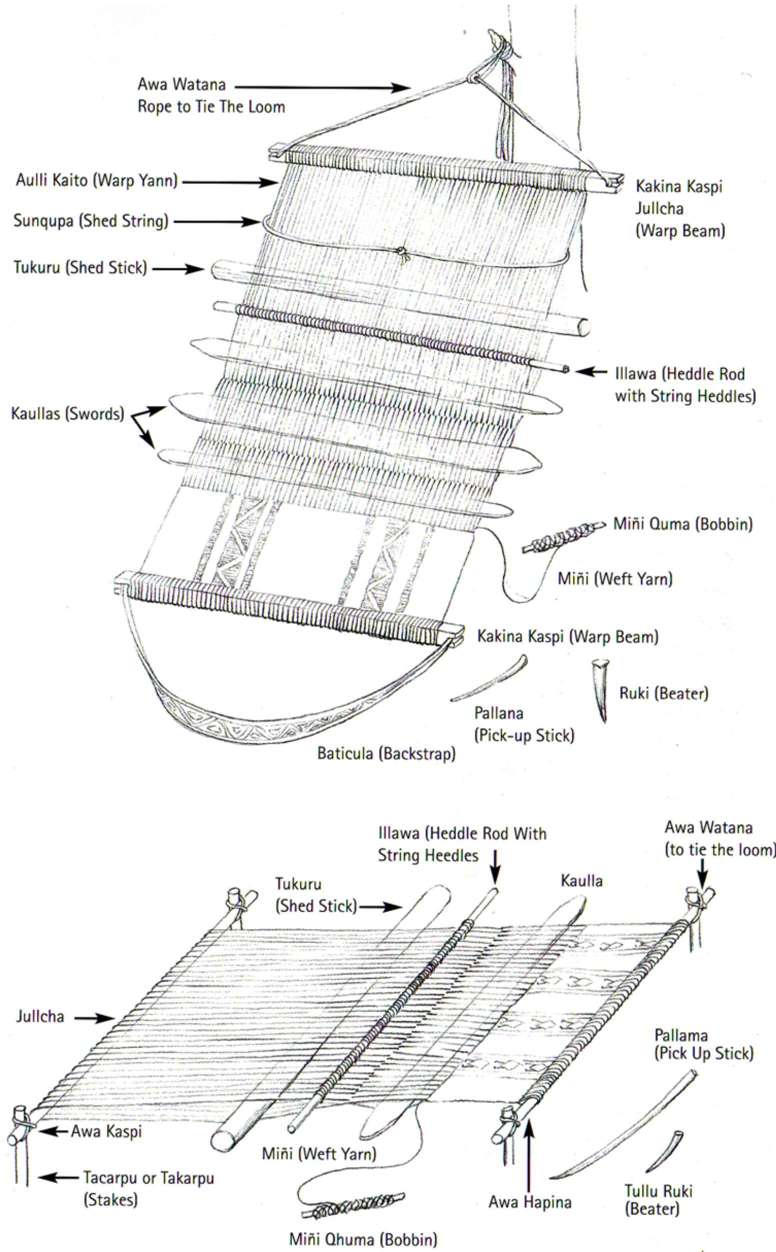


Figure 3.16: Modern backstrap and horizontal looms used in Cusco. The loom parts and weaving tools are labeled with English and Quechua names. Note that most items are made from wood, a perishable material (source: Callañaupa Alvarez 2007, p. 53).

Yarn is often dyed bright colors before being woven into intricate patterns. Dyes may be made from minerals, insects, or plants. We found carbonized seeds from three plant genera that may have been used to dye wool (*Galium*, *Bidens*, and *Ambrosia*). Two species of *Galium* are used to make red dye: (1) the branch of *Galium aparine* L. is used today in Cusco (Callañaupa Alvarez 2007:52) , and (2) *Galium hypocarpium* is used throughout the Andes (Ugent and Ochoa 2006) and was found in Early Horizon contexts at Paracas (1400-400 BC) (Fester 1953). *Bidens andicola* produces orangish-yellow dye, and although *Ambrosia peruviana* is a common weed (ragweed), the leaves can be used to make green dye. Unfortunately, none of these plants were identified to species level and plants in each genus may have had other uses as medicine or fuel.

The context of the plants, however, does support the proposition that *Galium* and *Ambrosia* were used to dye yarn. Because *Ambrosia* is a common weed (found in 29.7% of flotation samples), and *Bidens* was very rare (1 seed was found in a hearth inside the structure in the southeast corner of Unit D), I will focus on the contexts where *Galium* was common. All but one *Galium* seed was found in the Northern Sector (that seed was included with the offering of Burial 11). Single seeds were found in many kinds of features including hearths, pits, floors, burials, ash deposits, and compact soil. More than one *Galium* seed was found most often in hearths *outside* of structures (see Table 3.3). Dyeing wool is a messy operation. Therefore, when plants are used to make dyes, they are boiled in large pots over open fires outside. It seems likely, therefore, that *Galium* and *Ambrosia* were used to dye yarn at Yuthu.

What kinds of fibers did villagers use to make textiles? The only textile fragments found at Yuthu were made from unidentified plant fiber. They were associated with human burials and may have been special textiles for wrapping bodies during burial preparation. Given the large proportion of llama and alpaca bones found at Yuthu, most spinning and weaving probably used wool fibers.

Today in Cusco, women are the most visible weavers, and it would be tempting to attribute weaving to women in the Formative period as well. While dying wool may be a rare activity involving many people, women spin yarn every day while watching flocks, children, or soccer games. Women and men weave in cooperatives, and men are taught to weave in prison. Cross-culturally, it is true that both men and women weave (Díaz-Andreu 2005: 33). Unfortunately, there was no evidence at Yuthu to confirm whether men, women, or both were spinners and weavers.

Table 3.3: Features containing plants that might have been used for dye. (Samples that had more than one *Galium* seed are listed in the table. Note that all of these features were hearths outside structures in the Northern Sector.)					
Feature type	**Sample description**	**Sample #**	**Total density**	***Galium* Density**	***Ambrosia* Density**
Outdoor hearth (Ashy Intrusion 3 in the northwest corner)	ashy soil	S-165	3.71	0.41	0.41
Outdoor hearth (Ashy Intrusion 2 in the northwest corner)	ashy soil	S-137	6.30	0.65	0.87
	ashy soil	S-134	2.73	0.36	0.55
	trampled surface	S-151	8.50	1.00	0.00
	ashy soil	S-143	2.45	0.41	0.00
Outdoor hearth (in the southwest corner)	ashy soil	S-155	7.80	**1.20**	**1.60**
	ashy soil	S-159	2.60	0.80	0.00
	ashy soil	S-174	2.31	0.38	0.38
Outdoor hearth (filling the depression left by Intrusion M)	ashy soil	S-212	10.78	**2.35**	**2.35**
	ashy soil	S-217	4.24	0.39	0.00
Outdoor hearth (Intrusion N)	ashy soil	S-207	2.73	0.39	0.00
Outdoor hearth (Stratum 11)	ashy soil	S-167	5.63	0.42	0.21
Domestic structure in the southeast corner	trampled surface	S-18	2.15	0.62	0.00
Storage feature (Intrusion R)	ashy soil	S-196	2.94	0.78	0.39

Pottery making

Although no unequivocal evidence of pottery manufacturing tools or infrastructure was found at Yuthu (such as piles of clay or special kilns), one sherd that was damaged in the firing process was found on the surface of the site (a "waster"). Therefore, it is likely that villagers built and fired pottery at Yuthu on a small scale using open fires that leave little archaeological trace. It is most likely that this activity was carried out according to need or demand.

The pottery was built using coils (see Figure 3.17). The characteristic thick rims of Chanapata neckless ollas and open plates were created by folding the clay over and smoothing the seam. The most common finishing technique was burnishing, which would have been done when the clay was leather hard, after drying but before firing.

Chanapata redwares and blackwares were decorated with paint. This paint was usually limited to the interior rim of open vessels and exterior rim of restricted vessels, but red slip was found on the body of a few vessels. Most pots were fired in an oxidizing environment, though some were reduced to create a dark background for the paint.

Figure 3.17: Pottery at Yuthu was made using coils. These sherds have broken along the weaker seams between the coils, resulting in a rectangular shape.

No whole pots were found at Yuthu, so it was not possible to identify or describe vessel forms in detail. Instead, vessels were categorized as either open or restricted according to rim form. *Open forms* probably included plates and bowls. There were no necks with sharp angles to indicate the presence of flared vessels like *escudillas*. Therefore, open vessels were probably used primarily for serving food. *Restricted forms* were divided into two subgroups: those with a neck and those without a neck. These pots may have included cooking ollas, toasters, and storage vessels. They were probably used primarily for storing and preparing food.

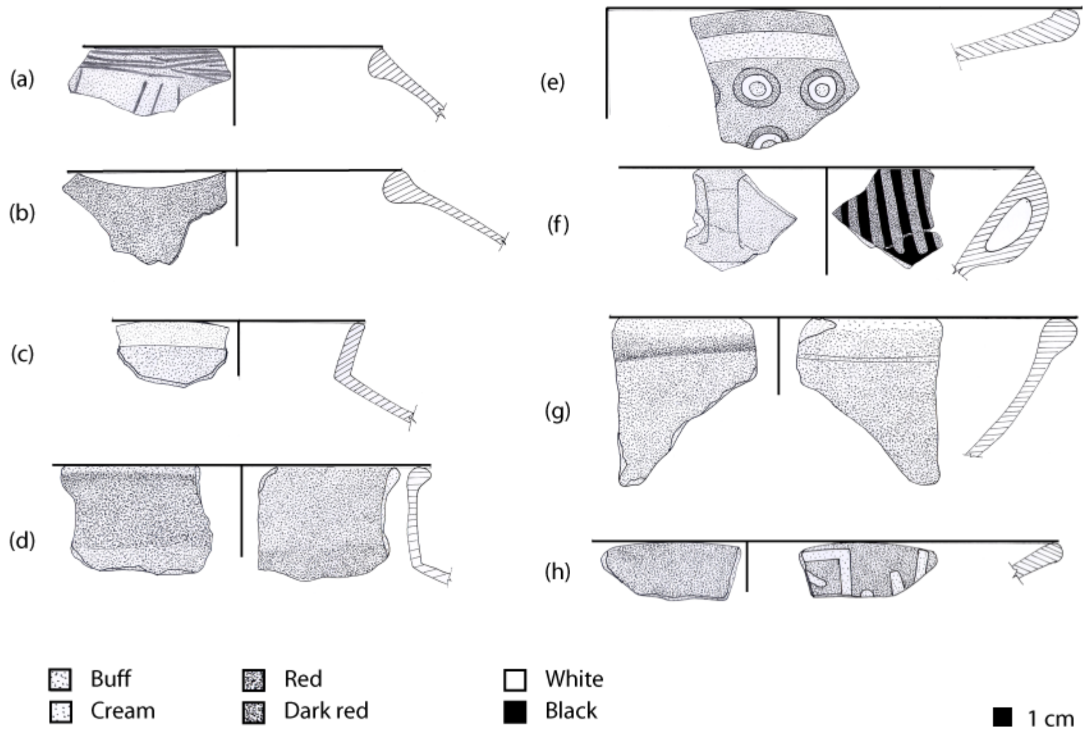


Figure 3.18: Pottery forms at Yuthu were divided into open vessels (e, f, g, h) and restricted vessels. Restricted vessels were divided into two groups: those without a neck (a and b) and those with a neck (c and d).

The pottery at Yuthu was nearly all Chanapata style or Paqallamocco style (a regional name for a contemporary Chanapata style pottery found on the pampa of Anta). Because these styles cannot be easily distinguished, all were considered Chanapata in this study. Within this style, pottery at Yuthu was divided into sub-types following those originally outlined by Rowe (1944).

Chanapata plainware is reddish to brown in color. It has no interior or exterior decoration though it may be unevenly burnished or brushed.

Chanapata pattern burnished is similar to Chanapata plainware except that some burnishing forms patterns on the interior of open vessels and the exterior of restricted vessels. The designs are usually a thick, shiny band around the rim and vertical lines descending down the body

Chanapata incised may be highly burnished and is decorated with lines cut into the clay when it was still somewhat wet.

Figure 3.19: Chanapata sub-styles identified at Yuthu: (a) Chanapata plainware, (b) Chanapata pattern burnished, (c) Chanapata redware, (d) Chanapata blackware, (e) Chanapata painted and incised, (f) Chanapata incised. Molded decorations (g) were applied to the body or rim of pottery of many different styles.

Chanapata redware is pottery painted with red, cream, or sparkling gray (probably made from hematite). Most commonly, the red was used as a background for the other colors. Paint is found on the exterior of restricted vessels and around the interior rim of open vessels. The area under the paint was often burnished to create a shiny surface. Painting and burnishing rarely extended all the way down the body of the pot. The most common designs were zigzags and circles, though zoomorphic designs sometimes occurred.

Chanapata blackware is the same as Chanapata redware, except that the pottery is fired in a reducing atmosphere so that the paint appears over dark brown or black background.

Chanapata painted and incised is similar to Chanapata redware, except that deep incisions delimit the painted areas.

Indeterminate style includes several rare styles that might represent traded wares from other parts of the Andes, though no attempt has been made to identify their sources.

Manufacture of ground pottery fragments

Some broken pottery sherds were ground and smoothed to be reused for other activities (see Figure 3.20). The most common were disc-shaped. These discs were not spindle whorls, as very few were found with perforations in the center. Although some scholars have suggested that these discs were used as bottle stoppers, no restricted pottery vessels with such small rim diameters were found at Yuthu, making this use unlikely (about 10 cm diameter is the smallest common restricted vessel diameter). Therefore, it is not clear what their use may have been. There were also many other non-disc shapes made into a variety of forms. Reworking sherds may have been an activity that was carried out in spare moments throughout the day.

Figure 3.20: Reworked pottery sherds included (a) disc shapes and (b) non-disc shapes.

Procurement and working of locally available sedimentary and metamorphic rock

The most common chipped stone tools were made from relatively low quality materials available in the local ancient marine sedimentary geology. In fact, the Xaquixaguana Plain Archaeological Survey identified outcrops of red quartzitic sandstone and quartzite throughout the pampa of Anta. Several outcrops surrounded by chipped stone debitage were located just behind the mountain Huanacaure. Although no sourcing analysis has been done yet, for now sedimentary and metamorphic rocks will be considered together as locally available resources.

Chipped sedimentary stone was rarely made into formal tool types. In fact, no two tools made from these materials resembled each other closely. Tool manufacture consisted primarily of flake utilization. Tools were probably make as need arose, and flakes were discarded when they were no longer sharp. This kind of informal stone tool industry is common in sedentary societies. Therefore, I have made no attempt to create a formal typology. Instead, I have used methods elaborated by Andrefsky (2005) to classify the chipped stone based on morphology of the piece. Tools are defined as any object that has been modified by use or through purposeful shaping. In contrast, the category of debitage includes objects that are removed from tools and show no other evidence of modification.

Tool morphological classifications are listed by raw material type below. The percentage of all chipped stone is listed for each material type by count and weight. Within each raw material section, the percentage of tools and debitage considers only tools made from that material.

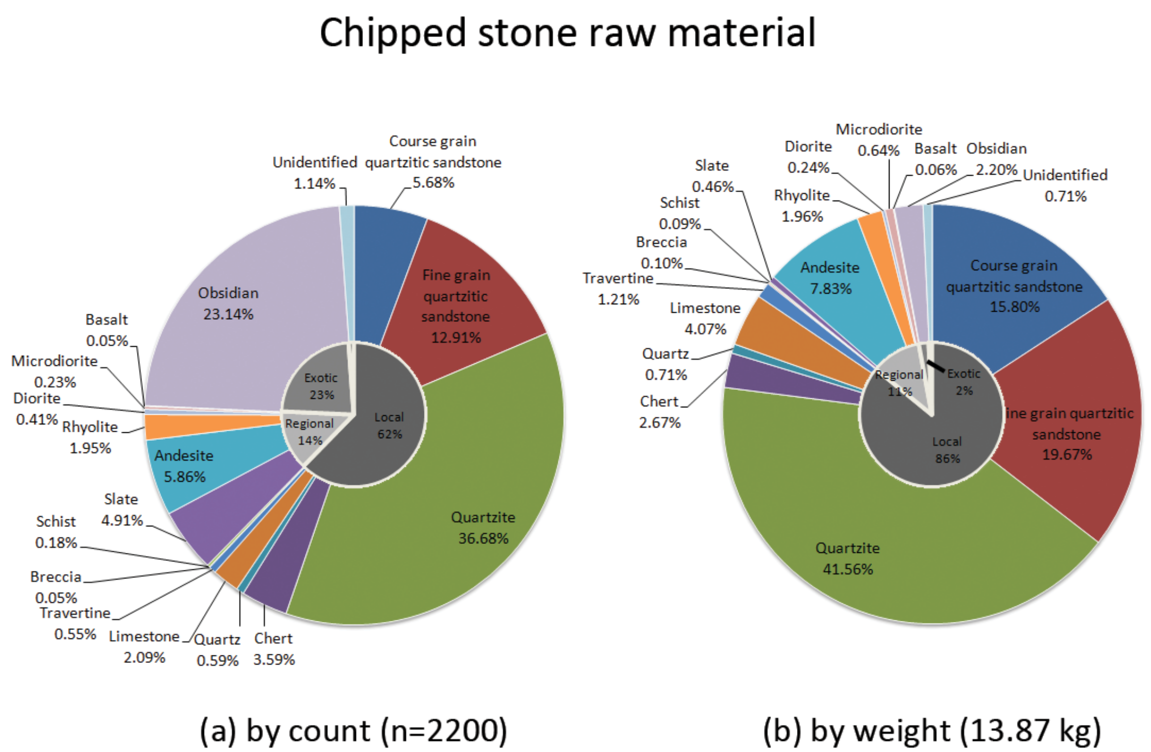


Figure 3.21: Raw materials for chipped stone by count and weight. Locally available sedimentary and metamorphic rocks were the most common materials used to make tools at Yuthu.

Coarse grain quartzitic sandstone (5.68% by count, 15.80% by weight)
Tools (16.8% by count, 24.96% by weight)

- Unimarginal flake tools
- Bimarginal flake tools
- Unidirectional cores

Debitage (83.20% by count, 75.04% by weight)

- Proximal flakes
- Flake shatter
- Angular shatter

Fine grain quartzitic sandstone (12.91% by count, 19.67% by weight)
Tools (31.34% by count, 52.32% by weight)

- Hafted bifaces
- Unhafted bifaces
- Unimarginal flake tools

- Bimarginal flake tools
- Combination flake tools
- Unidirectional cores
- Multidirectional cores

Debitage (68.66% by count, 47.68% by weight)
- Proximal flakes
- Flake shatter
- Angular shatter
- Unmodified manuports

Quartzite (36.68% by count, 41.56% by weight)
Tools (30.73% by count, 53.40% by weight)
- Unhafted bifaces
- Unimarginal flake tools
- Bimarginal flake tools
- Combination flake tools
- Unidirectional cores
- Multidirectional cores

Debitage (69.27% by count, 46.60% by weight)
- Proximal flakes
- Flake shatter
- Angular shatter
- Unmodified manuports

Chert (3.59% by count, 2.67% by weight)
Tools (43.04% by count, 46.06% by weight)
- Unimarginal flake tools
- Bimarginal flake tools
- Combination flake tools
- Multidirectional cores

Debitage (56.96% by count, 53.94% by weight)
- Proximal flakes
- Flake shatter
- Angular shatter
- Unmodified manuports

Quartz (0.59% by count, 0.71% by weight)
Tools (15.38% by count, 19.66% by weight)
- Unimarginal flake tools
- Multidirectional cores

Debitage (84.62% by count, 80.34% by weight)

- Proximal flakes
- Flake shatter
- Angular shatter

Organic limestone
Tools (30.43% by count, 25.61% by weight)

- Unimarginal flake tools
- Bimarginal flake tools
- Multidirectional cores

Debitage (69.57% by count, 74.39% by weight)

- Proximal flakes
- Flake shatter
- Angular shatter
- Unmodified manuports

Travertine (0.55% by count, 1.21% by weight)
Debitage

- Unmodified manuport

Schist
Debitage (100% by count and weight)

- Angular shatter
- Unmodified manuports

Breccia (0.05% by count, 0.10% by weight)
Tools (100% by count and weight)

- Unimarginal flake tools

Procurement and working of regionally available stones

Some raw materials were not available in the immediate vicinity of Huaypo, but are present in other parts of Cusco. Slate, a metamorphic rock, is found near Urcos. It was uncommon at Yuthu, though it was used frequently to make stone tools in later periods. Several igneous rocks were also present at Yuthu in low quantities. Rhyolite and andesite are igneous volcanic extrusive rocks, while diorite and microdiorite are intrusive igneous rocks.

Slate (4.91% by count, 0.46% by weight)
Tools (3.70% by count, 17.55% by weight)

- Unimarginal flake tools
- Bimarginal flake tools

Debitage (96.30% by count, 82.45% by weight)
- Proximal flakes
- Angular shatter
- Unmodified manuports

Andesite (5.86% by count, 7.83% by weight)
Tools (31.01% by count, 63.80% by weight)
- Hafted bifaces
- Unimarginal flake tools
- Bimarginal flake tools
- Multidirectional cores

Debitage (68.99% by count, 36.20% by weight)
- Proximal flakes
- Flake shatter
- Angular shatter
- Unmodified manuports

Diorite (0.41% by count, 0.24% by weight)
Tools (22.22% by count, 30.18% by weight)
- Unimarginal flake tools
- Multidirectional cores

Debitage (77.78% by count, 69.82% by weight)
- Proximal flakes
- Flake shatter
- Angular shatter

Microdiorite (0.23% by count, 0.64% by weight)
Tools (53.24% by count, 88.23% by weight)
- Unimarginal flake tools
- Multidirectional cores

Debitage (46.76% by count, 11.77% by weight)
- Proximal flakes
- Angular shatter

Rhyolite (1.95% by count, 1.96% by weight)
Tools (39.53% by count, 51.01% by weight)
- Unimarginal flake tools
- Bimarginal flake tools

Debitage (60.47% by count, 48.99% by weight)
- Proximal flake
- Flake shatter

- Angular shatter

Basalt
Debitage (100% by count and weight)
- Angular shatter

Procurement and working of obsidian

Obsidian has no known local source and had to be imported from other parts of the sierra, such as the Alca source in central Arequipa, the Chivay source in southern Arequipa, or the Quispisisa source in Ayacucho (Glascock, Speakman et al. 2007). No analyses have been conducted yet to determine which source the obsidian came from. The only formal tool type at Yuthu was the obsidian projectile point (see Figure 3.23). Although the shape of these points may seem superficially diverse, they are all made with the same technique. The edges of a flake that is short and wide are chipped to create a sharp point and more rounded base (see Figure 3.22). The points were classified as unimarginal flake tools, bimarginal flake tools, or hafted bifaces depending on the location and degree of chipping to achieve the final form.

Procurement of obsidian probably occurred periodically as traders with llama caravans passed through Cusco. Obsidian was reworked fairly frequently to maintain the sharp edges of formal tools.

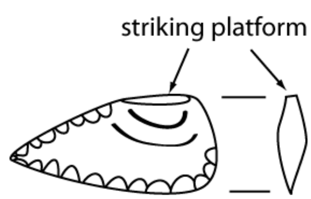


Figure 3.22: Conceptual diagram of a Formative period projectile point.

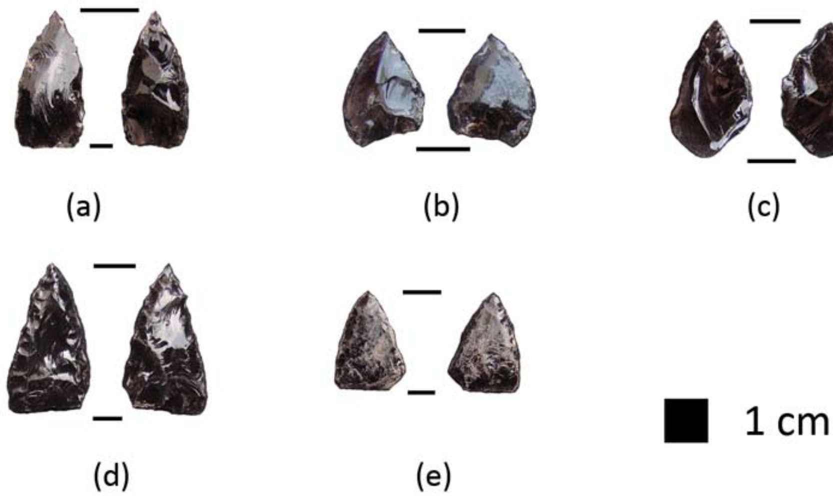


Figure 3.23: Examples of Formative period projectile points found at Yuthu. Although these flakes seem superficially diverse, they are made using the same technique (see Figure 3.22). The striking platform is located on the center of the dorsal and ventral views.

Bone tool manufacture

Many bone tools were found at Yuthu. Most were made from camelid bone fragments by cutting, smoothing, and polishing. At least in one case, bone tools were made in an outdoor work area alongside a large open hearth where a wide variety of domestic activities took place (see Chapter 4, "The hearth in the southwest corner").

Although bone tools varied widely, a basic typology was developed for this project. Because many objects were broken fragments rather than complete pieces, many tools that shared basic characteristics were grouped. Worked bone recovered from important contexts is described in detail in Chapters 4 and 5.

Tool types included:

- Clothing pins
- Thin polished tools such as needles or the ends of clothing pins
- *Ruk'is* or bone awls
- Broad, flat long bone shaft fragments with pointed or rounded tips
- Worn antlers
- Scapula scrapers
- Camelid mandible spatulas
- Chisel-like tools
- Tooth tools (teeth set in polished jaw fragments)

Production waste included:

- Cut proximal ends of mandibles
- Cut proximal and distal ends of long bones

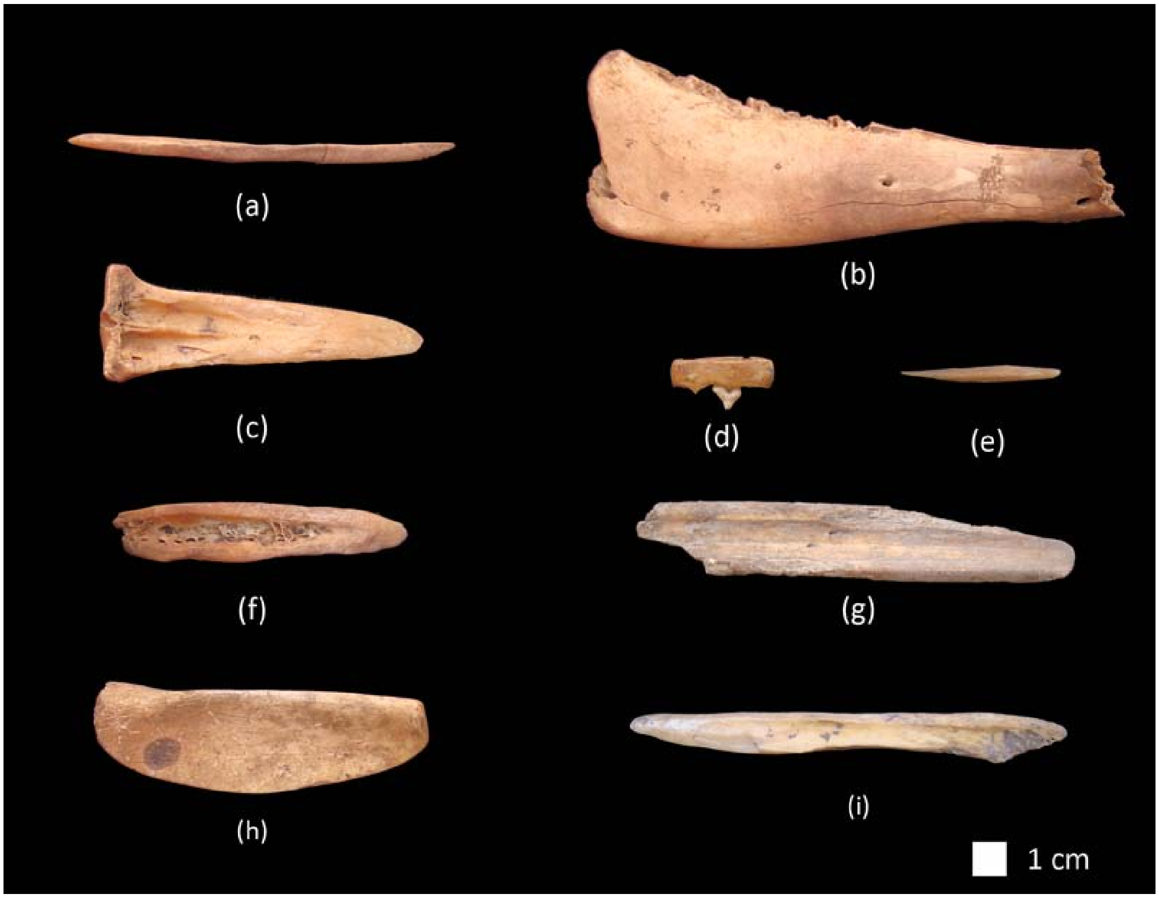


Figure 3.24: Examples of bone tools from Yuthu: (a) a thin pointed object, (b) a camelid mandible spatula, (3) a *ruk'i* or bone awl [see weaving section], (d) a polished jaw fragment with tooth, (e) a small needle, (f) a long bone shaft fragment with smooth rounded tip, (g) a long bone shaft fragment with square tip, (h) a camelid scapula scraper, (i) a long bone shaft fragment with pointed tips.

Chopping and woodworking

Very few objects for chopping or woodworking were recovered at Yuthu, though there were some fragments of small ground stone axes. The lack of woodworking tools is not surprising given that the area was deforested before 2,000 BC (Chepstow-Lusty, et al. 2004; Chepstow-Lusty, et al. 1998).

Long distance trade

Although most materials recovered from Yuthu were available locally, long distance trade was also an important activity at Yuthu. The most common marker of this trade was obsidian which is available from distant locations in the sierra (see above). The high proportion of obsidian at Yuthu is similar to patterns reported for many Formative sites (Burger, et al. 2000; Chávez 1980; McEwan, et al. 1995; Rowe 1943; Yábar Moreno 1972). In addition, a macaw beak and the jaw of a fish that were probably from the jungle were found at Yuthu. Similarly, a peccary tooth associated with Chanapata style pottery was recovered from the site of Marcavalle (Chávez 1980). These objects were the preserved footprint of what was probably a larger set of traded objects that included textiles, feathers, and other perishable goods. The high proportion of camelids at Yuthu (see herding section) indicates that this trade was probably conducted by long distance llama caravans. Arrival and departure of traders was probably a periodic or seasonal occurrence.

Water manipulation

The villagers of Yuthu understood how to create and take advantage of slope to control the flow of water. They built both simple drains and elaborate stone canals associated with the ceremonial structure in the Southern Sector. Construction and cleaning of canals would have been periodic work that may have involved several villagers. The drains were simple linear channels cut into bedrock. In contrast, the formal canals at Yuthu were lined on both sides with stones. They were covered with large flat stones. Rather than bringing water *toward* something like a field, these canals took water *away* from a structure with a sunken floor (see Chapter 5 for further discussion). It is possible that there were more extensive systems of canals located "offsite" that were used to irrigate agricultural fields.

Construction

At Yuthu, villagers used a wide variety of construction techniques to build domestic and ceremonial structures. While some construction practices were large undertakings that would have required labor from a large part of the community, many were techniques that required little time, labor, or special materials. It is likely that the larger projects were rarer and incorporated many villagers while smaller projects were more frequent and may have only required a few family members. Some similar construction techniques have been identified elsewhere in Cusco, though most excavations prior to this study have been very small trenches which prevent the identification of the entire structure shape and type. When possible, I have included references to other Cusco sites with similar features.

Land-leveling terracing

The most striking and large-scale technique was the leveling of a natural hill to create a large platform (about 60 x 30 m). Villagers cut through topsoil and excavated the relatively soft gypsum bedrock. More modest terracing may exist on the northern slope descending from the larger platform, and along the eastern edge of the site where dense clay is the underlying sterile geologic soil. This kind of leveling is also known from the sites of Batan Urqo and Muyu Orqo (Zapata 1998). It seems that leveling to create platforms is a common and important feature of monumental ceremonial architecture in Formative period Cusco.

Clay floors

There were prepared clay floors in both the ceremonial and domestic sectors. These floors were in open patios or plazas, never inside houses. Paved floors were also found at Chanapata (Bauer 2004)

Masonry

Some structures in the ceremonial sector were built using unmodified field stones set in clean clay mortar. At Yuthu, the bench of the sunken structure (see Chapter 5) and a circular cist were built using this technique. Similar practices have been identified in tomb constructions at Chanapata (Yábar Moreno 1972) and Batan Urqo (Arroyo and Choque 1992). This raises the possibility that the circular stone cist at Yuthu may have also served a mortuary function. If so, the absence of human remains in the intrusion may reflect the temporary storage of human remains as part of multi-phase burial practices (see below).

The retaining wall of Structure 1 at Yuthu was made of stone *without* mortar. This technique was also found at Chanapata (Bauer 2004) and at Choquepukio (McEwan, et al. 1995).

Figure 3.25: An adobe brick found in the Northern Sector of Yuthu.

Adobe

Adobes were recovered from Yuthu, though they were not found *in situ* as part of structures. One adobe was found broken in half (see Figure 3.25). The original brick measured 45 x 20 x 13 cm and was made of clay mixed with grasses. Although no adobe bricks have been found at other Formative period sites, it is possible that adobes were used in construction elsewhere. Zapata suggests that, at Batan Urqo, the red soil around circular structures was probably adobe melt (Zapata 1998). In addition, Chávez reported that Marcavalle seems to have had adobe architecture (Chávez 1980)

Stone foundations with walls made of perishable materials

Some small domestic structures at Yuthu had foundations comprised of a single course of stones. These stones were covered with compact red earth (similar to what Zapata found at Batan Urqo). This red earth was probably the remains of a perishable superstructure of adobes, packed mud, or wattle and daub.

Excavated structures or "Pit houses"

Some domestic structures at Yuthu were dug into the earth so that the floor was one meter or more below the ground surface. The "walls" were the sides of the pit, and these houses did not have a superstructure of rock or adobe. Rather, a thatched roof was built directly on the ground surface (see below). These houses were small and construction would have been quick, requiring little labor, few tools, and only material available locally from the lakeshore. In the *puna*, people still build houses with sunken floors for insulation against the cold and wind (Flannery, et al. 1989; Flores Ochoa 1979 [1967]).

Thatched roofs

The presence of carbonized *Scirpus sp*. seeds in and around the pit houses suggests that the roofs were thatched with grasses available along the lakeshore.

Interpersonal violence

While large scale construction projects may have brought the community together at times, there is also ample evidence of periodic conflict. Skeletal trauma demonstrates that men, women, and children were the victims of violence at Yuthu (see Figure 3.26). Unfortunately, it is much more difficult to identify the assailants or understand the social context of that violence. Markers of violent trauma on human skeletal remains are often used to demonstrate that raiding or warfare was prevalent in a society. More specifically, when archaeologists study societies undergoing the transition from autonomous villages to chiefdoms, violence is often attributed to escalating inter-village raiding that played a central role in the consolidation of a regional polity (*sensu* Kelly 2000). The level of violence at Yuthu was certainly high enough for us to infer that the Formative period was not peaceful, but there is insufficient evidence to fully understand the social context of this violence.

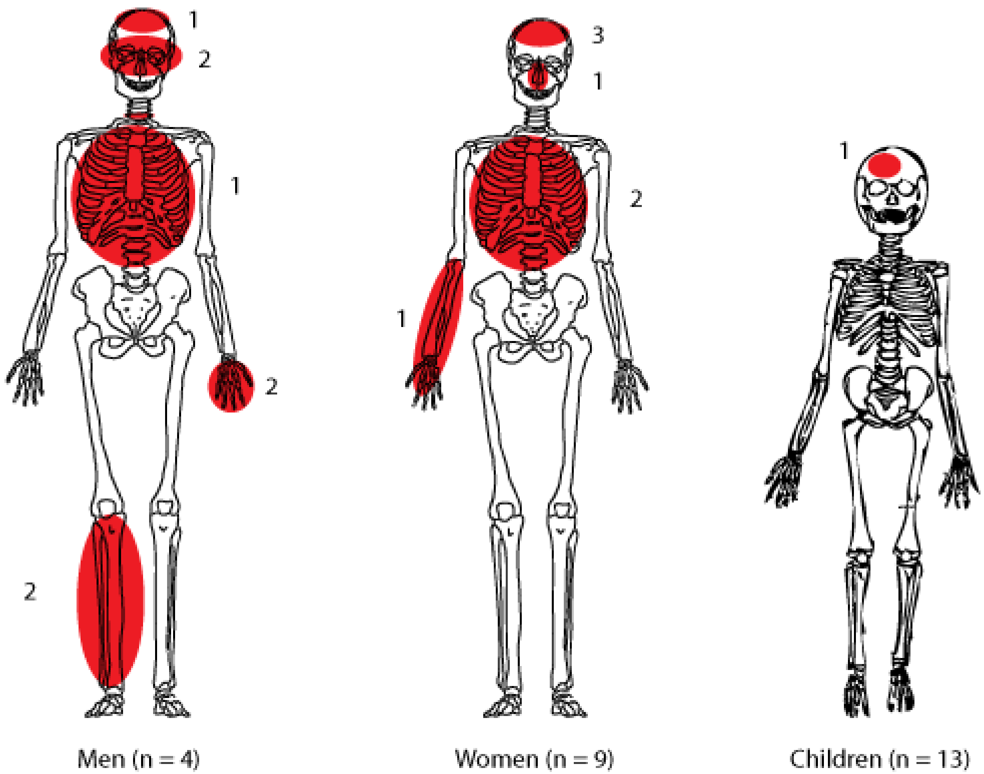


Figure 3.26: Shaded areas highlight the parts of the body where skeletal trauma was observed in men, women, and children. The number that appears beside the red area indicates how many individuals had injuries in that area. Human skeletal analysis was conducted by Valerie A. Andrushko.

By considering the social identity of victims, I hope to begin to build a more meaningful picture of interpersonal violence at Yuthu. Because the sample of burials is too small to conduct significant statistical analyses, this section is purely descriptive. Facial trauma is the most reliable evidence for interpersonal violence because it is the injury least likely to have resulted from accidents (Lessa and Mendonça de Souza 2004; Walker 2001). Because facial trauma was not found on individuals without other injuries, I have included all skeletal traumas in this section to help understand possible patterns in violence. Injuries identified by Valerie A. Andrushko are described below for each person so that the suite of injuries can be considered together. It is important to note, however, that not all breaks necessarily co-occurred and that some could have resulted from accidents. Individuals are divided into three sections: men, women, and children of indeterminate sex.

Men (n = 4)
Burial 2: an adult male 26-35 years old (the only individual at Yuthu without cranial modification)

- healed facial fractures to the right frontal along the supraorbital ridge, the right zygomatic and maxilla on the lower orbital rim, the right and left nasal bones, and the left maxilla
- healed fracture on the right tibia (massive fracture with healed infection)
- healed fracture on the left 4th metacarpal
- a minimum of eight healed rib fractures

Burial 12: a 36-45 year old man

- massive healed fracture to right tibia with ensuing chronic infection, associated healed fracture to the right fibula
- fracture to finger phalange with unhealed infection

Burial 16: a 26-35 year old man

- healed cranial vault fracture
- healed fracture to the right and left nasals
- healed fractures to the left frontal at zygomatic process and left zygomatic body
- healed fracture to the transverse process of the 7th cervical vertebra

Women (n=9)
Burial 8: a 36-45 year old woman

- small healed depressed cranial fracture
- healed fracture to one left middle rib

Burial 15: a 36-45 year old woman

- small depressed cranial fracture on left anterior parietal

Burial 10: an 18-25 year old woman

- healed depressed cranial fracture
- healed fracture to left nasal
- healed greenstick fracture to right middle rib

Burial 18: a 26-35 year old woman

- healed fracture to one right middle rib
- healed clavicle shaft fracture
- healed Colles' fracture to the left radius
- healed fracture to the distal left ulna
- healed fracture to the left 5th metacarpal

Children (n = 13)
Burial 6: an 11-12 year old child

- perimortem depressed skull fracture with open fracture lines

Trauma varied based on age and sex. Adults were much more likely to experience violence than children. Eight out of 10 adults with greater than 20% skeletal completeness had evidence of healed trauma. Cross-culturally, men are much more likely to experience traumatic injuries, whether from accident or interpersonal violence (Walker 2001). Indeed, all of the men at Yuthu with an intact cranium had facial trauma, often including more than one broken bone. In contrast, only one woman had facial trauma, a broken nose. When cranial injuries are considered, however, 3 out of 4 women with crania present had healed depressed skull fractures compared to 1 out of 3 men. Clearly men and women experienced different kinds of violence, though the context is not clear.

Among children, only 1 out of 13 individuals displayed evidence of violent trauma. An 11-12 year old had an unhealed perimortem depressed cranial fracture that almost certainly caused his or her death. That child was buried with two other children (a 7-8 year old and a 1-2 year old) who did not have unhealed skeletal trauma. The inclusion of three children in the same burial suggests that all of them may have suffered violent deaths. In fact, the neck and head of the 7-8 year old child were absent in the grave. It is possible that the child was decapitated, though no cut marks were found on the remaining vertebrae.

Overall, children were unlikely to experience non-lethal violence compared with adults. Male and female villagers began to be involved in certain kinds of socially sanctioned violence (such as warfare or domestic violence) only after they reached adulthood. Unfortunately, additional research will be necessary to understand this violence among adults.

Bird-related rituals

Birds of prey were emphasized in ritual activities, though the ideological significance or meaning of these animals is difficult to determine. The most striking example was the burial of an entire eagle hawk in the Northern Sector (see Chapter 4). In addition, we found a bird figurine in the fill of the earliest pit house (Intrusion H, see Figure 3.27). Because the ceramic figurine was crudely made, it is not possible to determine what species it might represent. However, the figurine is shaped more like a bird of prey than a water bird (the two common types of birds found at Yuthu) (see Figure 3.27). Finally, a man buried during the final use of the site had a bird bone (unidentified species) between his teeth, as if he were chewing it like a toothpick or smoking it like a cigarette (Burial 2, see Chapter 5). The evidence of bird ritual was somewhat rare, so it is likely that these activities were carried out periodically at Yuthu.

Figure 3.27: A figurine shaped like a bird of prey.

We recovered 143 bird bones at the site (10.3% from the heavy fraction of 1,012 liters of flotation samples). Excluding unidentified bird bone (n=79), the birds represented in the faunal sample included (1) birds from the lake that are commonly used for food like duck, coot, and heron (62.5%); and (2) birds of prey including eagle hawk and hawk (26.6% [controlling for the entire skeleton from a single animal]) and the burrowing owl (a single bone); and (3) the beak of a macaw, a bird from the jungle. Despite the fact that water birds from the lake were more common at Yuthu, ritual focused on powerful birds of prey like hawks and eagles.

Multi-phase burial treatment

Multi-phase burial treatment at Yuthu shows that mortuary ritual and interaction with the dead was an ongoing part of daily life. During the exploratory season in 2005, I found and excavated Burial 1 (a 12-13 year old child of indeterminate sex) buried between Ritual Canals 1 and 2. At the time, I did not guess that he or she was only the first of 27 individuals that I would find buried in only 152 m^2. Men, women, and children were buried in the Northern and Southern Sectors in diverse contexts, from shallow graves near simple pit houses to burials incorporated into the bench of the ceremonial sunken court.

Traditional mortuary analysis was not helpful for learning about the social structure of the village. All but one of the individuals was buried in a flexed position and there was no clear pattern of body orientation or position associated with age, sex, or burial sector. In addition, grave goods could not be used for conventional studies of status differences. With the exception of one red quartzite core and one bird bone, the burials at Yuthu did not include preserved grave goods. Yet, the ubiquity of burials suggests that the ongoing interaction with the dead was an important part of daily life at Yuthu.

A taphonomic approach to the burials has allowed the identification of multi-phase burial treatments which have proven most informative about social structure and mortuary practice. The preservation at Yuthu is exceptionally good; many burials included the smallest finger bones, kneecaps, and sternum. These small or porous bones are usually the first to decay (Duday 2006; Duday and Guillon 2006). Because of this excellent preservation, I have been able to use human skeletal taphonomy to determine that while some burials at Yuthu were primary interments made immediately or relatively soon after the death of the individual others at Yuthu were the last step in a multi-phase burial treatment.

An approach to mortuary study that focuses on taphonomy has been developed extensively since the 1970s by French archaeologists such as Henri Duday. It is called *anthropologie de terrain*, or field anthropology, in that tradition. Summary articles and applications of this methodology have only recently been published in English (Duday 2006; Duday and Guillon 2006; Nilsson Stutz 2003). This approach depends on knowledge of two basic processes: (1) the order in which the soft tissue and bone of the human body decays and (2) how the movement of bones is constrained after the soft tissue has decayed.

The preservation of bone depends on anatomy, age, and sex. Adults skeletons are better preserved than children and sub adults (Bello and Andrews 2006). In addition, the smallest and most porous bones in the body decay first. The cranium, mandible, clavicles, scapulae, long bones, and patellae are some of the most enduring bones. The sacrum, sternum, and small bones of the hands and feet decay most easily (Bello and Andrews 2006; Waldron 1987). When the perishable bones are missing from a burial, it is unlikely that the absence is a result of human modification of the body. In contrast, when the bones most likely to be preserved are missing, they have probably been removed by people during mortuary treatment.

By paying close attention to the displacement of bones, an archaeologist can infer certain characteristics about the timing of each phase of burial treatment, though the rate of decay of soft tissue and bone is not constant, but affected by water, soil type, temperature, oxygen exposure, and the flora and fauna that come into contact with the body (Henderson 1987). The labile, or unstable, articulations of the body decay first. These articulations usually link small bones (like the cervical region of the vertebral column, hands, and distal parts of the feet). Alternatively, they may be fragile joints with no osseous articulation (like the scapula-thoracic joint). The strongest and most persistent joints are those connected by powerful ligaments. They include the atlanto-occipital articulation, lumbar segment of vertebral column, lumbar-sacral joint, sacro-iliac articulation, knees, ankles, and tarsal bones of the feet (Duday 2006; Duday and Guillon 2006).

A further consideration is the effect of mortuary architecture on the movement of the bones after the soft tissue articulations have decayed. A body is said to be buried in an “empty space” when the body was surrounded by air, not covered with soil. When it decays, gravity or water can cause the skeletal elements to move around. Empty space may describe a coffin, a cist tomb, an above-ground burial structure, or other mortuary structure. Alternatively, the body may be “buried in soil”, meaning it was covered directly by earth or another material when it was interred. In that case, bones can move very little, except in the empty spaces created by the decay of the soft tissue (Duday 2006; Duday and Guillon 2006).

Using the premises outlined above, I have identified four types of burial treatment at Yuthu. They are described below and diagrammed in Figure 3.28.

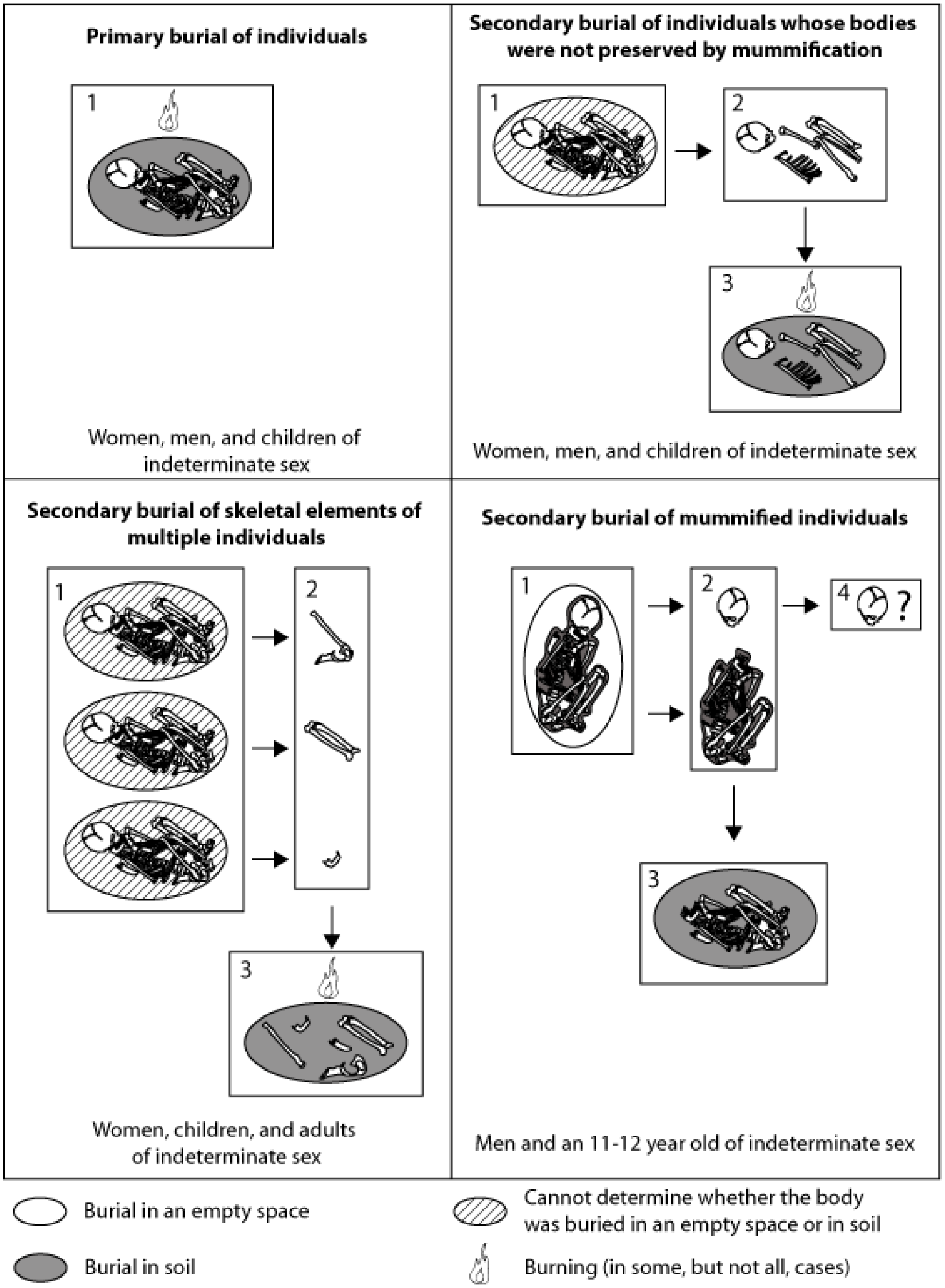


Figure 3.28: There were four types of burial practiced at Yuthu. Each type involved a minimum of 1 to 4 steps (depicted in boxes numbered in the upper left corner) that were detectable based on the position of the body when we excavated it.

(1) Primary burial

Primary burials had three characteristics: (1) they were found in articulated, or nearly articulated, position. (2) The bones were in good or excellent state of preservation. (3) All, or nearly all, of the bones were present; missing bones were limited to small or porous elements that decay quickly. In truth, it is not possible to determine whether the body received other mortuary treatments before burial. This definition only excludes additional steps that could be detected through taphonomy.

(2) Secondary burial of some skeletal elements of multiple individuals

Some burials contained the poorly preserved bones of more than one individual. In this type of burial, the bones were placed together in a small cavity and the deposit was burned. These burials included elements of women, children, and individuals of indeterminate sex. They (Burials 20 and 21) were found in the Northern Sector associated with the early pit houses.

Based on the very small percentage of the skeleton of each individual, it is clear that the remains had been moved to the final resting place at Yuthu after they were buried or stored in at least one previous location. It is not possible to determine with certainty whether they were buried in soil or placed in an empty space. But given that buried bone recovered at the site was in excellent condition (even after 2000 years), I would suggest that the poor preservation in these burials indicates storage in above ground ossuaries or other open places where skeletal elements were exposed to weathering.

(3) Secondary burial of individuals whose bodies were not preserved by mummification

Some burials included the bones of a single individual in a fairly poor state of preservation arranged to approximate a flexed body position. Many of the bones that have unstable articulations (such as fingers, toes, and vertebrae) were absent from the burial. It is likely that the skeletal elements were transported from a previous location. It is clear that the bodies were not bundled or preserved in a way that restricted displacement and loss of small bones after soft tissue decay, but in most cases, it is not possible to determine whether the bodies were kept in empty spaces or buried in soil before being brought to Yuthu for final burial. In the case of Burial 14, a 26-45 year old woman which was comprised of only long bones and part of the cranium, the bones were very weathered and displayed evidence of carnivore gnawing, indicating that the body had been stored in an empty space accessible to scavenging animals. These burials included men, women, and children and were located in the Southern Sector.

(4) Secondary burials of "mummified" individuals

During excavation, if an archaeologist has a good understanding of human osteology, it is easy to anticipate where he or she will find each bone in a primary burial. This is very helpful in ensuring that the skeleton can be uncovered carefully and that the original position of each bone will be documented. In 2007, Whitney Mihel, a student familiar with osteology asked me for help while she was excavating what seemed to be an intact primary burial (the fragile bones were present, the preservation was excellent, and the body was in good articulated position). As she followed the femur to the point of the leg that should meet the trunk of the body, she was having trouble finding the articulation with the pelvis. As she continued to excavate, it became clear that this was because the right half of the pelvis was missing from this otherwise complete burial. As she dug further, I noticed that the entire sacrum had been flipped upside down. Despite this significant disturbance, all of the fingers from the hand resting in the man's lap were present and in correct anatomical position. I had never seen anything like this before. I began to pay close attention to other burials and found that two more individuals had single skeletal elements missing (the cranium), but were otherwise intact and in articulated positions.

I was immediately curious and wanted to figure out how this could have happened. The first step was to determine whether natural decay may have accounted for the absence of these bones. Taphonomic studies have shown that the cranium is one of the last bones to decay (Bello and Andrews 2006). Although the pelvis is somewhat more fragile, it is not possible that these bones decayed before the small bones of the hands and feet, or the sternum.

If the bones had not decayed naturally, they must have been removed by someone or something. I ruled out removal by burrowing animals because there are none near Lake Huaypo. In both cases, the missing elements were articulated to their neighbors by some of the strongest ligament articulations in the body: the sacro-iliac and atlo-occipital joints. If the elements had been removed before the soft tissue had decayed, these strong ligaments would have to have been cut. However, there were no cut marks on the bones that articulated with the missing elements (mandible, atlas, sacrum, femur, or pelvis). Therefore, the bones could not have been removed shortly after death while the soft tissue was still strong.

I became concerned that the bones had been removed by modern people by one of two possible mechanisms. First, because Yuthu is located in a farm field that has been plowed with oxen and with tractors, burial disturbance from plowing was a distinct possibility. Second, the workmen had shared stories that raised suspicions. With a combination of amusement and embarrassment, they described nights when the party was going strong in town and people came out to the site to find heads to drink from. I was fairly certain that the tractor was not responsible since no surrounding bones were broken or displaced (in contrast with Burials 17 and 18), but I was more worried about the second possibility. Could modern people have targeted and removed certain bones? Because the bodies are completely skeletonized, it would no longer have been necessary to cut the ligaments. Given that the graves were unmarked, however, it is not likely that a (probably highly inebriated) person could slip away from a party to dig up a single bone without disturbing the rest of the skeleton—not even if that person were an archaeologist.

Having ruled out other possibilities, it became clear that the bone was removed before the body was buried in soil, but after it was in an advanced state of decay. This conclusion highlights what seems to be a contradiction. If the body had reached such an advanced state of decay while stored in an empty space, how could the bones with the weakest articulations still be in correct anatomical position? The body must have been constrained in some way. Indeed, a cloth fragment found in one burial at Yuthu suggests that some individuals were buried in clothing or wrapped in textiles. However, simple wrapping in a textile bundle would not have been sufficient to prevent disarticulation. Rather, it would be necessary for the soft tissue to remain preserved well enough to prevent movement of the bones. Such excellent preservation is common on the coast of Peru where the dry desert creates natural mummies by evaporation. But, how could mummification happen in the rainy highlands?

A weekly shopping trip to San Pedro Market in Cusco helped me resolve this question. Hanging above every witchcraft vendor's stall, a chandelier of perfectly preserved naturally freeze-dried llama fetuses caught my eye. These fetuses are naturally aborted in the high puna where the low air pressure and cold temperatures result in flesh desiccated by sublimation, or the transition of water from solid ice to gas skipping the liquid phase. Moving down through the marked stalls, I became more and more excited as I passed the freeze-dried potatoes (*ch'uñu*) and freeze-dried llama and sheep meat (*ch'arki*). In fact, intentional freeze drying of food is common today, and was practiced extensively in highland prehispanic Peru at least by the Formative period (Miller and Burger 2000; Shimada 1982, 1985; Valdez 2000). A similar process could have easily produced preserved "mummies" whose bodies only began to decay after they were buried in the moist soil at Yuthu. In fact, when I began to research Andean mummies further, I found that among Inka and modern populations, mummification was frequently understood in the same terms as the process of making *ch'uñu* (Allen 1982; Sillar 1996).

Unfortunately, it is not possible to determine whether the mummification at Yuthu was intentional or a natural process. Regardless, the best explanation for the unusual completeness, articulation, and preservation of these burials is that they were stored as desiccated mummies in accessible, empty spaces (possibly above ground), for some time before a bone was removed and the rest of the body was buried. There is very little evidence as to what happened to the bone after it was removed, though the right half of an adult pelvis was found above the feet of a 1-2 year old child in the multiple burial of children in the Southern Sector (see Chapter 5).

Three individuals received this type of burial: two adult men and one 11-12 year old child of indeterminate sex. These burials were found in the later phases of both the Northern and Southern Sectors of the site. The role of these mummies in the sacred system at Yuthu will be discussed further in Chapter 7.

Discussion of periodic activities

Many periodic activities at Yuthu were tied closely to subsistence, shelter, and other economic needs. Others were related to creating and maintaining the community or creating opportunities for social and physical conflict. Although these activities may seem unrelated, they were all important parts of social life at Yuthu.

Discussion

In this chapter, I have described the activities at Yuthu that left material traces visible to archaeologists. Farming, herding, and storage created an annual frame for all activities. This frame was closely tied to the particular mountain environment context of the village. Activities like food preparation and maintenance of social relationships filled each day regardless of the part of the annual cycle. In contrast, other activities like craft production and trade were periodic and had to be incorporated into the annual cycle. This was also true for ceremonial and political practices such as large-scale construction and mortuary rituals that encouraged community cohesion even as they created opportunities for conflict visible in the high rate of interpersonal violence at Yuthu.

Chapter 4

Excavations in the Northern Sector

The Northern Sector is located on the moderate southern slope of Cerro Yuthu. It is separated from the Southern Sector by a small gully that, until recently, carried water from a spring just above the site to Lake Huaypo. This area appears to have been mostly unmodified by terracing or leveling, but future excavations will be necessary to determine whether some modest terracing existed at the southeastern corner of the site. Compared with the Southern Sector, the density of stone tools, pottery fragments, and human bone on the ground surface was much lower. In addition, the pottery on the surface in this area was mostly undecorated plainware. I was curious to know if the distinctive character of the surface remains resulted from modern plows disturbing different kinds of structures and activity areas below the surface than those in the Southern Sector. I also wanted to establish the northern edge of the village.

Excavations in Unit D

I decided that a flat area at the lowest edge of the site, close to Lake Huaypo, would be the best place to address these questions. This area, located at the northeastern edge of the artifact scatter, might have been the remains of ancient terraces. Unfortunately, landholding policy prevented me from excavating there. In Cruzpata, land is held in common by the community, and the right to farm each agricultural field, or *chakra*, is given to individual families. Luckily, most of the *chakras* within the limits of Yuthu belong to the same family and I was able to get their permission to excavate. But because the adjacent field at the northeastern edge of the site belonged to another landowner who had traveled out of town, I was unable to get authorization to dig there. Thus, I opted to excavate a spot about 100 m uphill in a *chakra* that belonged to the cooperative family that had already allowed me to work in another of their fields.

In 2006, while most of the excavation team continued to work in the Southern Sector, I sent Jorge Flores to excavate a 2 x 2 m test pit in the Northern Sector. Within that small unit, he found several superimposed layers of ash and trampled surfaces associated with large quantities of burned bones and plants. Although I was still busy excavating on the platform of the Southern Sector, I was excited that this area seemed promising for finding houses and other domestic activity areas that would allow me to study the daily lives of the villagers of Yuthu.

When I returned for a second excavation season in 2007, I extended Unit D to the north and west, creating a single 8 x 8 m excavation unit. We excavated in this area for 8 weeks and found Formative period deposits up to 1.9 m deep that included domestic structures, hearths, storage features, and burials.

The archaeological deposits from Unit D are described below, beginning with the earliest features. Each stratum was assigned a number after excavation, based on its stratigraphic position. Figure 4.1 is a profile drawing of the stratigraphy of Unit D with each layer of soil labeled with the corresponding number. The deposits are described below according to these numbers. Because the excavation unit was large and many strata did not extend throughout the entire area, it was sometimes impossible to determine if a particular feature or layer of soil was relatively older or younger than another. Therefore, in these cases, the number assigned to a stratum may be misleading in terms of its relative stratigraphic position. Refer to the text for stratigraphic relationships.

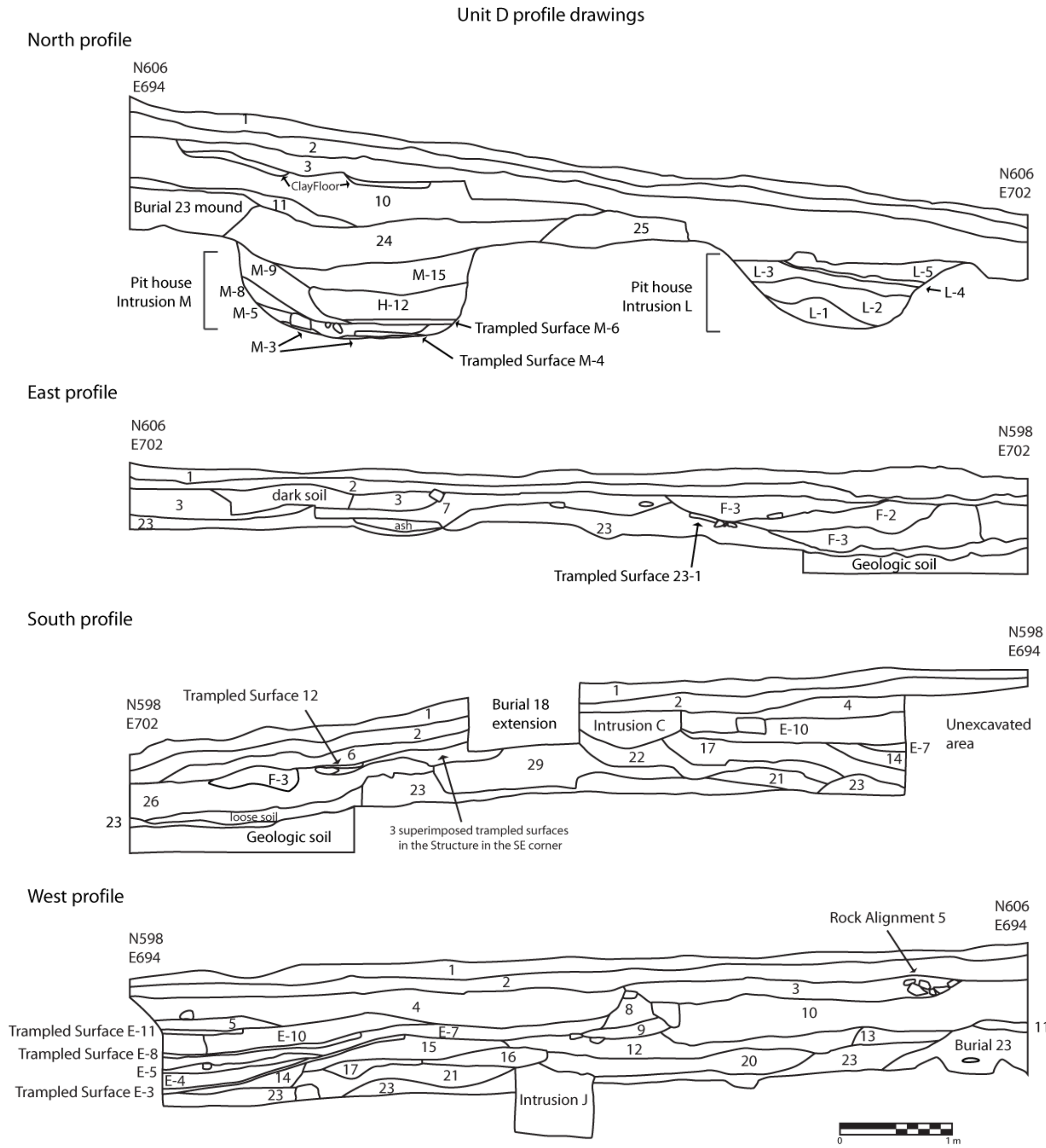


Figure 4.1: The stratigraphy of Unit D. Each of the strata that appear in this figure is described in the text.

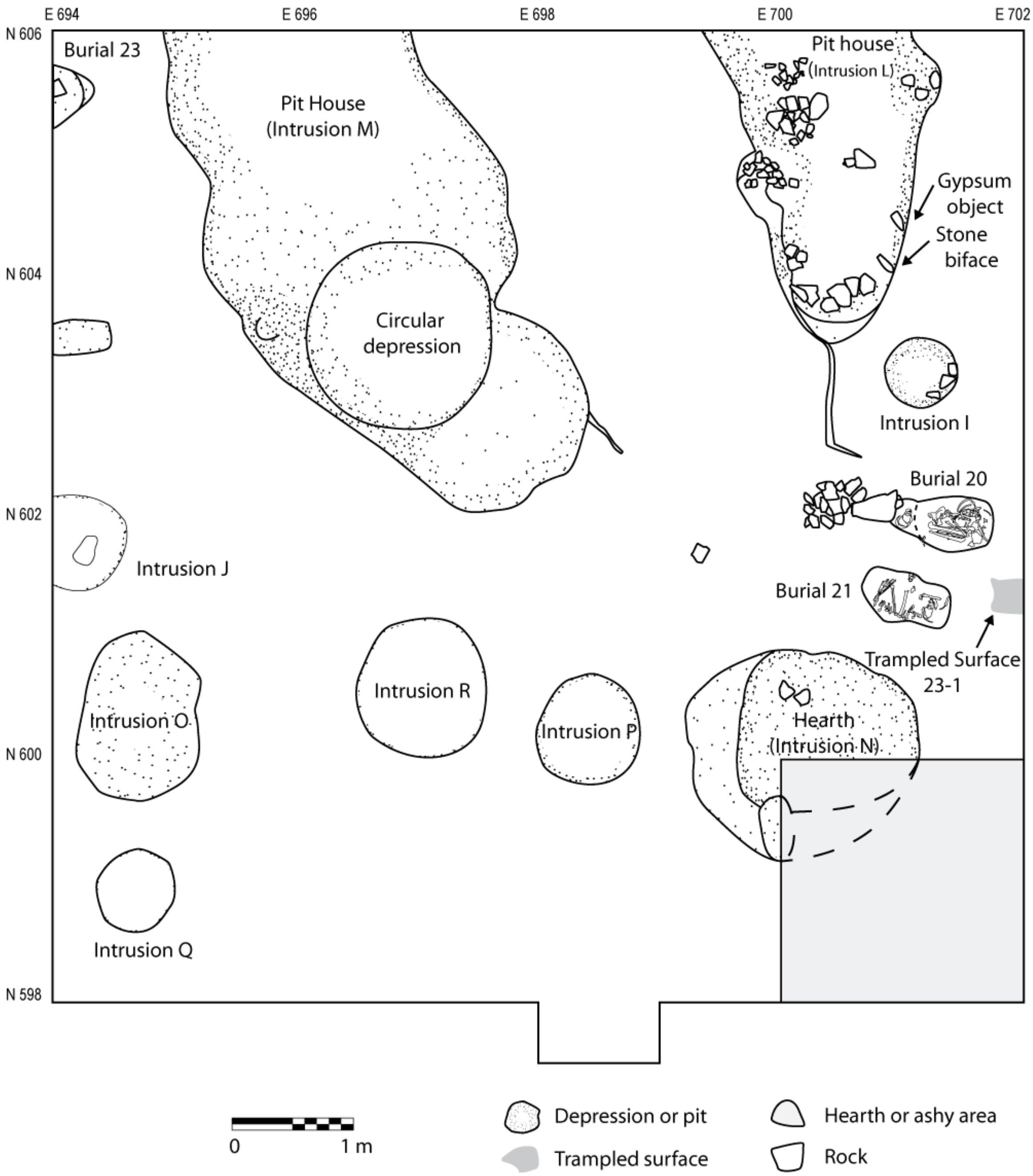


Figure 4.2: The earliest occupation of Yuthu included: (1) storage pits (Intrusions P, Q, R, I); (2) an area for burning and cooking (Intrusion N); two semi-subterranean domestic structures excavated into natural soil (Intrusions M and L); two secondary burials including multiple individuals (Burials 20 and 21); and one infant burial under a mound of soil (Burial 23).

Shallow circular storage pits with vertical walls

Three circular intrusions (Intrusions R, Q, and P) with vertical walls and slightly rounded bottoms were dug into the dense red clay (see Figure X). The form and contents of these features, described below, indicate that they were probably storage pits that contained food and/or other implements.

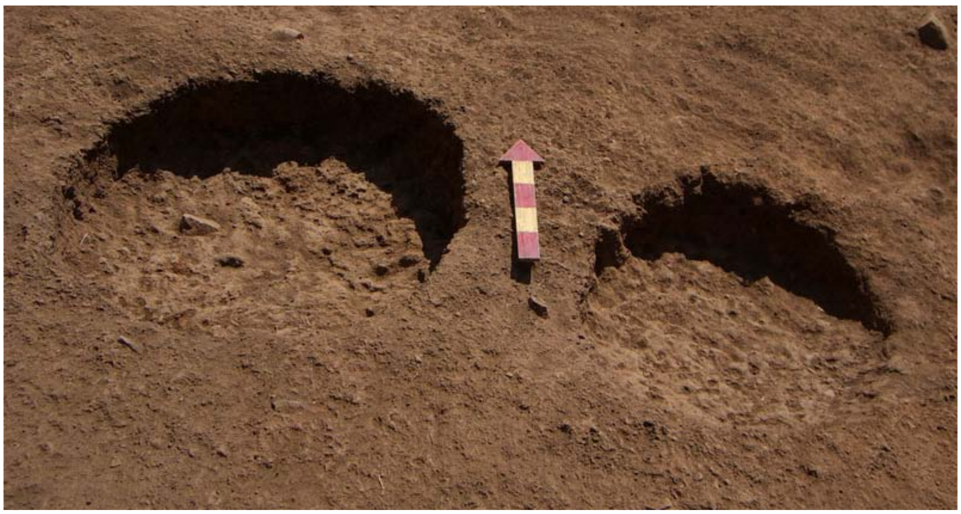


Figure 4.3: Intrusions R and P (left to right). These intrusions were shallow circular pits with vertical walls and rounded bottoms. They were excavated into geologic soil and were two of the earliest features found at the site. Because of their form and contents, it is likely that they were used as storage features.

Intrusion R

Intrusion R was 110 cm in diameter and 15 cm deep (see Figure 4.3). Two distinct levels of soil filled this pit.

Level R-1

Level R-1, the stratigraphically deepest level, was stuck to the corners and base of the pit. It was composed of semi-compact soil containing a high proportion of blocks of ash and charcoal.

Munsell color: 7.5 YR 4/3 brown

Ceramic vessels

Total sherds	21
Restricted vessels with a neck	3 plainware

Chipped stone
Regionally available stone (100% by count and weight)
Andesite
Debitage: 1 proximal flake (0.2 g)

Botanical remains from flotation of 5.8 liters of soil (S-196)
8 *Chenopodium quinoa* carbonized seeds
4 *Galium sp.* carbonized seeds
1 *Verbena sp.* carbonized seed
2 *Ambrosia sp.* carbonized seeds

Animal bone (NISP)
Mammals

Field mouse (*Muridae*)	1 (from flotation)
Unidentified	16 (all from flotation)

Level R-2

Level R-2 was looser soil mixed with some ash and charcoal that filled the rest of the intrusion.

Munsell color: 7.5 YR 4/3 brown

Ceramic vessels

Total sherds	161
Restricted vessels with a neck	2 Chanapata redware, 7 plainware
Body sherds with diagnostic style	1 Chanapata redware, 1 Chanapata incised, 2 pattern burnished, 1 indeterminate style

Reworked ceramic sherds

Discs	1 plainware

Chipped stone
Locally available stone (100% by count and weight)
Fine grain quartzitic sandstone
Tool: 1 unidirectional core (33.1 g)
Debitage: 1 fragment angular shatter (51.4 g)
Organic limestone
Tool: 1 multidirectional core (23.8 g)

Botanical remains from flotation of 5.65 liters of soil (S-195)
1 *Amaranthus sp.* carbonized seed
25 *Chenopodium quinoa* carbonized seeds

1 *Galium sp.* carbonized seed
2 *Ambrosia sp.* carbonized seeds
4 *Zea mays* carbonized cupule fragments

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	1
Guinea pig (*Cavia porcellus*)	3 (all from flotation)
Field mouse (*Muridae*)	5 (all from flotation)
Unidentified	17 (all from flotation)

<u>*Intrusion Q*</u>

Intrusion Q was a shallow circular pit similar to Intrusion R. It was 80 cm in diameter and 20 cm deep. Loose soil with flecks of charcoal filled this feature.

Munsell color: 7.5 YR 4/4 brown

Ceramic vessels

Total sherds	49
Restricted vessels with a neck	3 plainware
Body sherd with diagnostic style	1 pattern burnished

Chipped stone

Locally available stone (33.3% by count, 81.5% by weight)

Quartzite

Tool: 1 unimarginal utilized flake (10.3 g)
Debitage: 1 proximal flake (0.3 g)

Regionally available stone (33.3% by count, 15.4% by weight)

Slate

Tool: 1 unimarginal retouched or shaped flake tool (2.0 g)
Debitage: 1 proximal flake (<0.1 g, from flotation)

Exotic stone (33.3% by count, 3.1% by weight)

Obsidian

Tool: 1 unimarginal utilized flake (0.4 g)
Debitage: 1 proximal flake (< 0.1 g)

Botanical remains from flotation of 4.8 liters of soil (S-192)

18 *Chenopodium quinoa* carbonized seeds
1 *Trifolium sp.* carbonized seed
4 *Zea mays* carbonized cupule fragments

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	1
Field mouse (*Muridae*)	7 (all from flotation)

Unidentified	8 (all from flotation)

<u>*Intrusion P*</u>

Intrusion P was a shallow circular pit similar to Intrusions Q and R. It was 100 cm in diameter and 19 cm deep. The soil that filled the pit was full of ash and bits of charcoal.

Munsell color: 7.5 YR 5/2 brown

Ceramic vessels

Total sherds	53
Restricted vessels with a neck	3 plainware
Restricted vessels without a neck	1 Chanapata redware, 1 plainware

Groundstone

Grinding stone that fit in one hand with plano-convex cross section and flattened surfaces created by grinding with back and forth and rocking motions (Group 1, Type B). The stone measured 7.41 x 6.89 x 4.53 cm; it weighed 340 g.

Chipped stone

Locally available stone (33.33% by count, 26.67% by weight)

Fine grain quartzitic sandstone

Debitage: 1 proximal flake (0.4 g)

Exotic stone (66.67% by count, 73.33% by weight)

Obsidian

Debitage: 1 proximal flake (< 0.1 g), 1 fragment of flake shatter (1.1 g)

Botanical remains from flotation of 7.775 liters of soil (S-210)

10 *Chenopodium quinoa* carbonized seeds

1 *Galium sp.* carbonized seed

1 *Zea mays* carbonized cupule fragment

Animal bone (NISP)

Mammals

Unidentified	27 (all from flotation)

Shallow depression filled with ash

Intrusion O

Intrusion O was a shallow, irregularly shaped depression between 5 and 10 cm deep excavated into the natural soil. From north to south, the diameter was 138 cm, and from east to west the diameter was 96 cm. The soil that filled the depression was ashy and full of flecks of carbon, indicating that burning took place in this area.

Munsell color: 7.5 YR 4/3 brown

Ceramic vessels

Total sherds	12
Restricted vessel with a neck	1 plainware

Botanical remains from flotation of 5.65 liters of soil (S-194)

6 *Chenopodium quinoa* carbonized seeds
2 *Ambrosia sp.* carbonized seeds
4 *Poaceae* carbonized seeds

Animal bone (NISP)

Mammals	
Unidentified	8 (all from flotation)
Birds	
Unidentified	2

Circular hearth filled with multiple layers of soil and ash (Intrusion N)

In the southeast corner of Unit D, several superimposed pits were excavated into natural soil in the same area (Intrusions N-1 through N-6, see Figure 4.4). The area that held these intrusions had a diameter between 1.6 and 1.9 m and a maximum depth of 40 cm. Each intrusion in this area is described below, beginning with the stratigraphically deepest.

Intrusion N-1

The earliest of these intrusions was a pit about 30 cm in diameter between 10 and 20 cm deep. The semi-compact soil that filled this depression was slightly orange in color and contained burned plant remains. Most of this pit was destroyed by the later Intrusions N-2 and N-3.

Munsell color: 10 YR 5/1 gray

Ceramic vessels

Total sherds	7
Open vessel	1 plainware
Body sherds with diagnostic style	5 pattern burnished

Botanical remains from flotation of 5.13 liters of soil, the entire contents of the intrusion (S-199)

6 *Chenopodium quinoa* carbonized seeds

Animal bone (NISP)

Mammals

Unidentified	17 (all from flotation)

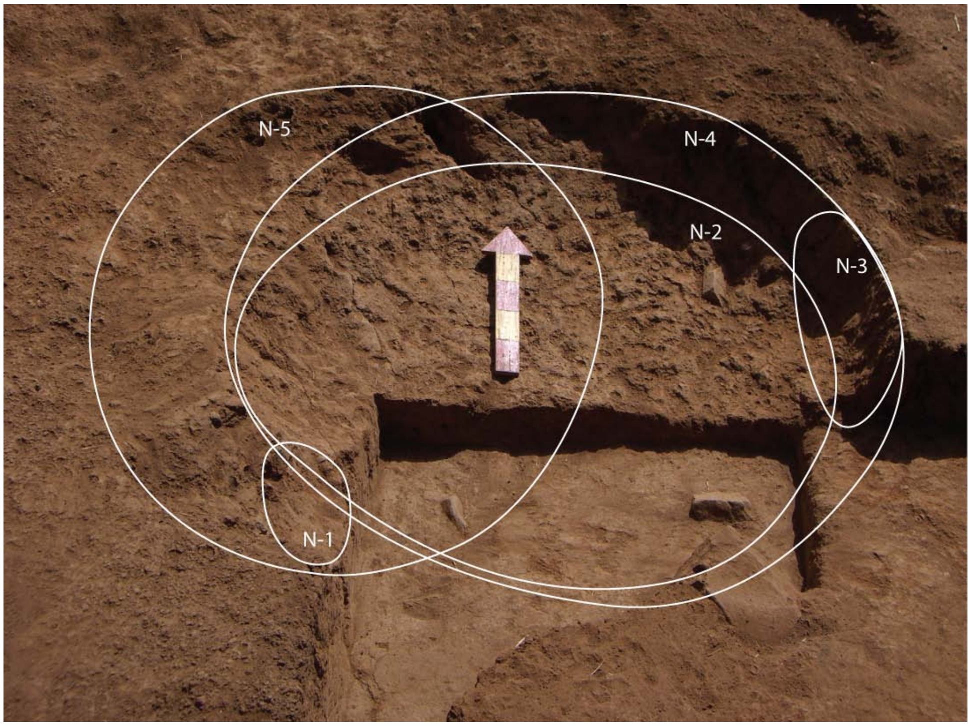


Figure 4.4: Intrusion N was a hearth that included 6 separate intrusions filled with soil and ash. Each cavity was excavated and used at different times so that the later intrusions cut through earlier ones. Together, all six intrusions comprise a single area that was repeatedly used as a hearth.

Intrusion N-2

Intrusion N-2 cut through part of Intrusion N-1 into natural soil. It had a diameter of about 140 cm and a maximum depth of 10 cm and was filled with ashy soil.

Munsell color: 7.5 YR 5/3 brown

Ceramic vessels

Total sherds	34
Restricted vessels with a neck	4 plainware, 1 Chanapata incised and painted
Body sherds with diagnostic style	3 pattern burnished

Chipped stone

Locally available stone (66.67% by count, < 1% by weight)

Quartzite

Debitage: 2 proximal flakes (< 0.1 g)

Regionally available stone (33.33% by count, 100% by weight)

Andesite

Debitage: 1 proximal flake (0.3 g)

Botanical remains from flotation of 6.45 liters of soil (S-207)

2 *Amaranthus sp.* carbonized seeds
6 *Chenopodium quinoa* carbonized seeds
2 *Galium sp.* carbonized seeds
2 *Zea mays* carbonized cupule fragments
2 *Scirpus sp.* carbonized seeds

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	3
Unidentified	10 (all from flotation)

<u>Intrusion N-3</u>

Intrusion N-3 had very ashy soil and cut through the eastern edge of Intrusion N-2 into geological soil. This area was 35 x 60 cm and between 5 and 10 cm deep.

Munsell color: 7.5 YR 5/3 brown

Ceramic vessels

Total sherds	12
Restricted vessel without a neck	1 plainware
Body sherd with diagnostic style	1 pattern burnished

Chipped stone

Locally available stone (100% by count and weight)

Quartzite

Debitage: 2 proximal flakes (0.3 g)

Botanical remains from flotation of 6.9 liters of soil (S-205)

8 *Chenopodium quinoa* carbonized seeds
2 *Zea mays* carbonized cupule fragments

Animal bone (NISP)

Mammals	
Unidentified	9 (all from flotation)

Intrusion N-4

Intrusion N-4 was an ashy stratum 10 cm thick that covered both Intrusions N-2 and N-3. This stratum extended over the entire area of Intrusion N.

Munsell color: 10 YR 5/1 gray

Ceramic vessels

Total sherds	154
Restricted vessels with a neck	1 Chanapata redware, 2 Chanapata blackware, 9 plainware
Body sherds with diagnostic style	3 Chanapata redware, 2 Chanapata incised, 7 pattern burnished

Animal bone (NISP)

Mammals	
Llama or alpaca (*Lama sp.*)	14
Guinea pig (*Cavia porcellus*)	2
Field mouse (*Muridae*)	4
Unidentified	4
Birds	
Unidentified	1

Intrusion N-5

Intrusion N-5 was a shallow circular intrusion with a diameter of about 120 cm and a depth of only 5 cm filled with reddish brown soil that had less ash than the previous intrusions. It cut through most of Level N-4, but the center was located slightly to the west of that of Intrusion N-4.

Munsell color: 5 YR 4/6 yellowish red

Ceramic vessels

Total sherds	89
Body sherds with diagnostic style	2 Chanapata redware

Chipped stone

Locally available stone (60% by count, 100% by weight)

Fine grain quartzitic sandstone

Debitage: 1 fragment of angular shatter (0.6 g)
Quartzite
Debitage: 2 proximal flakes (0.1 g)
Regionally available stone (40% by count, < 1% by weight)
Slate
Debitage: 2 proximal flakes (< 0.1 g)

Groundstone

Nondescript fragment of grinding stone that weighed 100 g.

Botanical remains from flotation of 6.7 liters of soil (S-200)
8 *Chenopodium quinoa* carbonized seeds

Animal bone (NISP)
Mammals

Llama or alpaca (*Lama sp.*)	6
Field mouse (*Muridae*)	3 (all from flotation)

Intrusion N-6

The latest intrusion in this area was filled with light brown, semi-compact soil with some flecks of carbon. It had a diameter of 160 cm and maximum depth of 12 cm, covering all previous intrusions in the area. The surface of this layer was concave, and it was later covered by Stratum 23, a large layer of soil with very little ash and charcoal that was deposited throughout most of Unit D.

Munsell color: 5 YR 4/6 yellowish red

Ceramics
No pottery was analyzed from this level.

Intrusion M – A semi-subterranean domestic structure

On what was supposed to be the last day of excavations, all of Unit D had been excavated to geologic soil except the northwest quarter. Although the ground surface was uneven in that area, I felt sure that we would expose culturally sterile soil after quickly scraping off a few centimeters of sediment with artifacts. Then, we would make a final drawing of the plan of the unit and head back to the village where the women who usually washed artifacts were preparing a feast of *cuy*, *cuy* sausage, tortilla española, baked noodles, and at least 3 kinds of potatoes. I was so confident that we would finish the excavation that I dropped off my contribution for the meal, several cases of Cusqueña beer, *before* going to the field site.

I did not anticipate finding a subterranean feature as large and deep as Intrusion M. At 6 pm, the Andean sun disappeared over the hills to the west, and we ran out of excavation forms before arriving at the base of the intrusion. We headed back to town without finishing the excavation. It was too late for soccer, but we couldn't let the party preparations go to waste. We stuffed ourselves and danced the night away to "No me caso" by Fresia Linda and "Pisao pisao" by Muñequita Sally, the year's hottest *waynos* blaring from the static-making speakers of the taxi that would take us back to Cusco.

Three days later, after a period of recovery, we returned to finish Intrusion M. It took the team a full day to excavate 80 cm of deposits that filled the intrusion, including trampled surfaces, hearths, and accumulations of domestic trash. Although I did not expect to encounter such a significant semi-subterranean feature, Intrusion M turned out to be the most important domestic structure that we excavated at the site of Yuthu.

Intrusion M had three components (see Figure X). (1) The main part of the intrusion was excavated about 90 cm below the surface of the geologic soil. It had vertical walls, a flat base, and an irregular shape. The maximum width from east to west was 2.6 m. The feature extended beyond the northern limit of the excavation unit, so it is unclear what the maximum length might have been, but the excavated portion was 3.3 m long. (2) A circular depression about 1.5 m in diameter and 7 cm deeper than the rest of the intrusion was added at the southern end of the main part after the original construction (see below). (3) The southern extreme of the intrusion was a shallow depression that sloped gently from 0 to 25 cm below the surface of the natural soil and extended about 1 m southeast of the circular depression.

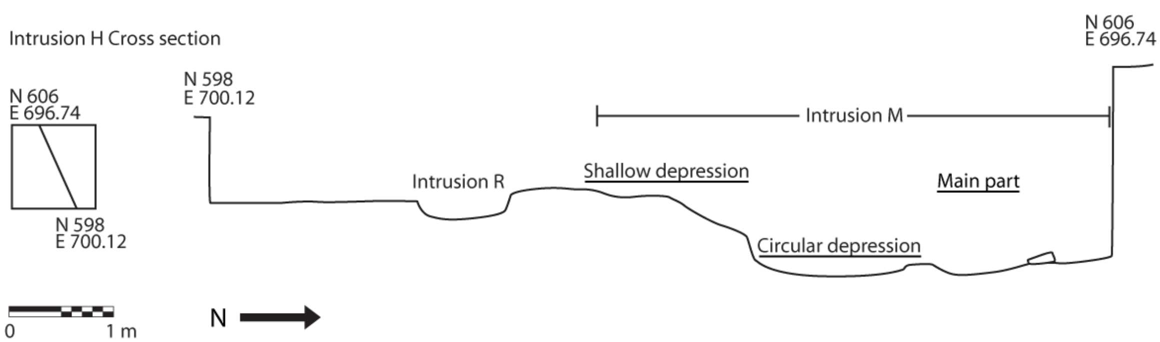


Figure 4.5: A cross-section of the final excavation of Intrusion M showing three parts: (1) the main part, (2) the circular depression, and (3) the shallow, sloping depression.

Below, I will describe the deposits that filled in the intrusion, dividing them into 5 phases of roughly coeval stratigraphic deposits and features (see Figure 4.6). After the description, I will propose that this intrusion was a simple semi-subterranean domestic structure.

Phase 1

Level M-1

The earliest deposits (Levels M-1, M-2, and M-3) rested on top of the geologic soil at the base of the intrusion. Level M-1 was comprised of an accumulation of archaeological trash and small rocks in the main part.

Munsell color: 5 YR 5/6 yellowish red

Radiocarbon date: AA84437 \ Yuthu RC-255, 2,243 ± 36 uncalibrated radiocarbon years BP, 383 – 118 BC calibrated without modeling (95.4% confidence)

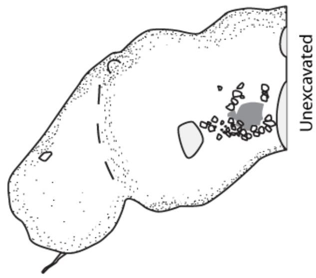
Ceramic vessels

Total sherds	130
Restricted vessels with a neck	3 plainware
Restricted vessel without a neck	1 plainware
Open vessels	2 Chanapata redware
Open vessel with a diameter greater than 30 cm	1 Chanapata redware
Body sherds with diagnostic style	1 Chanapata redware, 3 pattern burnished

Reworked ceramic sherd

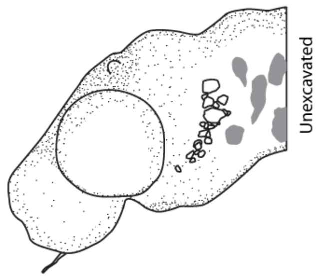
Non-disc	1 plainware

Chipped stone
- *Locally available stone* (66.67% by count, 100% by weight)
  - Coarse grain quartzitic sandstone
    - Debitage: 2 proximal flakes (0.2 g),
  - Fine grain quartzitic sandstone
    - Tools: 1 unimarginal flake tool (6.7 g)
  - Quartzite
    - Debitage: 1 proximal flake (< 0.1 g)
- *Exotic stone* (33.33% by count, < 1% by weight)
  - Obsidian
    - Debitage: 2 proximal flakes (< 0.1 g)



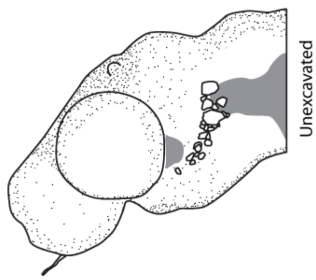
Phase 1

The main part of Intrusion M (north of the dotted line) was excavated 90 cm into geologic soil. The area to the south of the dotted line was a much shallower depression about 25 cm below the level of geologic soil. Dirt mixed with archaeological debris and areas of ash were deposited on the base of the main part of the intrusion. A radiocarbon sample from this phase dated to 393 - 204 BC (calibrated).



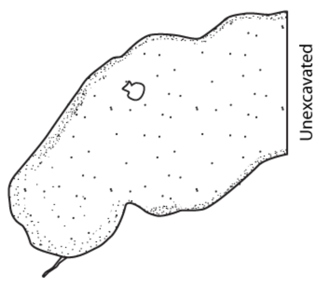
Phase 2

A circular depression, probably used as a storage feature, was added at the southern end of the main part of the intrusion. It was about 7 cm deep. This depression was kept clean of debris during Phases 2 and 3. In addition, an arc-shaped dividing wall was built to separate the storage area from the main part of the intrusion. Trampled surfaces formed to the north of the dividing wall.



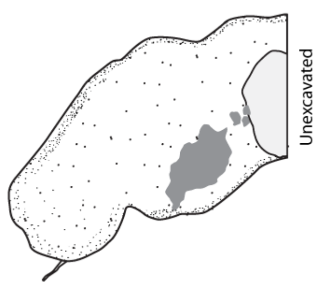
Phase 3

The circular depression was kept clean while a small trampled surface formed beside it and a larger trampled surface formed north of the dividing wall. Note that the northern trampled surface meets with two large, flat stones that probably formed a doorway in the dividing wall.



Phase 4

Intrusion H was filled by erosion with three strata of soil. There were no floors or hearths associated with this phase.



Phase 5

The depression left by the partially filled intrusion was used as a cooking area with a hearth along the northern limit of the excavation unit and a trampled surface that led from outside the intrusion to the hearth.

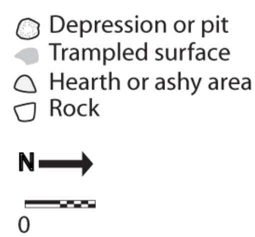


Figure 4.6: Intrusion M was filled with five phases of deposits. During Phases 1-3, the intrusion was a simple semi-subterranean domestic structure. During Phases 4 and 5, the intrusion was partly filled in by erosion and then used as a cooking area.

Botanical remains from flotation of 6.225 liters of soil (S-230)
2 *Chenopodium quinoa* carbonized seeds
1 *Scirpus sp.* carbonized seed

Animal bone (NISP)
Mammals

Llama or alpaca (*Lama sp.*)	7 (3 from flotation)
Unidentified	4 (all from flotation)

Level M-2

Stratigraphically contemporary with Levels M-1 and M-3, Level M-2 was a small very ashy area where burning took place.

Munsell color: 7.5 YR 4/3 brown

Ceramic vessels

Total sherds	7
Restricted vessel without a neck	1 plainware

Chipped stone
Locally available stone (100% by count and weight)
Quartzite
Debitage: 1 proximal flake (0.2 g)

Botanical remains from flotation of 6.3 liters of soil (S-228)
2 *Amaranthus sp.* carbonized seeds
12 *Chenopodium quinoa* carbonized seeds
2 *Zea mays* carbonized seeds
1 *Scirpus sp.* carbonized seed

Botanical remains from flotation of 4 liters of soil (S-229)
1 *Amaranthus sp.* carbonized seed
10 *Chenopodium quinoa* carbonized seeds
3 *Scirpus sp.* carbonized seeds

Botanical remains from flotation of 2.1 liters of soil (S-231)
1 *Amaranthus sp.* carbonized seed
5 *Chenopodium quinoa* carbonized seeds

Animal bone (NISP)
Mammals

Llama or alpaca (*Lama sp.*)	1 (from flotation)
Pampas cat (*Felis cf. colocolo*)	1
Field mouse (*Muridae*)	3 (all from flotation)

Level M-3

Level M-3 was another concentration of ash located along the northern profile that was stratigraphically contemporary with Levels M-1 and M-2.

Munsell color: 5 YR 5/6 yellowish red

Ceramic vessels

Total sherds	4
No diagnostic sherds were found	

Botanical remains from flotation of 6.45 liters of soil (S-227)

1 *Ambrosia sp.* carbonized seed

Phase 2

During Phase 2, a circular depression with a diameter of 1.5 m cut through Level M-1 into geologic soil. The base of this intrusion was 7 cm deeper than the surface of Level M-1. Throughout Phase 2, the interior of the circular intrusion was kept clean and no archaeological deposits accumulated within it. The form of this feature was very similar to that of the storage features described above (Intrusions P, Q and R), and may have been a similar storage feature inside the structure.

About 60 cm north of the circular intrusion, unworked field stones were arranged in an arc that ran roughly east to west on top of the deposits of Phase 1. Although there was no evidence of an adobe, stone, or cane wall above this foundation, it is clear that these rocks divided the space into northern and southern areas and controlled movement between them. By Phase 3 (see below), a trampled surface formed that extended north from two large flat stones in the wall. This indicates that these stones were probably a doorway between the main part of Intrusion M and the new storage feature.

Trampled Surface M-4

To the north of the dividing arc, a large proportion of the soil surface was compacted by trampling.

Munsell color: 5 YR 5/3 reddish brown

Ceramic vessels

Total sherds	8
Restricted vessels with a neck	2 plainware
Body sherd with diagnostic style	1 pattern burnished

Botanical remains from flotation of 6.7 liters of soil (S-226)

1 *Amaranthus sp.* carbonized seed
6 *Chenopodium quinoa* carbonized seeds
2 *Zea mays* carbonized cupule fragments

<u>Level M-5</u>

A thin layer of light brown soil accumulated on top of this floor.

Munsell color: 7.5 YR 4/4 brown

Ceramic vessels

Total sherds	68
Restricted vessels with a neck	4 plainware
Open vessel	1 plainware
Body sherds with diagnostic style	1 Chanapata redware, 1 pattern burnished

Reworked ceramic sherd

Non-disc	1 plainware

Botanical remains from flotation of 7.1 liters of soil (S-222)

1 *Amaranthus sp.* carbonized seed
2 *Chenopodium quinoa* carbonized seeds

Botanical remains from flotation of 6.75 liters of soil (S-225)

1 *Poaceae* carbonized seed

Animal bone (NISP)

Mammals	
Llama or alpaca (*Lama sp.*)	1
Human bone	3

Other items

Cuy coprolite

<u>*Phase 3*</u>

Phase 3 was a stratigraphically higher set of trampled surfaces in the northern and southern areas of the main part of Intrusion M.

Trampled Surface M-6

Trampled Surface M-6 was large and extended north from the doorway in the arc of stones. It was stratigraphically contemporary with Trampled Surface M-7.

Munsell color: 7.5 YR 4/4 brown

Ceramic vessels

Total sherds	4
Restricted vessel with a neck	1 plainware
Body sherd with diagnostic style	1 pattern burnished

Botanical remains from flotation of 5.975 liters of soil (S-221)

2 *Chenopodium quinoa* carbonized seeds

Trampled Surface M-7

South of the arc of stones, there was a small trampled area along the northeastern edge of the circular intrusion.

Munsell color: 7.5 YR 4/4 brown

Ceramic vessels

Total sherds	3
No diagnostic sherds were found	

Chipped stone

Locally available stone (33.33% by count, unknown percent by weight)

Quartzite

Debitage: 1 proximal flake (< 0.1 g)

Exotic stone (66.67% by count, unknown percent by weight)

Obsidian

Debitage: 2 proximal flakes (< 0.1 g)

Botanical remains from flotation of 5.75 liters of soil (S-224)

6 *Amaranthus sp.* carbonized seeds
12 *Chenopodium quinoa* carbonized seeds
1 *Trifolium sp.* carbonized seed
10 *Ambrosia sp.* carbonized seeds
8 *Zea mays* carbonized rachis fragments

Animal bone (NISP)

Mammals

Field mouse (*Muridae*)	13 (all from flotation)
Unidentified	4 (all from flotation

Phase 4

During Phase 4, Intrusion M was filled by a series of three uniform strata. These strata were the same on either side of the arc of stones. For the first time, the main part of the intrusion and the circular depression were filled with the same soil.

Level M-8

The lowest stratum was brown soil without ash. This stratum had a uniform thickness that resulted in an uneven surface, with the surface in the circular depression lower than that of the rest of Intrusion M.

Munsell color: 7.5 YR 4/4 brown

Ceramic vessels

Total sherds	235
Restricted vessels with a neck	16 plainware
Restricted vessel without a neck	1 plainware
Open vessel	1 Chanapata blackware
Open vessel with a diameter greater than 30 cm	1 Chanapata redware
Lid	1 Chanapata redware
Body sherd with diagnostic style	1 Chanapata blackware

Reworked ceramic sherds

Discs	2 plainware

Chipped stone

Locally available stone (83.33% by count, 99.48% by weight)

Fine grain quartzitic sandstone

Debitage: 1 proximal flake (10.6 g), 5 fragments of flake shatter (21.6 g)

Quartzite

Tool: 1 bimarginal flake tool (4.2 g)

Debitage: 1 proximal flake (1.6 g), 2 fragments of flake shatter (0.1 g)

Exotic stone (16.67% by count, 0.52% by weight)

Obsidian

Debitage: 1 proximal flake (< 0.1 g), 1 fragment of angular shatter (0.2 g)

Figurine

1 baked clay bird figurine (see Figure 3.27)

Botanical remains from flotation of 7.2 liters of soil (S-220)

2 *Amaranthus sp.* carbonized seeds

3 *Chenopodium quinoa* carbonized seeds

Botanical remains from flotation of 6.475 liters of soil (S-223)
6 *Chenopodium quinoa* carbonized seeds

Animal bone (NISP)

Mammals	
Llama or alpaca (*Lama sp.*)	11 (1 from flotation)
Field mouse (*Muridae*)	2
Unidentified	4
Human bone	2

Level M-9

The second stratum was ashy soil. The base of this stratum was a little bit lower in the circular depression than it was in the main part of the intrusion. Along the western side of the circular intrusion, nearly half of a broken restricted vessel with a neck was found covering the skeleton of a frog (32 bones) and a very small projectile point (see Figure 4.7). Although it is likely that this frog crawled under the vessel and died, the association with the projectile point raises the interesting possibility that it was killed and placed under the broken pot. After this stratum was deposited, the surface of the soil filling Intrusion M was flat and even.

Munsell color: 10 YR 5/2 grayish brown

Ceramic vessels

Total sherds	273
Restricted vessels with a neck	9 plainware, 5 pattern burnished
Restricted vessels without a neck	1 plainware, 1 pattern burnished
Open vessel	1 plainware
Lid	1 Chanapata redware
Body sherds with diagnostic style	2 Chanapata incised, 14 pattern burnished

Reworked ceramic sherd

Non-disc	1 plainware

Chipped stone
Locally available stone (85.71% by count, 99.68% by weight)
Fine grain quartzitic sandstone
Tools: 1 unimarginal flake tool (< 0.1 g)
Debitage: 1 fragment of angular shatter (8.5 g)

Quartzite

Debitage: 4 fragments of angular shatter (23.0 g)

Regionally available stone (14.29% by count, 0.32% by weight)

Andesite

Debitage: 1 proximal flake (0.1 g)

Groundstone

Nondescript fragment of grinding stone that weighed 50 g.

Botanical remains from flotation of 4.825 liters of soil (S-217, outside the area of the circular intrusion)

16 *Chenopodium quinoa* carbonized seeds
2 *Galium sp.* carbonized seeds
4 *Scirpus sp.* carbonized seeds

Botanical remains from flotation of 6.55 liters of soil (S-219, inside the area of the circular intrusion)

8 *Amaranthus sp.* carbonized seeds
20 *Chenopodium quinoa* carbonized seeds

Animal bone (NISP)

Mammals	
Llama or alpaca (*Lama sp.*)	4
Field mouse (*Muridae*)	1
Unidentified	34 (30 from flotation)
Amphibians	
Toad (*Bufo sp.*)	32 (see Figure 4.7)

Figure 4.7: The bones of a toad and a very small projectile point were found under a large fragment of a restricted vessel with a neck.

Level M-10

The third layer of soil that filled the intrusion was brown and did not contain ash.

Munsell color: 10 YR 4/3 brown

Ceramic vessels

Total sherds	56
Restricted vessels with a neck	2 plainware
Open vessel	1 Chanapata redware
Lid	1 Chanapata redware
Body sherds with diagnostic style	1 Chanapata redware, 1 indeterminate style

Botanical remains from flotation of 6.25 liters of soil (S-218)

6 *Chenopodium quinoa* carbonized seeds
2 *Zea mays* carbonized cupule fragments
2 Poaceae carbonized seeds

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	2
Guinea pig (*Cavia porcellus*)	1
Unidentified	4 (all from flotation)

Level M- 11

Level M-11 was a sloped deposit of hard clay located along the southern edge of the intrusion. It is likely that this stratum formed when rainwater washed in the walls of the intrusion.

Munsell color: 7.5 YR 4/4 brown

Ceramic vessels

Total sherds	60
Restricted vessels with a neck	5 plainware
Open vessel with a diameter greater than 30 cm	1 Chanapata redware

Reworked ceramic sherd

Non-disc	1 plainware

Chipped stone

Locally available stone (50% by count, 98.45% by weight)

Quartzite

Tool: 1 multidirectional core (31.7 g)

Exotic stone (50% by count, 1.55% by weight)
Obsidian
Debitage: 1 proximal flake (0.5 g)

Worked bone
1 ovoid scapula tool with two thin working edges

Botanical remains from flotation of 6.95 liters of soil (S-216)
6 *Chenopodium quinoa* carbonized seeds

Animal bone (NISP)
Mammals

Field mouse (*Muridae*)	2 (all from flotation)

<u>Phase 5</u>

During Phase 5, a hearth was dug into the intrusion along the limit of the excavation unit. In addition, a trampled surface formed running to the hearth from outside the intrusion.

<u>Hearth M-12</u>

Level M-12 was a deep intrusion of very ashy loose soil that served as a hearth or burning area that cut through Level M-14 into Level M-9.

Munsell color: 10 YR 5/2 grayish brown

Ceramic vessels

Total sherds	277
Restricted vessels with a neck	14 plainware
Body sherds with diagnostic style	2 Chanapata blackware

Chipped stone
Locally available stone (80% by count, 100% by weight)
Coarse grain quartzitic sandstone
Debitage: 2 proximal flakes (0.3 g)
Fine grain quartzitic sandstone
Debitage: 2 proximal flakes (< 0.1 g)
Quartzite
Debitage: 4 proximal flakes (0.2 g)
Organic limestone
Tool: 1 unimarginal flake tool (5.1 g)
Debitage: 3 fragments of angular shatter (0.3 g)

Regionally available stone (6.67% by count, < 1% by weight)
Andesite
Debitage: 1 proximal flake (0.1 g)
Exotic stone (13.33% by count, < 1% by weight)
Obsidian
Debitage: 2 proximal flakes (< 0.1 g)

Groundstone

Grinding stone that fit in one hand with plano-convex cross section and flattened surfaces created by grinding with back and forth and rocking motions (Group 1, Type B). The stone measured 11.23 x 8.80 x 4.21 cm; it weighed 640 g.

Botanical remains from flotation of 4.45 liters of soil (S-213)
3 *Amaranthus sp.* carbonized seeds
10 *Chenopodium quinoa* carbonized seeds
3 *Ambrosia sp.* carbonized seeds
5 *Zea mays* carbonized cupule fragments

Animal bone (NISP)
Mammals

Llama or alpaca (*Lama sp.*)	19 (10 from flotation)

<u>Trampled Surface M-13</u>

Trampled Surface M-13 was a long and narrow area of compacted soil that formed along the eastern edge of the intrusion, probably as a result of people entering and exiting the intrusion on the way to the hearth.

Munsell color: 7.5 YR 4/4 brown

Ceramic vessels

Total sherds	2

No diagnostic sherds were found

Chipped stone
Locally available stone (100% by count and weight)
Quartzite
Debitage: 3 proximal flakes (< 0.1 g)

Botanical remains from flotation of 5.58 liters of soil (S-215)
2 *Chenopodium quinoa* carbonized seeds

Animal bone (NISP)
Mammals

Unidentified	4 (all from flotation)

Figure 4.8: The hard gray soil visible along the eastern edge of the intrusion is Trampled Surface M-13. It likely formed as people entered and exited the shallow depression left in Intrusion M, possibly walking back and forth to the hearth located along the northern profile.

<u>Level M-14</u>

Level M-14 was a thin layer of brown soil associated with Trampled Surface M-13.

Munsell color: 7.5 YR 4/4 brown

Ceramic vessels

Total sherds	326
Restricted vessels with a neck	15 plainware
Restricted vessel without a neck	1 Chanapata redware
Open vessels	2 Chanapata blackware, 4 plainware
Open vessel with a diameter greater than 30 cm	1 Chanapata redware
Lid	1 plainware
Body sherds with diagnostic style	2 Chanapata redware, 1 Chanapata blackware, 1 pattern burnished

Chipped stone
Locally available stone (79.41% by count, 98.50% by weight)
Coarse grain quartzitic sandstone
Debitage: 2 proximal flakes (12.0 g), 1 fragment of angular shatter (26.9 g)
Fine grain quartzitic sandstone
Debitage: 7 proximal flakes (0.2 g)
Quartzite
Debitage: 2 proximal flakes (< 0.1 g), 7 fragments of angular shatter (19.6 g)
Chert
Debitage: 1 proximal flake (0.6 g), 2 fragments of angular shatter (< 0.1 g)
Quartz
Debitage: 5 fragments of angular shatter (< 0.1 g)
Regionally available stone (8.82% by count, < 1% by weight)
Andesite
Debitage: 3 fragments of angular shatter (< 0.1 g)
Exotic stone (8.82% by count, 1.50% by weight)
Obsidian
Debitage: 2 proximal flakes (< 0.1 g), 1 fragment of angular shatter (0.9 g)
Unidentified (2.94% by count, < 1% by weight)
Debitage: 1 proximal flake (< 0.1g)

Botanical remains from flotation of 7.6 liters of soil (S-214)
26 *Chenopodium quinoa* carbonized seeds
1 *Asteraceae* carbonized seed
2 *Zea mays* carbonized cupule fragments

Animal bone (NISP)
Mammals

Llama or alpaca (*Lama sp.*)	7

Level M-15

Level M-15 was a layer of loose soil mixed with concentrations of ash and bits of charcoal that covered the hearth and the trampled surface. The ash and charcoal probably came from the hearth itself.

Munsell color: 10 YR 5/2 grayish brown

Ceramic vessels

Total sherds	257
Restricted vessels with a neck	2 Chanapata redware, 7 plainware
Open vessels	2 Chanapata redware
Body sherds with diagnostic style	3 Chanapata redware, 1 Chanapata incised

Reworked ceramic sherds

Discs	3 plainware
Non-disc	1 plainware

Worked bone

1 scapula scraper with one working edge (see Figure 4.10)

Groundstone

Palm-sized mortar (Type R) with evidence of pecking. The stone measured 14.08 x 9.02 x 3.63 cm; it weighed 740 g.

Botanical remains from flotation of 5.7 liters of soil of an ash concentration (S-212)

4 *Amaranthus sp.* carbonized seeds
26 *Chenopodium quinoa* carbonized seeds
12 *Galium sp.* carbonized seeds
12 *Ambrosia sp.* carbonized seeds
1 *Scirpus sp.* carbonized seed

Animal bone (NISP)

Mammals

Field mouse (*Muridae*)	17 (all from flotation)
Unidentified	7 (5 from flotation)

Figure 4.9: Scraper made from a scapula found in Phase 5 of Intrusion M.

Interpretation of Intrusion M

Phases 1, 2 and 3: Construction and use of a domestic structure

Intrusion M contained deposits from multiple phases of use. During Phase 1, the main part of the intrusion was excavated into the natural soil. Then, soil mixed with artifacts and ash filled the bottom. During Phase 2, a circular storage pit was added to the southern end of the main part of Intrusion M. In addition, a wall or some other type of divider was constructed to separate the storage area from the northern part of the intrusion. Once the divider was built, deposits were distinct on either side. On the northern side, fairly intense foot traffic resulted in a series of trampled surfaces during Phases 2 and 3. In contrast, the circular depression in the southern part was maintained clean and only a small trampled surface formed alongside it.

The best explanation for the high degree of foot traffic, the domestic debris, and the form of the circular depression is that Intrusion M was a semi-subterranean domestic structure with a storage feature. There is no evidence of a superstructure of adobes or stone. However, the intrusion was deep enough that a thatch roof would have made a simple, but adequate house. The presence of *Scirpus* seeds, a species used to thatch the roofs of modern houses (Ugent and Ochoa 2006) in the early levels of the intrusion supports this idea, though interpretation must be cautious because *Scirpus* can also be used to make mats, baskets, and other domestic items.

Figure 4.10: (a) Exterior and (b) interior views of a modern semi-subterranean thatched structure excavated into a hillside. Note that the simple roof was built directly on the ground surface.

A similar type of construction, in which a cavity is excavated into a hillside or mountain slope and covered by a simple thatch roof, is used to build temporary-use structures in rural areas of Cusco today (see Figure 4.11). This type of house would have several advantages for Formative period villagers. First, it was an expedient structure that required only a digging tool and thatching material that was available from the nearby lake. Construction would not have required much preparation in advance, such as making adobes or felling lumber. In fact, Intrusion M was almost certainly constructed much faster than archaeologists were able to excavate it.

In addition, a subterranean structure would have blocked the strong cold winds that blow across Cerro Yuthu and insulated the occupants against the chilly air of highland nights. Although similar structures are only used as temporary posts today when watching herds or working outlying agricultural fields, there is not yet enough evidence to determine whether Intrusion M was used as a permanent or short-term dwelling. However, the presence of a storage feature within the structure does indicate ongoing use of the structure as a house at least starting in Phase 2.

Phases 4 and 5: Fill and reuse of the depression left after the structure was abandoned

During Phase 4, Intrusion M was filled in by strata that probably washed into the depression after it was no longer used as a house. These strata contained no evidence of human use such as floors or hearths. During Phase 5, after the intrusion was partly filled, the shallow depression that remained was used for a new purpose. Villagers probably took advantage of the cavity as a wind break for cooking fires. They built a hearth at the northern limit of the excavation unit and a trampled surface formed that led from the outside of the intrusion to that hearth.

Stratum 25

Stratum 25 was loose dirt mixed with ash. The stratum rested on natural soil along the northern profile.

Munsell color: 7.5 YR 4/3 brown

Ceramic vessels

Total sherds	1,890
Restricted vessels with a neck	2 Chanapata redware, 1 pattern burnished, 73 plainware
Restricted vessels without a neck	4 plainware
Open vessels	1 Chanapata redware, 1 plainware
Open vessels with a diameter greater than 30 cm	1 Chanapata redware, 1 plainware
Lids	1 Chanapata redware, 1 plainware
Body sherds with diagnostic style	20 Chanapata redware, 4 Chanapata blackware

Reworked ceramic sherds

Discs — 3 plainware

Non-discs — 2 plainware

Chipped stone

Locally available stone (66.67% by count, 88.33% by weight)

Coarse grain quartzitic sandstone

Debitage: 1 fragment of angular shatter (10.0 g)

Fine grain quartzitic sandstone

Tool: 1 unimarginal flake tool (6.2 g)

Debitage: 1 fragment of angular shatter (11.4 g)

Quartzite

Tools: 1 unimarginal flake tool (7.8 g), 1 multidirectional core (20.9 g)

Debitage: 2 fragments of angular shatter (20.5 g)

Organic limestone

Debitage: 1 proximal flake (4.2 g)

Regionally available stone (16.67% by count, 9.60% by weight)

Andesite

Tools: 1 bimarginal flake tool (5.8 g)

Debitage: 1 fragment of angular shatter (3.0 g)

Exotic stone (16.67% by count, 2.07% by weight)

Obsidian

Tools: 1 bimarginal flake tool projectile point (0.6 g), 1 combination flake tool projectile point (1.3 g) (see Figure 4.12)

Worked bone

2 broad, flat long bone shaft fragments with pointed tips

1 spatula made from a camelid mandible

Figure 4.11: Two obsidian projectile points found in Stratum 25.

Groundstone

Fragment of a doughnut-shaped clod breaker. It was 11 cm in diameter and 6.81 cm in height; the fragment weighed 220 g.

Roughly spherical stone that fit into one hand with flattened surfaces created by grinding with back and forth or circular strokes (Group 1, Type A). The stone had evidence of pecking. It measured 8.23 x 7.65 x 7.2 cm; it weighed 560 g.

Roughly spherical stone that fit into one hand with flattened surfaces created by grinding with back and forth or circular strokes (Group 1, Type A). The stone had evidence of pecking. It measured 7.63 x 7.51 x 6.62 cm; it weighed 480 g.

Roughly spherical stone that fit into one hand with flattened surfaces created by grinding with back and forth or circular strokes (Group 1, Type A). The stone shows evidence of pecking. It measured 7.28 x 6.47 x 5.77 cm; it weighed 380 g.

Fragment of a roughly spherical stone that fit into one hand with flattened surfaces created by grinding with back and forth or circular strokes (Group 1, Type A). About 40% of the object was present; it weighed 260 g.

Grinding stone that fit in one hand with plano-convex cross section and flattened surfaces created by grinding with back and forth and rocking motions (Group 1, Type B). The stone measured 8.78 x 8.33 x 4.03 cm; it weighed 380 g.

Fragment of a grinding stone that fit in one hand with plano-convex cross section and flattened surfaces created by grinding with back and forth and rocking motions (Group 1, Type B). About 20% of the object was present. Length and width are unknown; the height was 4.15 cm; the object weighed 120 g.

Nondescript fragment of grinding stone that weighed 70 g.

Long and narrow stone with triangular cross section that could be held between the fingers (Small Group 1, Type L). The stone measured 4.69 x 1.86 x 1.03 cm; it weighed 20 g.

Fragment of a small oval stone with plano-convex cross section that could be held between the fingers (Small Group 2, Type O). About 30% of the object was present. Length and width are unknown; height was 2.5; it weighed 100 g.

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	57
Guinea pig (*Cavia porcellus*)	10
Unidentified	41

Intrusion L – A semi-subterranean domestic structure

Intrusion L was a large feature that cut through Stratum 25 into geologic soil. It had an irregular shape, vertical walls, and a flat base. It was excavated about 90 cm below the surface of Stratum 25. The maximum width was 2 m from east to west. The excavated portion of the intrusion measured 2.6 m north to south, but the true length of the features is not known because it extended beyond the northern limit of Unit D. The deposits that filled Intrusion L are described below, beginning with the stratigraphically earliest deposits. Following the description, I will propose that based on similarities with Intrusion M, Intrusion L was also a semi-subterranean domestic structure.

Figure 4.12: Several piles of stones rested on the floor of Intrusion L,
a semi-subterranean domestic structure.

Artifacts lying on the bottom of the feature

Several accumulations of rocks were found on the base of the intrusion (see Figure 4.13). In addition, two unique artifacts were found resting on the floor of the feature leaning against the eastern wall (see Figure 4.14). The first was a long, narrow bifacial stone tool made of andesite (22 x 5 cm). This tool was probably the blade of a hoe or axe that had been hafted to a perishable handle. The second was a white cone-shaped object carved out of gypsum that measured roughly 22 cm long and 12 cm in diameter. Narrow linear grooves were incised into the flat base of the cone, as if it the bottom had been scraped against a harder object or surface, but it is unclear what its function might have been. No similar artifacts were found in any other context at Yuthu. Very similar artifacts were found in domestic contexts at Lukurmata and other Lake Titicaca Formative period sites (Bermann 1994).

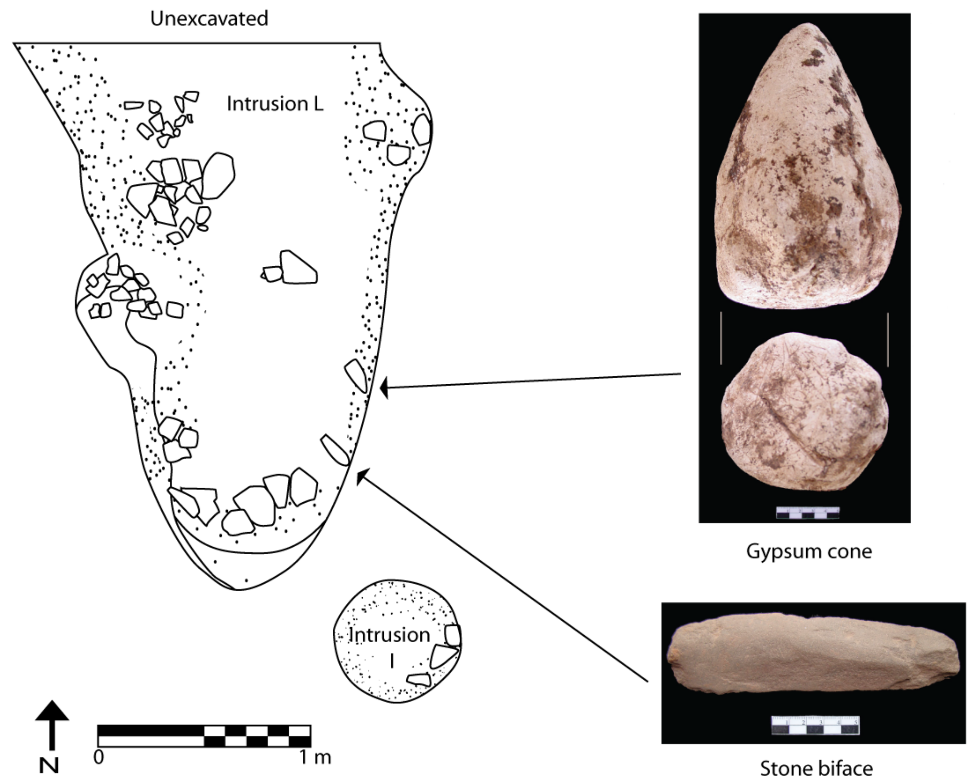


Figure 4.13: Two unique artifacts were found on the floor of Intrusion L: (1) a white gypsum cone with flat bottom with linear scrape marks whose function is unknown, and (2) an andesite biface whose form suggests that it was hafted to the handle of a foot plow.

Level L-1

The western side of the base of Intrusion L was covered by orange soil mixed with flecks of carbon 15 cm thick.

Munsell color: 7.5 YR 4/6 strong brown

Radiocarbon date: AA84436 \ Yuthu RC-251, 2,223 ± 36 uncalibrated radiocarbon years BP, 366 – 96 BC calibrated without modeling (95.4% confidence)

Ceramic vessels

Total sherds	623
Restricted vessels with a neck	1 pattern burnished, 32 plainware
Restricted vessels without a neck	2 plainware

Open vessel	1 Chanapata blackware
Open vessels with a diameter greater than 30 cm	1 Chanapata redware, 1 plainware
Lids	1 Chanapata redware, 1 plainware
Body sherds with diagnostic style	1 Chanapata redware, 1 Chanapata incised, 4 pattern burnished

Reworked ceramic sherds

Non-discs	2 plainware

Chipped stone

Locally available stone (80% by count, 99.31% by weight)

Coarse grain quartzitic sandstone

Debitage: 7 proximal flakes (12.9 g)

Quartzite

Tool: 1 bimarginal flake tool (9.1 g)

Debitage: 8 proximal flakes (21.2 g)

Regionally available stone (15% by count, < 1% by weight)

Andesite

Debitage: 3 proximal flakes (< 0.1 g)

Exotic stone (5% by count, 0.69% by weight)

Obsidian

Tool: unimarginal flake tool (0.3 g)

Groundstone

Small oval stone with plano-convex cross section that could be held between the fingers (Small Group 2, Type O). The stone had pecking marks. It measured 6.19 x 5.50 x 3.73 cm; it weighed 200 g.

Figurine

1 carved quartzite animal figurine with nose, mouth, and possibly ears

Botanical remains from flotation of 6.525 liters of soil from the middle of the intrusion (S-206)

26 *Chenopodium quinoa* carbonized seeds

5 *Zea mays* carbonized cupule fragments

Botanical remains from flotation of 5.6 liters of soil from around the rocks in the southern end of the intrusion (S-211)

12 *Chenopodium quinoa* carbonized seeds

4 *Ambrosia sp.* carbonized seeds

4 *Zea mays* carbonized cupule fragments

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	10 (5 from flotation)
White-tailed deer (*Odocoileus virginianus*)	1
Guinea pig (*Cavia porcellus*)	1
Field mouse (*Muridae*)	3 (all from flotation)
Unidentified	53 (41 from flotation)

<u>Level L-2</u>

Level L-2 was a layer of nearly pure ash mixed with a high proportion of charcoal including corn cobs, wood, and other organic matter. This ash was densest in the center of the intrusion and did not extend all the way to the southern end.

Munsell color: 7.5 YR 4/2 brown

Ceramic vessels

Total sherds	264
Restricted vessels with a neck	16 plainware
Body sherds with diagnostic style	4 Chanapata redware, 2 Chanapata blackware, 2 pattern burnished

Reworked ceramic sherds

Non-discs	2 plainware

Chipped stone

Locally available stone (100% by count and weight)

Fine grain quartzitic sandstone

Tool: 1 unimarginal flake tool (5.1 g)

Botanical remains from flotation of 5.1 liters of soil (S-202)

2 *Amaranthus sp.* carbonized seeds

35 *Chenopodium quinoa* carbonized seeds

2 *Brassica sp.* carbonized seeds

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	5
Guinea pig (*Cavia porcellus*)	2 (1 from flotation)
Field mouse (*Muridae*)	2 (all from flotation)
Unidentified	44 (36 from flotation)

Level L-3

Level L-3 covered the ashy soil of Level L-2. It was semi-compact orange soil 18 cm deep that contained few bits of charcoal.

Munsell color: 7.5 YR 3/4 dark brown

Ceramic vessels

Total sherds	766
Restricted vessels with a neck	1 Chanapata redware, 48 plainware
Open vessels	1 Chanapata blackware, 4 plainware
Open vessels with a diameter greater than 30 cm	1 Chanapata redware, 1 plainware
Body sherds with diagnostic style	6 Chanapata redware, 1 Chanapata incised, 4 pattern burnished

Reworked ceramic sherds

Discs	2 plainware
Non-discs	2 Chanapata redware, 12 plainware

Chipped stone

Locally available stone (37.50% by count, 88.24% by weight)

Quartzite

Debitage: 1 proximal flake (0.1 g), 1 fragment of flake shatter (0.1 g), 4 fragments of angular shatter (40.4 g)

Regionally available stone (12.50% by count, 5.88% by weight)

Slate

Debitage: 1 unmodified manuport (2.7 g)

Exotic stone (50% by count, 5.88% by weight)

Obsidian

Tool: 1 broken tip of hafted biface projectile point (0.3 g)

Debitage: 2 proximal flakes (< 0.1 g), 2 fragments of flake shatter (1.3 g), 3 fragments of angular shatter (1.1 g)

Worked bone

1 scapula scraper with one working edge

1 broad, flat long bone fragment with pointed tip

Groundstone

Fragment of a roughly spherical stone that fit into one hand with flattened surfaces created by grinding with back and forth or circular strokes (Group 1, Type A).

About 45% of the object was present. It measured 7.39 cm long x 65.4 cm wide; height is unknown; it weighed 250 g.

Fragment of a roughly spherical stone that fit into one hand with flattened surfaces created by grinding with back and forth or circular strokes (Group 1, Type A). About 40% of the object was present and it showed evidence of pecking. Length is unknown; the object was 4.45 cm high and 5.93 cm wide; it weighed 200 g.

Stone that could be pinched between the fingers with a flattened surface created by back and forth or circular strokes (Small Group 3, Type P). The stone measured 3.31 x 2.93 x 2.33 cm; it weighed 20 g.

Nondescript fragment of grinding stone that weighed 100 g.

Botanical remains from flotation of 6.4 liters of soil (S-198)
4 *Chenopodium quinoa* carbonized seeds

Animal bone (NISP)

Mammals	
Llama or alpaca (*Lama sp.*)	22
Guinea pig (*Cavia porcellus*)	3
Field mouse (*Muridae*)	3 (all from flotation)
Unidentified	45 (33 from flotation)
Birds	
Unidentified	2

Level L-4

Level L-4 was a thin layer of ash 2 cm thick located along the northern edge of the excavated portion of the intrusion. The part of this stratum that was within Unit D was so small that it was excavated together with Level L-5 (see below).

Level L-5

Level L-5 was dark soil located along the northern edge of the excavated portion of the intrusion. It was 9 cm thick and measured 40 cm from east to west and 1.5 m from north to south. Because Level L-4 was excavated together with this level, a few artifacts listed below may be from Level L-4.

Munsell color: 7.5 YR 4/4 strong brown

Ceramic vessels

Total sherds	9

No diagnostic sherds were found

Chipped stone

Locally available stone (100% by count and weight)

Quartzite

Debitage: 3 proximal flakes (0.7 g), 1 fragment of angular shatter (11.5 g)

Chert

Debitage: 1 fragment of angular shatter (1.0 g)

Groundstone

Nondescript fragment of grinding stone that weighed 58 g.

Botanical remains from flotation of 6.25 liters of soil (S-190)

14 *Chenopodium quinoa* carbonized seeds

4 *Ambrosia sp.* carbonized seeds

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	1 (from flotation)
White-tailed deer (*Odocoileus virginianus*)	2
Field mouse (*Muridae*)	4
Unidentified	38 (all from flotation)

Interpretation of Intrusion L

Intrusion L was a large intrusion with vertical walls and a flat base. It was kept relatively clean during the initial use, and piles of small rocks, an andesite biface, and a gypsum cone were left on the floor when it was abandoned. Then, the intrusion was filled with layers of ash and soil. No clear features such as hearths or trampled surfaces were found in these later strata.

Below I will compare Intrusion L with Intrusion M, the house described above. Both intrusions shared important characteristics. Each had vertical walls and flat bases. They were excavated about 90 cm below the western ground surface that existed at the time of their construction. Small piles of rocks were found on the bottom of each feature.

There were also important differences between the intrusions. Unlike Intrusion M, Intrusion L did not have a dividing wall or carbonized *Scirpus* seeds that may have come from a thatch roof. Therefore, it is possible that the intrusions did not have the same type of superstructure. Intrusion L did not contain trampled surfaces, and lacked an interior storage feature. However, it was closely associated with Intrusion I (described below), a small storage pit 30 cm southeast of the intrusion. While Intrusion L had *in situ* artifacts on its floor, no artifacts were found resting on the bottom of Intrusion M.

Despite some differences, I propose that Intrusion L was also a semi-subterranean domestic structure based on the similarity in form and size to Intrusion M and the artifacts found on the base of the feature. The contrasts described above may have resulted from a shorter period of use that did not result in the formation of trampled surfaces and did not include a restructuring of space like that of Intrusion M. Alternatively, the contrasts between the two structures may reflect functionally distinct uses of the spaces—such as cooking and food storage in Intrusion M vs. sleeping and tool storage in Intrusion L. In fact, the small size of these structures may preclude these kinds of divisions into distinct activity areas within a single semi-subterranean structure.

To understand daily life in a Formative village, it will be necessary to determine whether households included more than one domestic structure, each with a different use. Unfortunately, entire household complexes were not found in the relatively small unit and more extensive excavations will be necessary to identify the full range of structures and activities within Formative households.

Stratum 24

Stratum 24 was semi-compact soil mixed with ash about 38 cm deep located in the northwest part of the excavation unit. It rested partially on geologic soil and filled the depression left by Intrusion M.

Munsell color: 7.5 YR 5/3 brown

Ceramic vessels

Total sherds	5,610
Restricted vessels with a neck	22 Chanapata redware, 3 Chanapata blackware, 6 pattern burnished, 237 plainware
Restricted vessels without a neck	5 Chanapata redware, 1 Chanapata blackware, 2 pattern burnished, 17 plainware
Open vessels	18 Chanapata redware, 1 pattern burnished, 18

	plainware
Open vessels with a diameter greater than 30 cm	12 Chanapata redware, 2 Chanapata blackware, 1 pattern burnished, 3 plainware
Lids	6 Chanapata redware, 1 Chanapata blackware, 1 plainware, 1 indeterminate style
Body sherds with diagnostic style	77 Chanapata redware, 10 Chanapata blackware, 4 Chanapata incised, 24 pattern burnished, 1 indeterminate style

Reworked ceramic sherds

Discs	11 plainware
Non-discs	27 plainware

Chipped stone

- *Locally available stone* (78.75% by count, 97.57% by weight)
  - Coarse grain quartzitic sandstone
    - Debitage: 1 proximal flake (6.9 g)
  - Fine grain quartzitic sandstone
    - Tools: 2 unimarginal flake tools (49.4 g), 1 bimarginal flake tool (6.4 g), 1 multidirectional core (30.8 g)
    - Debitage: 8 proximal flakes (50.8 g), 1 fragment of flake shatter (10.5 g), 5 fragments of angular shatter (56.7), 1 unmodified manuport (105.9 g)
  - Quartzite
    - Tools: 1 unimarginal flake tool (15.7 g), 1 unidirectional core (18.1 g), 4 multidirectional cores (57.0 g)
    - Debitage: 8 proximal flakes (25.4 g), 2 fragments of flake shatter (5.0 g), 18 fragments of angular shatter (204.1 g)
  - Chert
    - Tool: 1 multidirectional core (14.0 g)
    - Debitage: 3 fragments of angular shatter (5.3 g)
  - Organic limestone
    - Tools: 2 unimarginal flake tools (15.90 g), 1 bimarginal flake tool (15.1 g)
- *Regionally available stone* (10% by count, 1.81% by weight)
  - Slate
    - Debitage: 4 proximal flakes (< 0.1 g)
  - Andesite
    - Tools: 1 unimarginal flake tool (1.3 g)
    - Debitage: 3 proximal flakes (12.3 g)
- *Exotic stone* (11.25% by count, 0.62% by weight)

Obsidian

Tools: 2 unimarginal flake tools (1.6 g), 1 bimarginal flake tool projectile point (0.9 g), 2 combination flake tools (1.5 g)

Debitage: 3 proximal flakes (< 0.1 g), 1 fragment of flake shatter (0.7 g)

Worked bone

1 broad, flat long bone shaft fragment with pointed tip

1 broad, flat long bone shaft fragment with rounded tip

Groundstone

Roughly spherical stone that fit into one hand with flattened surfaces created by grinding with back and forth or circular strokes (Group 1, Type A). The stone measured 6.46 x 5.48 x 5.35 cm; it weighed 300 g.

Fragment of a grinding stone that fit in two hands with plano-convex cross section and flattened surfaces created by grinding with back and forth and rocking motions (Group 1, Type C). About 40% of the object was present and it had pecking. Length is unknown; the stone was 7.01 cm wide and 1.09 cm in height; the object weighed 880 g.

Fragment of a grinding stone that fit in two hands with plano-convex cross section and flattened surfaces created by grinding with back and forth and rocking motions (Group 1, Type C). About 20% of the object was present; it weighed 320 g.

Small oval stone with no flat surface that may have been in an early phase of use (Small Group 2, Type N). Length is unknown; the stone was 2.79 cm wide by 1.23 cm tall; it weighed 20 g.

Small oval stone with plano-convex cross section that could be held between the fingers (Small Group 2, Type O). The stone measured 6.53 x 4.52 x 4.20 cm; it weighed 220 g.

Nondescript fragment of grinding stone that weighed 100 g.

Figure 4.14: A polished red stone bead found in Stratum 39.

Bead

1 polished red stone bead (see Figure 4.15)

Botanical remains from flotation of 5.6 liters of soil (S-161)

16 Chenopodium quinoa carbonized seeds
6 *Ambrosia sp.* carbonized seeds
2 *Asteraceae* carbonized seeds
1 *Solanum sp.* carbonized seed
2 *Zea mays* carbonized cupule fragments

Botanical remains from flotation of 5.11 liters of soil (S-171)

12 *Chenopodium quinoa* carbonized seeds
2 *Phaseolus vulgaris* carbonized cotyledons
4 *Ambrosia sp.* carbonized seeds
2 *Zea mays* carbonized cupule fragments
3 *Scirpus sp.* carbonized seeds

Botanical remains from flotation of 4.6 liters of soil (S-172)

4 *Chenopodium quinoa* carbonized seeds
4 *Ambrosia sp.* carbonized seeds
2 *Zea mays* carbonized cupule fragments
3 *Scirpus sp.* carbonized seeds

Botanical remains from flotation of 6.0 liters of soil (S-191)

6 *Chenopodium quinoa* carbonized seeds
2 *Trifolium sp.* carbonized seeds
4 *Ambrosia sp.* carbonized seeds

Botanical remains from flotation of 5.16 liters of soil (S-193)

9 *Chenopodium quinoa* carbonized seeds
2 *Bidens sp.* carbonized seeds
4 *Zea mays* carbonized cupule fragments

Botanical remains from flotation of 5.15 liters of soil (S-201)

16 *Chenopodium quinoa* carbonized seeds
1 *Galium sp.* carbonized seed
16 *Ambrosia sp.* carbonized seeds
2 *Zea mays* carbonized seeds, 4 carbonized cupule fragments

Botanical remains from flotation of 5.14 liters of soil (S-204)

5 *Chenopodium quinoa* carbonized seeds
1 *Ambrosia sp.* carbonized seed

Botanical remains from flotation of an unknown volume of soil (S-232)

4 *Amaranthus sp.* carbonized seeds
4 *Chenopodium quinoa* carbonized seeds

Animal bone (NISP)

Mammals	
Llama or alpaca (*Lama sp.*)	71 (6 from flotation)
White-tailed deer (*Odocoileus virginianus*)	1
Guinea pig (*Cavia porcellus*)	1
Field mouse (*Muridae*)	7 (all from flotation)
Unidentified	74 (12 from flotation)
Birds	
Coot (*Fulica sp.*)	1
Eagle hawk (*Geranoetus sp.*)	3
Unidentified	1
Fish	
Unidentified	1
Human bone	9

Features of Stratum 24

<u>*Ashy Intrusion 3 in the northwest corner (Intrusion K)*</u>

In the northwest corner of the excavation unit, there were a series of superimposed ashy deposits partly or fully separated by intervening strata of non-ashy soil. These repetitive deposits may have formed because the slight depression left by Intrusion M (the semi-subterranean house) was convenient for cooking or other burning. Ashy Intrusion 3 was the deepest of these ashy deposits. It cut into Stratum 24.

Ceramic vessels

Total sherds	757
Restricted vessels with a neck	13 plainware
Restricted vessel without a neck	1 plainware
Open vessels	5 plainware
Open vessel with a diameter greater than 30 cm	1 plainware
Lid	1 plainware
Body sherds with diagnostic style	2 Chanapata redware, 3 pattern burnished

Reworked ceramic sherd

Non-disc	1 plainware

Chipped stone

Locally available stone (55.56% by count, 100% by weight)

Quartz

Debitage: 1 proximal flake (0.7 g)

Breccia

Tool: 1 unimarginal flake tool (13.8 g)

Regionally available stone (22.22% by count, < 1% by weight)

Slate

Debitage: 2 proximal flakes (< 0.1g)

Exotic stone (22.2% by count, < 1% by weight)

Obsidian

Debitage: 1 proximal flake (< 0.1 g), 1 fragment of angular shatter (< 0.1 g)

Groundstone

Grinding stone that fit in one hand with plano-convex cross section and flattened surfaces created by grinding with back and forth and rocking motions (Group 1, Type B). The object had evidence of pecking. The stone measured 10.60 x 9.60 x 4.41 cm; it weighed 620 g.

Stone that could be pinched between the fingers with a flattened surface created by back and forth or circular strokes (Small Group 3, Type P). The stone measured 5.92 x 3.47 x 3.42 cm; it weighed 90 g.

Nondescript fragment of grinding stone that weighed 260 g.

Botanical remains from flotation of 5.15 liters of soil (S-158)

18 *Chenopodium quinoa* carbonized seeds

1 *Asteraceae* carbonized seed

Botanical remains from flotation of 5.95 liters of soil (S-165)

12 *Chenopodium quinoa* carbonized seeds

2 *Galium sp.* carbonized seeds

2 *Ambrosia sp.* carbonized seeds

2 *Zea mays* carbonized seeds

Botanical remains from flotation of 6.125 liters of soil (S-168)

6 *Chenopodium quinoa* carbonized seeds

2 *Poaceae* carbonized seeds

Animal bone (NISP)

Mammals	
Llama or alpaca (*Lama sp.*)	16 (4 from flotation)
Field mouse (*Muridae*)	16 (all from flotation)
Unidentified	44 (all from flotation)
Birds	
Unidentified	2

Burial 23

In the northwest corner of Unit D next to Intrusion M, a small depression that cut into geologic soil contained Burial 23, an infant (newborn to 6 months of age). The burial was covered by loose brown dirt. Although the limits of the excavation unit prevented us from excavating this soil completely, it is possible that it was a small mound, about 44 cm high and 80 cm in diameter, constructed to cover and mark the burial. The mound was almost entirely on top of geologic soil except for a small part that overlapped Stratum 24, the last layer that filled the earliest pit house (Intrusion M, see Figure 4.1, northern profile). If the mound were constructed on top of Stratum 24, it would have been built long after the semi-subterranean house was abandoned. However, if the superposition of the mound on top of Stratum 24 resulted from slumping or erosion, it is possible that this burial mound was coeval with construction of the house and that the child was a member of the family who lived there.

Unfortunately, the orientation and position of the body were not recorded because my assistant did not recognize that he was excavating a human burial. Despite this, 57% of the bones of the individual were salvaged from the fauna bag. Because the skeleton was nearly complete and the delicate infant bones were in excellent condition, it is likely that Burial 23 was a primary interment in which this individual was buried very soon after his or her death (Burial Type 1).

The individual had a double-headed first rib, a congenital condition that it shared with a woman buried during the final use of the Northern Sector (Burial 18, see below). Although these two individuals shared a heritable trait, the burials were from the stratigraphically lowest and highest cultural deposits, making it impossible that they were mother and child. Rather, this shared condition demonstrates the continued occupation of the site by related people from the earliest to latest phases.

Munsell color: 7.5 YR 4/3 brown

Ceramic vessels

Total sherds	204
Restricted vessels with a neck	13 plainware
Open vessel	1 plainware

Body sherds with diagnostic style	2 Chanapata redware, 1 Chanapata blackware, 2 pattern burnished

Chipped stone
Locally available stone (53.85% by count, 95.40% by weight)
Coarse grain quartzitic sandstone
Debitage: 2 proximal flakes (25.8 g)
Fine grain quartzitic sandstone
Tool: 1 unimarginal flake tool (0.6 g)
Debitage: 2 fragments of angular shatter (7.3 g)
Quartzite
Tool: 1 unimarginal flake tool (3.1 g)
Debitage: 1 fragment of angular shatter (2.6 g)
Exotic stone (46.15% by count, 4.60% by weight)
Obsidian
Tools: 1 unimarginal flake tool (0.6 g), 1 bimarginal flake tool (0.1 g), 1 bimarginal flake tool reutilized projectile point (1.2 g),
Debitage: 3 proximal flakes (< 0.1 g)

Worked bone
1 broad, flat long bone shaft fragment with a pointed tip
1 broad, flat long bone shaft fragment with a rounded tip

Botanical remains from flotation of 6.5 liters of soil (S-166)
24 *Chenopodium quinoa* carbonized seeds
3 *Ambrosia sp.* carbonized seeds

Animal bone (NISP)
Mammals

Llama or alpaca (*Lama sp.*)	1
Unidentified	33 (27 from flotation)

Stratum 23

Stratum 23 was a large deposit of semi-compact brown soil with some bits of charcoal. It covered almost all of Unit D and rested directly on geologic soil, except for a small part that was on top of the mound covering Burial 23.

Munsell color: 7.5 YR 3/4 dark brown

Ceramic vessels

Total sherds	2,655
Restricted vessels with a neck	5 Chanapata redware, 1 Chanapata blackware, 2

	pattern burnished, 106 plainware
Restricted vessels without a neck	1 Chanapata redware, 2 Chanapata blackware, 2 pattern burnished, 18 plainware
Open vessels	7 Chanapata redware, 2 pattern burnished, 6 plainware
Open vessels with a diameter greater than 30 cm	2 Chanapata redware, 1 Chanapata blackware, 2 plainware
Lids	2 plainware
Body sherds with diagnostic style	34 Chanapata redware, 1 Chanapata blackware, 1 Chanapata incised, 1 Chanapata incised and painted, 11 pattern burnished, 3 indeterminate style

Reworked ceramic sherds

Discs	1 pattern burnished, 5 plainware
Non-discs	5 plainware

Chipped stone

- *Locally available stone* (74.6% by count, 87.23% by weight)
  - Coarse grain quartzitic sandstone
    - Debitage: 1 proximal flake (2.2 g)
  - Fine grain quartzitic sandstone
    - Tools: 1 unimarginal flake tool (21.6 g), 4 multidirectional cores (121.4 g)
    - Debitage: 1 proximal flake (7.4 g), 5 fragments of angular shatter (52.8 g)
  - Quartzite
    - Tools: 1 unimarginal flake tool (1.7 g), 8 multidirectional cores (179.2 g)
    - Debitage: 7 proximal flakes (51.8 g), 11 fragments of angular shatter (103.9 g)
  - Chert
    - Tool: 1 multidirectional core (5.8 g)
    - Debitage: 6 fragments of angular shatter (28.9 g)
  - Quartz
    - Debitage: 1 unmodified manuport (42.4 g)
- *Regionally available stone* (12.70% by count, 11.62% by weight)
  - Slate
    - Debitage: 1 unmodified manuport (1.3 g)
  - Andesite
    - Tool: 1 unimarginal flake tool (33.5 g)
    - Debitage: 2 proximal flakes (9.3 g), 1 fragment of angular shatter (2.0 g)

Microdiorite

Debitage: 1 proximal flake (5.2 g)

Rhyolite

Tool: 1 unimarginal flake tool (31.2 g)

Exotic stone (12.70% by count, 1.14% by weight)

Obsidian

Tools: 1 hafted biface projectile point (2.0 g), 1 unimarginal flake tool (0.4 g), 1 bimarginal flake tool (0.6 g), 1 combination flake tool (1.6 g), 1 broken multidirectional core projectile point (0.9 g)

Debitage: 1 fragment of angular shatter (0.2 g)

Worked bone

1 broad, flat long bone shaft fragment with pointed tip

Groundstone

Roughly spherical stone that fit into one hand with flattened surfaces created by grinding with back and forth or circular strokes (Group 1, Type A). The stone measured 8.04 x 7.46 x 52.5 cm; it weighed 430 g.

Fragment of a roughly spherical stone that fit into one hand with flattened surfaces created by grinding with back and forth or circular strokes (Group 1, Type A). The stone had pecking marks. About 60% of the object was present. The stone measured 6.07 cm long by 5.71 cm wide; it's height is unknown. The fragment weighed 260 g.

Grinding stone that fit in one hand with plano-convex cross section and flattened surfaces created by grinding with back and forth and rocking motions (Group 1, Type B). The stone measured 9.33 x 7.91 x 4.13 cm; it weighed 360 g.

Fragment of a grinding stone that fit in two hands with plano-convex cross section and flattened surfaces created by grinding with back and forth and rocking motions (Group 1, Type C). About 40% of the object was present. Length was unknown; it was 7.24 cm wide and 3.93 cm tall; the fragment weighed 270 g.

Fragment of an oval stone with rectangular cross section created by rocking the stone side to side along its edge (Group 2, Type D). About 60% of the object was present. The length is unknown; it was 10.29 cm wide and 5.08 cm tall. The fragment weighed 710 g.

Small oval stone with no flat surface that may have been in an early phase of use (Small Group 2, Type N). The stone measured 4.64 x 4.39 x 3.29 cm; it weighed 80 g.

Stone that could be pinched between the fingers with a flattened surface created by back and forth or circular strokes (Small Group 3, Type P). The stone measured 4.45 x 3.74 x 2.71 cm; it weighed 60 g.

Column-shaped stone that could be pinched between the fingers with a flat base created by back and forth circular strokes (Small Group 3, Type Q). The stone measured 3.74 x 3.61 x 2.71 cm; it weighed 60 g.

A cobble with one flat surface with extensive pecking and scarring created when the stone was used as a hammer. The stone measured 8.40 x 7.49 x 6.81 cm; it weighed 660 g.

A unique groundstone hafted biface made of breccia (see Figure 4.16). The point measured 6.18 x 4.70 x 1.84 cm; it weighed 60 cm.

Nondescript fragment of grinding stone that weighed 90 g.

Figure 4.15: An unusual groundstone hafted biface made from breccia.

Special objects

1 stone bead (see Figure 4.17)

1 clear quartz crystal that weighed 2.9 g.

Figure 4.16: A stone bead found in Stratum 23.

Botanical remains from flotation of 5.2 liters of soil (S-209)
 2 *Chenopodium quinoa* carbonized seeds
 2 *Zea mays* carbonized cupule fragments

Animal bone (NISP)	
Mammals	
Llama or alpaca (*Lama sp.*)	55
Guinea pig (*Cavia porcellus*)	1
Unidentified	52 (11 from flotation)
Birds	
Duck (*Anas sp.*)	
Coot (*Fulica sp.*)	2
Human bone	2

Features associated with Stratum 23

Intrusion J

Intrusion J was a cylindrical pit about 60 cm in diameter and 60 cm deep that cut through Stratum 23 into geologic soil. The soil that filled this feature was reddish brown with chunks of burned earth and flecks of charcoal.

Munsell color: 5 YR 4/4 reddish brown

Ceramic vessels	
Total sherds	71
Body sherds with diagnostic style	1 Chanapata redware, 4 pattern burnished

Chipped stone
 Locally available stone (66.67% by count, < 1% by weight)
 Coarse grain quartzitic sandstone
 Debitage: 1 proximal flake (< 0.1 g),
 Quartzite
 Debitage: 1 fragment of angular shatter (< 0.1 g)
 Exotic stone (33.33% by count, 100% by weight)
 Obsidian
 Debitage: 1 fragment of angular shatter (0.5 g)

Botanical remains from flotation of 6.15 liters of soil from a lower part of the intrusion fill (S-186)
 18 *Chenopodium quinoa* carbonized seeds
 2 *Verbena sp.* carbonized seeds
 4 *Ambrosia sp.* carbonized seeds

Botanical remains from flotation of 6.85 liters of soil from a higher part of the intrusion fill (S-185)

20 *Chenopodium quinoa* carbonized seeds
4 *Ambrosia sp.* carbonized seeds
3 *Zea mays* carbonized seeds
6 *Poaceae* carbonized seeds

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	2 (all from flotation)
Field mouse (*Muridae*)	12 (all from flotation)
Unidentified	8 (7 from flotation)

<u>Loose soil</u>

A small area of loose dirt cut into Stratum 23 along the southern edge of Unit D.

Munsell color: 7.5 YR 4/3 brown

Ceramic vessels

Total sherds	5
Body sherds with diagnostic style	2 pattern burnished

<u>Thin ashy stratum</u>

A small lens of ash was found along the eastern profile of Unit D.

Munsell color: 7.5 YR 4/3 brown

Ceramic vessels

Total sherds	396
Restricted vessels with a neck	16 plainware
Open vessels	4 Chanapata redware, 3 plainware
Lids	2 plainware
Body sherds with diagnostic style	2 Chanapata redware, 1 Chanapata blackware, 1 pattern burnished

Reworked ceramic sherd

Non-disc	1 plainware

Chipped stone

Locally available stone (83.33% by count, 97.24% by weight)

Quartzite
Debitage: 1 proximal flake (20.6 g), 1 fragment of flake shatter (3.0 g), 2 fragments of angular shatter (14.8 g)
Chert
Tool: 1 multidirectional core (3.8 g)
Exotic stone (16.67% by count, 2.76% by weight)
Obsidian
Tool: 1 unimarginal flake tool (1.2 g)

Groundstone

Roughly spherical stone that fit into one hand with flattened surfaces created by grinding with back and forth or circular strokes (Group 1, Type A). The stone shows evidence of pecking. It measured 7.39 x 6.35 x 5.26 cm; it weighed 360 g.

Animal bone (NISP)
Mammals

Llama or alpaca (*Lama sp.*)	6

<u>*Intrusion I*</u>

Intrusion I was a shallow circular depression with vertical walls and a flat base located only 30 cm southeast of the second semi-subterranean house (Intrusion L, see Figure 4.2). The diameter was 25 cm and it was 7-10 cm deep. The depression was filled with semi compact orange soil that contained very little cultural material, suggesting that the pit was kept empty for storage until it was no longer used. Because of similarities between Intrusion I and Intrusions P, Q, and R described above, this feature was probably used as a storage pit for food or implements.

Munsell color: 7.5 YR 3/4 dark brown

Ceramic vessels

Total sherds	5
Body sherd with diagnostic style	1 Chanapata redware

Regionally available stone (100% by count and weight)
Slate
Debitage: 6 proximal flakes (< 0.1 g)

Botanical remains from flotation of 6.45 liters of soil (S-197)
6 *Chenopodium quinoa* carbonized seeds

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	1

Area with burials, a trampled surface, and small distinct soil deposits

Just south of Intrusion L, the second semi-subterranean house, several closely associated features cut through Stratum 23. These included: two burials, an area of orange compact soil, a small trampled surface, an ash layer, and an area of dark soil that contained a concentration of pottery.

Burial 20

Burial 20 included two individuals buried in a shallow cavity that cut through Stratum 23 into geologic soil (see Figure 4.18). Individual A was an adult woman between 26 and 35 years old buried in flexed position on her right side. The skeleton was incomplete (29% complete) and included elements primarily from the right side of the trunk, arms, and upper portion of the legs. The head, hands, and feet were missing, and the bones were poorly preserved. Individual B consisted of a cranium and part of a mandible (0% complete) of a 1 to 2 year old child of indeterminate sex. The child's head had been placed at the feet of the woman. The bones were in poor condition and their dark gray color may have been the result of burning, though other characteristics of burning were not present. Although there is not yet genetic or skeletal morphological evidence of relatedness between these two individual, it is an intriguing possibility that the burial represents a mother and child that were reunited through reburial together in a secondary interment.

Considering the incompleteness and preservation of the skeletal remains of both of the individuals, it is clear that Burial 20 was not a primary interment (Burial Type 2). While discoloration of the child's cranium may be the result of burning or another special treatment, there is no such discoloration of the woman's bones. Therefore, the treatment of the cranium probably occurred prior to placing the remains in the grave. It is not possible to determine if it was prior to or during the inhumation ritual. Hard purplish soil under the body of the woman may represent the remains of another aspect of mortuary ritual. This burial was not associated with any grave goods, but there was a large rock to the west of the child's cranium that may have marked the grave.

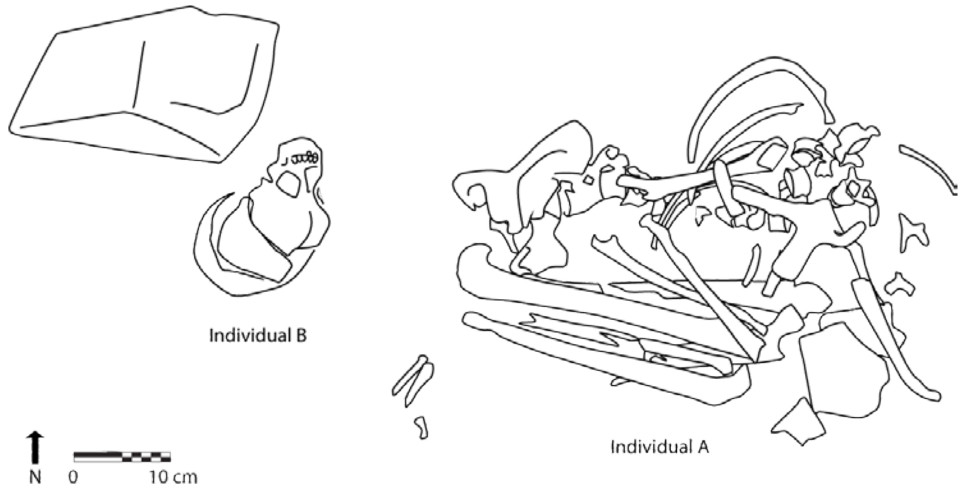


Figure 4.17: Burial 20 was a secondary burial that included the incomplete skeletons of two individuals. Individual A was a woman between 26 and 35 years of age. Individual B was the head of a 1-2 year old child of indeterminate sex that exhibited signs of possible burning.

Burial 21

Burial 21 included the burned partial remains of four individuals buried in a cavity that cut through Stratum 23 into geologic soil. Individuals A (29% complete) and B (29% complete) were cranial and post cranial bone fragments of two infants about 3 months old. The bones were in poor condition and showed signs of weathering. Individual C consisted of elements primarily from the right side of the head, trunk, and legs of a 5-6 year old child (7% complete) in a poor state of preservation. The child had tabular erect cranial modification. Individual D was represented by very fragmentary bits of bone from the head, trunk, legs, and arms of an adult of indeterminate sex that was at least 25 years old.

The very fragmentary nature of the bones of all individuals in the grave demonstrates that this was a secondary burial (Burial Type 2). The small fraction of bones from any one person suggests that before being moved and reburied, either the individuals were buried in different graves or in an open ossuary. In addition, the clear evidence for burning of all skeletal elements implies that the bones and other combustible materials were burned at the time of the inhumation. There were no grave goods associated with this burial.

Figure 4.18: Burial 21 was a burned secondary interment of two individuals that were probably about 3 months of age, a 5-6 year old child, and an adult (of indeterminate sex) more than 25 years old.

<u>Small area of orange soil</u>

A small area of orange soil was located just south of Burial 20. It was about 80 cm from east to west, 60 cm from north to south, and 9 cm deep.

Munsell color: 7.5 YR 3/3 dark brown

Ceramic vessels

Total sherds	34
Restricted vessel with a neck	1 plainware
Restricted vessel without a neck	1 plainware

Chipped stone

Locally available stone (100% by count and weight)

Quartzite

Debitage: 1 proximal flake (0.6 g)

Animal bone (NISP)

Mammals

Unidentified	10

<u>Area of soil mixed with ash</u>

A small ash concentration 9 cm thick that measured 1.2 m from north to south and 80 cm from east to west was adjacent to the southern edge of the area with orange soil.

Munsell color: 7.5 YR 4/3 brown

Ceramic vessels

Total sherds	142
Restricted vessels with a neck	4 plainware
Open vessels	2 plainware
Lid	1 plainware
Body sherds with diagnostic style	2 pattern burnished

Chipped stone
Locally available stone (75% by count, 99.41% by weight)
Fine grain quartzitic sandstone
Debitage: 1 proximal flake (5.5 g)
Quartzite
Debitage: 2 proximal flakes (1.1 g), 3 fragments of angular shatter (10.3 g)
Regionally available stone (25% by count, 0.59% by weight)
Slate
Debitage: 2 proximal flakes (0.1 g)

Botanical remains from flotation of 5.18 liters of soil (S-176)
2 *Chenopodium quinoa* carbonized seeds
1 *Brassica sp.* carbonized seed
1 *Ambrosia sp.* carbonized seed

Animal bone (NISP)

Mammals	
Llama or alpaca (*Lama sp.*)	3
Field mouse (*Muridae*)	5 (all from flotation)
Unidentified	28 (all from flotation)
Human bone	2 (all from flotation)

<u>Trampled Surface 23-1</u>

Trampled Surface 23-1 formed on top of the soil mixed with ash described above. It was a small area about 30 cm from north to south that extended beyond the western limit of Unit D. The entire floor was taken as a flotation sample

Munsell color: 7.5 YR 4/4 brown

Ceramic vessels

Total sherds	4
Restricted vessel with a neck	1 plainware

Chipped stone

Locally available stone (100% by count and weight)

Fine grain quartzitic sandstone

Tool: 1 unimarginal flake tool (11.7 g)

Botanical remains from flotation of 1.15 liters of soil (S-175)

6 *Chenopodium quinoa* carbonized seeds

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	2 (all from flotation)
Field mouse (*Muridae*)	3 (all from flotation)

Dark soil containing a concentration of pottery

A small area of very dark soil 9 cm thick that measured 60 cm from east to west and 85 cm north to south contained a high quantity of pottery and some loose stones.

Munsell color: 7.5 YR 3/4 dark brown

Ceramic vessels

Total sherds	61
Open vessel	1 pattern burnished
Body sherd with diagnostic style	1 Chanapata incised and painted

Chipped stone

Locally available stone (100% by count and weight)

Fine grain quartzitic sandstone

Debitage: 1 proximal flake (2.8 g)

Quartzite

Tool: 1 bimarginal flake tool (23.9 g)

Debitage: 1 fragment of angular shatter (8.1 g)

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	1

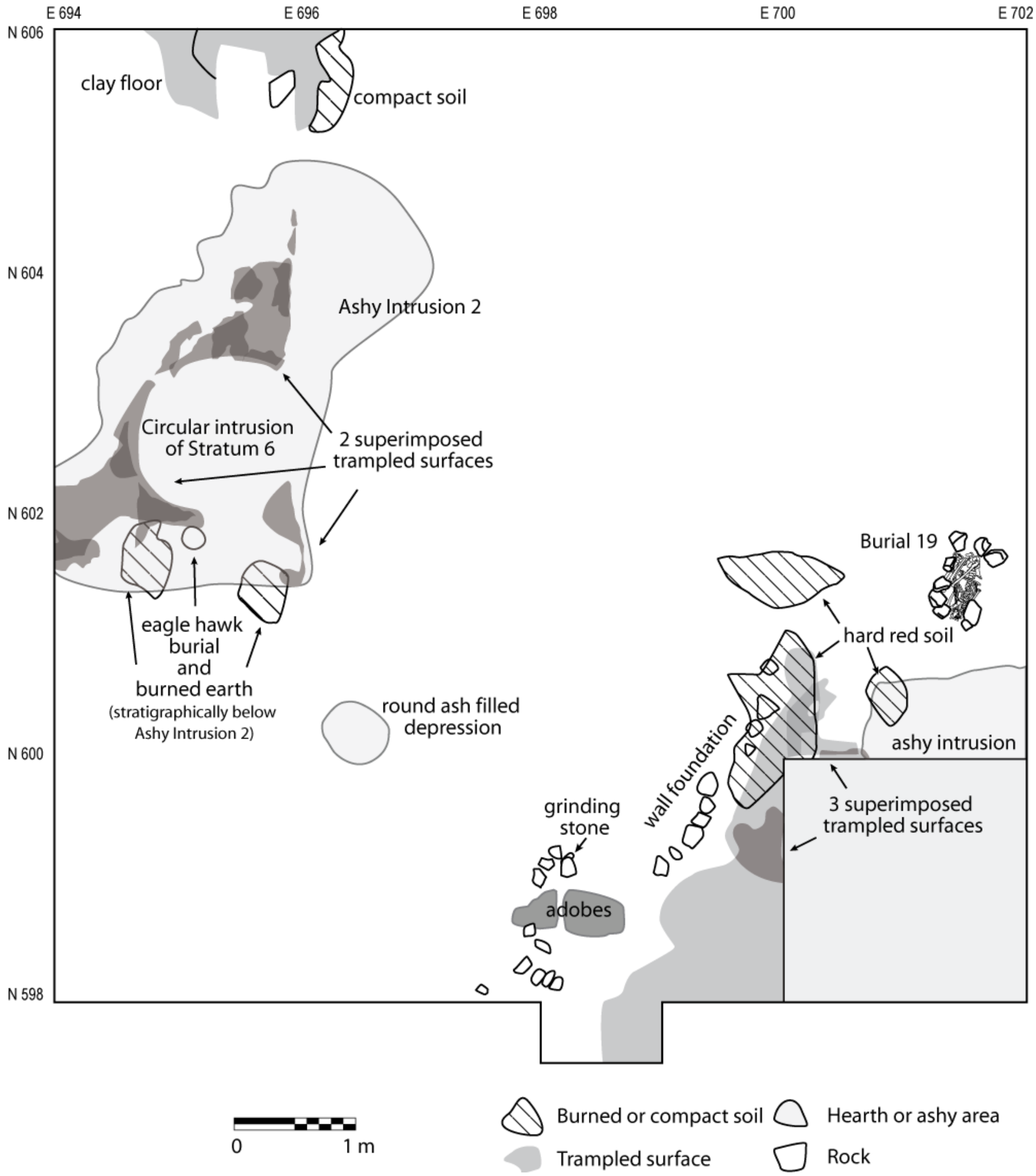


Figure 4.19: Two areas in Unit D were important domestic activity zones. (1) The Semi-circular floor in the northwest corner was the only prepared floor made of very hard clay. It was associated with Ashy Intrusion 2 (Intrusion G) in the northwest corner that was a large irregular shaped cavity filled with alternating layers of ash and trampled surfaces. (2) The structure in the southeast corner included three superimposed trampled surfaces bordered on the northwest by a simple wall foundation and to the east by ashy intrusion. This structure was closely associated with the secondary burial of an 11-12 year old child (Burial 19). This plan drawing also includes the eagle hawk burial, the round ash-filled depression, and the cluster of adobes.

Stratum 22

Stratum 22, loose brown dirt mixed with a small amount of ash 19 cm thick, was located along the southern edge of Unit D.

Munsell color: 7.5 YR 4/4 brown

Ceramic vessels

Total sherds	524
Restricted vessels with a neck	4 Chanapata redware, 13 plainware
Restricted vessels without a neck	2 pattern burnished
Open vessels	2 plainware
Open vessels with a diameter greater than 30 cm	3 Chanapata redware
Body sherds with diagnostic style	7 Chanapata redware, 2 Chanapata blackware

Reworked ceramic sherds

Discs	2 plainware

Chipped stone

Locally available stone (100% by count and weight)

Fine grain quartzitic sandstone

Debitage: 2 fragments of angular shatter (12.0 g)

Quartzite

Debitage: 4 fragments of angular shatter (24.8 g)

Chert

Tools: 1 unimarginal flake tool (2.5 g), 1 bimarginal flake tool (1.4 g)

Schist

Debitage: 1 unmodified manuport (4.5 g)

Groundstone

Grinding stone that fit in one hand with plano-convex cross section and flattened surfaces created by grinding with back and forth and rocking motions (Group 1, Type B). The stone measured 11.88 x 5.23 x 2.93 cm; it weighed 280 g.

Palm-sized mortar (Type R). The length and width are unknown; it was 2.17 cm tall and weighed 100 g.

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	11
Guinea pig (*Cavia porcellus*)	1

Unidentified	8
Birds	
Duck (*Anas sp.*)	1
Human bone	1

Figure 4.20: Two adobes, a bit of daub, and several stones were surrounded by loose soil.

Feature of Stratum 22

<u>*A cluster of adobes and loose rocks*</u>

An area of loose soil about 1 m from north to south and 90 cm from east to west that was 19 cm deep covered 2 adobes and several loose stones near the southern edge of Unit D.

Munsell color: 7.5 YR 5/4 brown

Ceramic vessels

Total sherds	9
No diagnostic sherds were found	

Botanical remains from flotation of 5.8 liters of soil (S-142)

6 *Chenopodium quinoa* carbonized seeds

Animal bone (NISP)

Mammals	
Llama or alpaca (*Lama sp.*)	11
Guinea pig (*Cavia porcellus*)	1
Unidentified	8
Birds	
Duck (*Anas sp.*)	1
Human bone	1

Stratum 21

Stratum 21 was loose, dark-brown earth about 11 cm thick that was located in the southwest corner.

Munsell color: 7.5 YR 3/3 dark brown

Ceramic vessels

Total sherds	724
Restricted vessels with a neck	36 plainware
Open vessels	3 Chanapata redware, 1 plainware
Open vessel with a diameter greater than 30 cm	1 Chanapata redware
Lids	3 Chanapata redware, 1 plainware
Body sherds with diagnostic style	1 Chanapata redware, 3 Chanapata blackware, 2 Chanapata incised, 3 pattern burnished

Reworked ceramic sherds

Non-discs	3 plainware

Chipped stone

Locally available stone (92.86% by count, 95.90% by weight)

Fine grain quartzitic sandstone

Tool: 1 unimarginal flake tool (9.4 g)

Debitage: 1 proximal flake (4.0 g)

Quartzite

Tools: 1 unimarginal flake tool (3.1 g), 2 multidirectional cores (37.4 g)

Debitage: 1 proximal flake (9.7 g), 4 fragments of angular shatter (6.8 g)

Chert

Debitage: 2 fragments of angular shatter (6.8 g)

Organic limestone

Debitage: 1 proximal flake (4.3 g)

Regionally available stone (7.14% by count, 4.1% by weight)

Andesite
Debitage: 1 proximal flake (4.3 g)

Groundstone

Fragment of a small oval stone with plano-convex cross section that could be held between the fingers (Small Group 2, Type O). About 40% of the object was present. The length was unknown; it was 3.43 cm wide and 3.02 cm tall. The fragment weighed 60 g.

Botanical remains from flotation of 6.125 liters of soil (S-189)
6 *Chenopodium quinoa* carbonized seeds
2 *Ambrosia sp.* carbonized seeds
2 *Zea mays* carbonized cupule fragments

Animal bone (NISP)

Mammals	
Llama or alpaca (*Lama sp.*)	6
Unidentified	31 (14 from flotation)
Birds	
Duck (*Anas sp.*)	1

Stratum 20

Stratum 20—loose, light brown dirt mixed with bits of charcoal 18 cm thick—was located along the western side of the excavation unit.

Munsell color: 5 YR 4/3 reddish brown

Ceramic vessels

Total sherds	2,371
Restricted vessels with a neck	5 Chanapata redware, 3 pattern burnished, 90 plainware
Restricted vessels without a neck	3 plainware
Open vessels	5 Chanapata redware, 6 plainware
Open vessel with a diameter greater than 30 cm	1 plainware
Lids	2 Chanapata redware, 1 Chanapata blackware
Body sherds with diagnostic style	16 Chanapata redware, 8 Chanapata blackware, 6 Chanapata incised, 4 pattern burnished

Reworked ceramic sherds

Disc	1 plainware
Non-discs	2 plainware

Chipped stone

Locally available stone (66.67% by count, 93.36% by weight)

Fine grain quartzitic sandstone

Debitage: 1 proximal flake (2.6 g), 1 fragment of angular shatter (5.1 g)

Quartzite

Tool: 1 multidirectional core (13.3 g)

Debitage: 4 fragments of angular shatter (31.3 g)

Chert

Tools: 1 unimarginal flake tool (5.6 g)

Debitage: 1 fragment of angular shatter (5.0 g)

Quartz

Debitage: 1 proximal flake (0.4 g)

Exotic stone (33.33% by count, 6.64% by weight)

Obsidian

Tools: 1 unimarginal flake tool (0.4 g), 1 unimarginal flake tool reutilized projectile point (2.2 g), 1 combination flake tool (0.8 g), 1 broken combination flake tool projectile point (1.1 g)

Worked bone

1 broad, flat long bone shaft fragment with pointed end of to one side
1 broad, flat long bone shaft fragment with pointed end and side notch

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	22
Unidentified	14

Birds

Unidentified	1

Metal

A long metal clothing pin was found in Stratum 20 (see Figure 4.22).

Figure 4.21: A metal pin found in Stratum 20.

Features of Stratum 20

Eagle hawk burial

Close to the western limit of the excavation unit, the intentional burial of a bird intruded into Stratum 20 (see Figure 4.23). The bird was an eagle hawk (*Geranoetus sp.)* also known as the buzzard eagle or "*aguilucho*," a species that inhabits forests, open areas, and mountainsides and eats rodents, reptiles, and carrion (Koepcke 1970). There were no other objects buried with the bird.

Figure 4.22: An eagle hawk was buried near the western edge of Unit D. It was not closely associated with any structures, but it was near two areas of burned earth (not shown).

Two areas of burned earth

The bird burial was closely associated with two areas of burned earth 9 cm thick that rested on Stratum 20 (see Figure 4.20). The low density of carbonized botanical remains from this feature suggests that the burning that created this it was probably not a cooking fire. Rather, it might have been formed by some aspect of the ritual performed when the eagle hawk was buried.

Munsell color: 2.5 YR 4/4 reddish brown

Ceramic vessels

Total sherds	79
Body sherd with diagnostic style	1 Chanapata redware

Reworked ceramic sherds

Non-disc	1 plainware

Botanical remains from flotation of 6.35 liters of soil (S-183)

1 *Fabaceae* carbonized seed
1 *Ambrosia sp.* carbonized seed

Animal bone (NISP)

Mammals

Field mouse (*Muridae*)	6 (all from flotation)
Unidentified	7 (5 from flotation)

Stratum 19

Stratum 19 was gray soil mixed with a high proportion of ash. It was 15 cm thick and located along the southern profile of Unit D.

Munsell color: 7.5 YR 3/3 dark brown

Ceramic vessels

Total sherds	1,199
Restricted vessels with a neck	53 plainware
Restricted vessels without a neck	2 plainware
Open vessels	1 Chanapata redware, 13 plainware
Body sherds with diagnostic style	6 Chanapata redware, 1 Chanapata blackware

Chipped stone

Locally available stone (71.43% by count, 95.66% by weight)

Fine grain quartzitic sandstone

Tools: 1 unimarginal flake tool (2.7 g), 1 bimarginal flake tool (14.7 g), 1 multidirectional core (35.9 g)

Debitage: 1 fragment of flake shatter (11.4 g)

Quartzite

Debitage: 3 proximal flakes (0.3 g), 2 fragments of angular shatter (37.4 g)

Chert

Tool: 1 multidirectional core (3.4 g)

Regionally available stone (7.14% by count, 4.07% by weight)

Andesite

Debitage: 1 proximal flake (4.5 g)

Exotic stone (21.43% by count, 0.27% by weight)

Obsidian

Tool: 1 unimarginal flake tool projectile point (0.3 g)

Debitage: 2 proximal flakes (< 0.1 g)

Worked bone

1 ovoid scapula tool with two thin working edges (see Figure 4.24)

Figure 4.23: Ovoid shaped tool made from a scapula. Each end is cut and smoothed.

Groundstone

Fragment of a grinding stone that fit in two hands with plano-convex cross section and flattened surfaces created by grinding with back and forth and rocking motions (Group 1, Type C). The length was unknown; it was 8.24 cm wide and 4.95 cm tall. The fragment weighed 460 g.

Botanical remains from flotation of 6.025 liters of soil (S-164)

18 *Chenopodium quinoa* carbonized seeds
4 *Ambrosia sp.* carbonized seeds

Botanical remains from flotation of 4.45 liters of soil (S-170)

4 *Chenopodium quinoa* carbonized seeds
1 *Ambrosia sp.* carbonized seed

Animal bone (NISP)

Mammals	
Llama or alpaca (*Lama sp.*)	20
Guinea pig (*Cavia porcellus*)	7 (all from flotation)
Field mouse (*Muridae*)	2
Unidentified	33 (11 from flotation)
Birds	
Unidentified	2 (all from flotation)

Stratum 18

Stratum 18 was a semi-compact dark reddish brown soil 9 cm thick located only in the southeast corner of Unit D.

Munsell color: 7.5 YR 4/3 brown

Ceramic vessels

Total sherds	77
Restricted vessels without a neck	2 plainware
Open vessel	1 plainware
Open vessel with a diameter greater than 30 cm	1 plainware
Body sherd with diagnostic style	1 pattern burnished

Chipped stone

Regionally available stone (60% by count, percent by weight unknown)

Slate

Debitage: 3 proximal flakes (< 0.1 g)

Exotic stone (40% by count, percent by weight unknown)

Obsidian

Debitage: 1 proximal flake (< 0.1 g), 1 fragment of angular shatter (< 0.1 g)

Botanical remains from flotation of 6.3 liters of soil (S-147)

4 *Chenopodium quinoa* carbonized seeds

1 *Ambrosia sp.* carbonized seed

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	2
White-tailed deer (*Odocoileus virginianus*)	1 (from flotation)
Field mouse (*Muridae*)	1 (from flotation)
Unidentified	21 (all from flotation)

Stratum 17

Stratum 17 was a small deposit of loose ash along the western edge of Unit D that measured 140 cm east to west and 130 cm north to south and 5 cm deep. The high density of quinoa and other carbonized botanical remains suggest this was probably a hearth or an area for discarding ash from cooking fires.

Munsell color: 7.5 YR 3/2 dark brown

Ceramic vessels

Total sherds	142
Restricted vessels with a neck	7 plainware
Body sherds with diagnostic style	3 pattern burnished

Chipped stone

Locally available stone (66.67% by count, 100% by weight)

Fine grain quartzitic sandstone

Debitage: 2 proximal flakes (0.1 g)

Exotic stone (33.33% by count, < 1% by weight)

Obsidian

Debitage: 1 proximal flake (< 0.1 g)

Botanical remains from flotation of 5.6 liters of soil (S-181)

18 *Chenopodium quinoa* carbonized seeds

1 *Phaseolus vulgaris* carbonized cotyledon

3 *Verbena sp.* carbonized seeds

2 *Ambrosia sp.* carbonized seeds

Animal bone (NISP)

Mammals	
Llama or alpaca (*Lama sp.*)	8
Guinea pig (*Cavia porcellus*)	1
Unidentified	10 (all from flotation)
Human bone	1

Stratum 16

Stratum 16 was loose dirt mixed with ash 13 cm thick located along the western profile of Unit D.

Munsell color: 5 YR 4/3 reddish brown

Ceramic vessels

Total sherds	410
Restricted vessels with a neck	30 plainware
Restricted vessel without a neck	1 plainware
Open vessels	4 Chanapata redware, 5 plainware
Open vessel with a diameter greater than 30 cm	1 plainware
Body sherds with diagnostic style	6 Chanapata redware, 1 Chanapata blackware

Chipped stone

Locally available stone (75% by count, 90.82% by weight)

Quartzite

Debitage: 3 fragments of angular shatter (17.8 g)

Exotic stone (25% by count, 9.18% by weight)

Obsidian

Tool: 1 unimarginal flake tool (1.8 g)

Animal bone (NISP)

Mammals	
Llama or alpaca (*Lama sp.*)	7

Unidentified	6
Birds	
Eagle hawk (*Geranoetus sp*.)	1

Stratum 15

Stratum 15 was semi-compact orange soil 20 cm thick located in the southwest corner of the excavation unit. During later use of the site, a large hearth cut into this layer and the top of this stratum became a trampled surface (Trampled Surface E-2, see below).

Munsell color: 7.5 YR 4/3 brown

Ceramic vessels	
Total sherds	2,681
Restricted vessels with a neck	3 Chanapata redware, 97 plainware
Restricted vessels without a neck	9 plainware
Open vessels	3 Chanapata redware, 1 Chanapata blackware, 15 plainware
Open vessel with a diameter greater than 30 cm	1 plainware
Lids	2 Chanapata redware
Body sherds with diagnostic style	18 Chanapata redware, 5 Chanapata blackware, 3 pattern burnished

Reworked ceramic sherds	
Discs	5 plainware
Non-discs	4 plainware

Chipped stone
- *Locally available stone* (55.56% by count, 80% by weight)
  - Fine grain quartzitic sandstone
    - Tool: 1 multidirectional core (41.3 g)
  - Quartzite
    - Tools: 1 bimarginal flake tool (9.6 g), 1 multidirectional core (21.6 g)
    - Debitage: 4 proximal flakes (13.1 g), fragment of angular shatter (4.1 g)
  - Chert
    - Tools: 1 bimarginal flake tool (9.6 g), 1 multidirectional core (21.6 g)
    - Debitage: 1 fragment of angular shatter (3.0 g)
- *Regionally available stone* (11.11% by count, 13.28% by weight)
  - Andesite
    - Tool: 1 multidirectional core (13.4 g)
    - Debitage: 1 proximal flake (3.4 g)

Exotic stone (33.33% by count, 6.72% by weight)
Obsidian
Tools: 1 hafted biface reutilized projectile point (2.5 g), 1 bimarginal flake tool (0.7 g), 1 broken bimarginal flake tool projectile point (1.5 g), 1 multidirectional core (2.0 g)

Worked bone
1 scapula scraper with one working edge
1 broad, flat long bone shaft fragment with rounded tip

Metal

One fragment of a pointed metal tool was found in Stratum 17. It had a round cross-section and a flattened end.

Figure 4.24: A pointed metal tool found in Stratum 15.

Botanical remains from flotation of 5.825 liters of soil (S-139)
3 *Chenopodium quinoa* carbonized seeds
4 *Zea mays* carbonized cupule fragments

Botanical remains from flotation of 6.125 liters of soil (S-169)
12 *Chenopodium quinoa* carbonized seeds
1 *Galium sp.* carbonized seed
2 *Ambrosia sp.* carbonized seeds
2 *Zea mays* carbonized cupule fragments

Animal bone (NISP)

Mammals	
Llama or alpaca (*Lama sp.*)	51 (1 from flotation)
White-tailed deer (*Odocoileus virginianus*)	1
Guinea pig (*Cavia porcellus*)	5 (3 from flotation)
Andean fox (*Dusycion culpaeus*)	1
Field mouse (*Muridae*)	25 (all from flotation)
Unidentified	11 (1 from flotation)
Birds	
Duck (*Anas sp.*)	2
Unidentified	3

Stratum 14

Stratum 14 was loose orange soil 14 cm thick. Like Stratum 17, this level was cut into by a later hearth so that during the use of that hearth, the surface of this level became a trampled surface (Trampled Surface E-3 see below).

Munsell color: 7.5 YR 4/4 brown

Ceramic vessels

Total sherds	556
Restricted vessels with a neck	2 Chanapata redware, 22 plainware
Restricted vessels without a neck	2 plainware
Open vessels	2 Chanapata redware
Body sherds with diagnostic style	5 Chanapata redware, 3 Chanapata blackware

Reworked ceramic sherds

Discs	2 plainware

Chipped stone

Locally available stone (60% by count, 86.46% by weight)
Fine grain quartzitic sandstone
Debitage: 1 fragment of flake shatter (7.4 g)
Quartzite
Tool: 1 unidirectional core (24.2 g)
Debitage: 1 fragment of angular shatter (6.7 g)
Regionally available stone (20% by count, 11.29% by weight)
Rhyolite
Tool: 1 unimarginal flake tool (5.0 g)
Exotic stone
Obsidian (20% by count, 2.26% by weight)
Tool: 1 bimarginal flake tool (1.0 g)

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	3

Stratum 13

Stratum 13 was semi-compact orange soil 7 cm thick along the western profile.

Munsell color: 5 YR 5/3 reddish brown

Ceramic vessels

Total sherds	420
Restricted vessels with a neck	2 Chanapata redware, 12 plainware
Restricted vessels without a neck	4 plainware
Open vessels	1 Chanapata redware, 2 plainware
Open vessel with a diameter greater than 30 cm	1 Chanapata redware
Lid	1 Chanapata redware
Body sherds with diagnostic style	7 Chanapata redware, 3 pattern burnished

Reworked ceramic sherds

Non-discs	2 plainware

Chipped stone

Locally available stone (55.56% by count, 97.38% by weight)

Coarse grain quartzitic sandstone

Debitage: 3 proximal flakes (93.1 g)

Quartzite

Debitage: 1 proximal flake (4.0 g)

Quartz

Tool: 1 multidirectional core (17.9 g)

Exotic stone (33.33% by count, 1.95% by weight)

Obsidian

Tools: 2 unimarginal flake tools (1.0 g), 1 broken bimarginal flake tool projectile point (1.3 g)

Unidentified (11.11% by count, 0.68% by weight)

Debitage: 1 fragment of angular shatter (0.8 g)

Groundstone

Fragment of a roughly spherical stone that fit into one hand with flattened surfaces created by grinding with back and forth or circular strokes (Group 1, Type A). The stone had pecking marks. About 50% of the object was present. It was 9.24 cm long and 8.49 cm wide; the height is unknown. The fragment weighed 490 g.

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	7
Guinea pig (*Cavia porcellus*)	1

Birds

Eagle hawk (*Geranoetus sp.*)	2

Stratum 12

Stratum 12 was loose dirt mixed with ash and bits of charcoal 24 cm thick located along the western profile of the excavation unit.

Munsell color: 7.5 YR 4/3 brown

Ceramic vessels

Total sherds	887
Restricted vessels with a neck	19 plainware
Open vessels	2 Chanapata redware, 7 plainware
Lids	2 Chanapata redware
Body sherds with diagnostic style	11 Chanapata redware, 1 Chanapata blackware, 1 Chanapata incised

Reworked ceramic sherds

Non-disc	1 plainware

Chipped stone

Locally available stone (63.64% by count, 82.99% by weight)

Quartzite

Tools: 2 multidirectional cores (26.7 g)

Debitage: 4 proximal flakes (17.2 g), 1 fragment of angular shatter (3.9 g)

Regionally available stone (27.27% by count, 10.24% by weight)

Slate

Debitage: 1 proximal flake (0.8 g)

Andesite

Debitage: 1 proximal flake (2.0 g)

Rhyolite

Tool: 1 unimarginal flake tool (3.1 g)

Exotic stone (9.09% by count, 6.77% by weight)

Obsidian

Tool: 1 multidirectional core (3.9 g)

Groundstone

Roughly spherical stone that fit into one hand with flattened surfaces created by grinding with back and forth or circular strokes (Group 1, Type A). The stone shows evidence of pecking. It measured 7.89 x 7.78 x 6.50 cm; it weighed 560 g.

Beads

1 shell bead (see Figure 4.26)

Figure 4.25: A shell bead found in Stratum 12.

Worked bone
1 broad, flat long bone shaft fragment with pointed tip

Animal bone (NISP)

Mammals	
Llama or alpaca (*Lama sp.*)	33
Guinea pig (*Cavia porcellus*)	3
Field mouse (*Muridae*)	1
Unidentified	16
Birds	
Eagle hawk (*Geranoetus sp.*)	1

Feature of Stratum 12

A round ash-filled depression (Intrusion H)

A round depression 60 cm in diameter and 35 cm deep had been cut into Stratum 12. The intrusion was filled with two levels of soil described below. The shape and contents of this feature suggest that it was probably a cooking pit, possibly similar to a contemporary *wathiya*, a small expedient earth oven used to cook potatoes and oca.

Level H-1

The lowest level was ash 15 cm deep that contained a very high density of carbonized quinoa seeds as well as *Amaranthus sp.* and *Ambrosia sp.* that might have been used as fuel.

Munsell color: 7.5 YR 3/2 dark brown

Ceramic vessels

Total sherds	31
Restricted vessel without a neck	1 plainware

Chipped stone
Locally available stone (16.67% by count, 62.50% by weight)

Quartzite

Debitage: 1 proximal flake (0.5 g)

Exotic stone (83.33% by count, 37.50% by weight)

Obsidian

Tools: 2 bimarginal flake tools (0.3 g)

Debitage: 2 proximal flakes (< 0.1 g), 1 fragment of angular shatter (< 0.1 g)

Botanical remains from flotation of 4.5 liters of soil (S-180)

8 *Amaranthus sp.* carbonized seeds

82 *Chenopodium quinoa* carbonized seeds

8 *Ambrosia sp.* carbonized seeds

Level H-2

This 10 cm thick level was loose soil without ash. The entire contents of this level were taken as a flotation sample. This soil probably filled in the intrusion after it was no longer used for cooking.

Munsell color: 7.5 YR 4/3 brown

Ceramic vessels

Total sherds	13
Body sherds with diagnostic style	3 pattern burnished

Chipped stone

Locally available stone (16.67% by count, < 1% by weight)

Quartzite

Debitage: 1 proximal flake (< 0.1 g)

Regionally available stone (50% by count, 100% by weight)

Slate

Debitage: 2 proximal flakes (< 0.1 g)

Andesite

Debitage: 1 proximal flake (1.2 g)

Exotic stone (33.33% by count, < 1% by weight)

Obsidian

Debitage: 2 proximal flakes (< 0.1 g)

Botanical remains from flotation of 5.75 liters of soil (S-153)

16 *Chenopodium quinoa* carbonized seeds

1 *Scirpus sp.* carbonized seed

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	4 (all from flotation)

Stratum 11

Stratum 11 was ash mixed with a bit of soil 14 cm thick located along the northern profile of Unit D. The high density of carbonized plant remains suggests that this was either a cooking area or an area where cooking ash was discarded.

Munsell color: 7.5 YR 4/3 brown

Ceramic vessels

Total sherds	7
No diagnostic sherds were found	

Chipped stone

Unidentified (100% by count and weight)

Debitage: 3 proximal flakes (< 0.1 g)

Groundstone

Nondescript fragment of a grinding stone that weighed 5 g.

Botanical remains from flotation of 5.5 liters of soil (S-167)

1 *Amaranthus sp.* carbonized seed
23 *Chenopodium quinoa* carbonized seeds
2 *Galium sp.* carbonized seeds
1 *Ambrosia sp.* carbonized seed

Animal bone (NISP)

Mammals

Unidentified	9 (all from flotation)

Stratum 10

Stratum 10 was semi-compact soil mixed with a small amount of ash. This large stratum was located in the northwest corner and was between 20 and 40 cm deep.

Munsell color: 7.5 YR 5/3 brown

Ceramic vessels

Total sherds	2,776
Restricted vessels with a neck	1 Chanapata blackware, 108 plainware
Restricted vessels without a neck	32 plainware
Open vessels	4 Chanapata redware, 13 plainware
Open vessels with a diameter greater than 30 cm	2 Chanapata redware, 1 plainware

Lids	10 plainware
Body sherds with diagnostic style	14 Chanapata redware, 6 Chanapata blackware, 1 pattern burnished

Reworked ceramic sherds

Disc	1 plainware
Non-discs	2 plainware

Chipped stone

Locally available stone (51.92% by count, 62.75% by weight)

Coarse grain quartzitic sandstone

Debitage: 1 proximal flake (27.3 g)

Fine grain quartzitic sandstone

Tool: 1 multidirectional core (28.5 g)

Debitage: 2 proximal flakes (27.1 g), 1 fragment of angular shatter (28.8 g)

Quartzite

Tools: 1 unimarginal flake tool (37.3 g), 1 multidirectional core (7.2 g)

Debitage: 10 proximal flakes (39.1 g), 7 fragments of angular shatter (60.5 g)

Organic limestone

Debitage: 1 proximal flake (0.2 g)

Regionally available stone (13.46% by count, 30.27% by weight)

Slate

Debitage: 2 proximal flakes (< 0.1 g)

Andesite

Tool: 1 multidirectional core (99.0 g)

Debitage: 3 proximal flakes (22.3 g)

Rhyolite

Debitage: 1 proximal flake (2.2 g)

Exotic stone (28.85% by count, 2.87% by weight)

Obsidian

Tools: 1 hafted biface projectile point (1.5 g), 1 unhafted biface (0.9 g), 4 unimarginal flake tools (3.2 g), 2 unimarginal flake tool reutilized projectile points (2.0 g), 2 bimarginal flake tools (1.4 g), 1 multidirectional core (0.8 g), 1 multidirectional core reutilized projectile point (0.7 g)

Debitage: 2 proximal flakes (< 0.1 g), 1 fragment of flake shatter (1.2 g)

Unidentified

Tool: 1 bimarginal flake tool (1.2 g)

Debitage: 1 proximal flake (3.5 g), 1 fragment of angular shatter (12.1 g)

Worked bone

1 thin object with round cross section and two pointed ends

1 thin object with round cross section and pointed end with a notch at one end

1 broad, flat long bone shaft fragment with rounded tip

1 tool made from camelid teeth set in a worked jaw fragment

Groundstone

Roughly spherical stone that fit into one hand with flattened surfaces created by grinding with back and forth or circular strokes (Group 1, Type A). The stone had pecking marks. It measured 7.12 x 6.28 x 5.86 cm; it weighed 400 g.

Grinding stone that fit in one hand with plano-convex cross section and flattened surfaces created by grinding with back and forth and rocking motions (Group 1, Type B). The stone had pecking marks. It measured 10.6 x 8.50 x 5.03 cm; it weighed 620 g.

Grinding stone that fit in one hand with plano-convex cross section and flattened surfaces created by grinding with back and forth and rocking motions (Group 1, Type B). The stone measured 8.40 x 7.03 x 4.63 cm; it weighed 410 g.

Fragment of a grinding stone that fit in two hands with plano-convex cross section and flattened surfaces created by grinding with back and forth and rocking motions (Group 1, Type B). The stone had pecking marks. The length and height were unknown; it was 9.25 cm wide. The fragment weighed 540 g.

Fragment of an oval stone with rectangular cross section created by rocking the stone side to side along its edge (Group 2, Type D). About 50% of the object was present. The length was unknown; it was 8.85 cm wide and 4.12 cm tall. The fragment weighed 540 g.

A disc-shaped stone with rectangular cross section created by rocking the stone side to side along its edge (Group 2, Type E). The stone measured 9.75 x 9.07 x 2.21 cm; it weighed 320 g.

Small oval stone with plano-convex cross section that could be held between the fingers (Small Group 2, Type O). The stone measured 3.74 x 3.44 x 2.98 cm; it weighed 60 g.

Two nondescript fragments of grinding stone that weighed 30 g and 140 g.

Metal

A thin metal needle was found in Stratum 10. It was 5.33 cm long and 2.6 cm in diameter. It weighed 1.3 g (see Figure 4.27).

Figure 4.26: A metal needle found in Stratum 10.

Botanical remains from flotation of 7.0 liters of soil (S-117)

8 *Chenopodium quinoa* carbonized seeds
1 *Galium sp.* carbonized seed
1 *Ambrosia sp.* carbonized seed

Botanical remains from flotation of 6.1 liters of soil (S-113)

24 *Chenopodium quinoa* carbonized seeds
2 *Ambrosia sp.* carbonized seeds

Animal bone (NISP)

Mammals	
Llama or alpaca (*Lama sp.*)	92 (13 from flotation)
White-tailed deer (*Odocoileus virginianus*)	10
Guinea pig (*Cavia porcellus*)	9
Andean fox (*Dusycion culpaeus*)	1
Field mouse (*Muridae*)	11 (all from flotation)
Unidentified	35 (15 from flotation)
Birds	
Duck (*Anas sp.*)	2
Coot (*Fulica sp.*)	3
Unidentified	1

Features of Stratum 10

<u>*Semi-circular clay floor*</u>

Floor 2 was the only formally prepared floor in Unit D. It was made of hard, brown clay. The floor extended beyond the northern limit of Unit D, so the entire size and shape of the floor are not known. However, the excavated portion was shaped like the head of a wrench with the "mouth" facing south toward Ashy Intrusion 2 in the Northwest Corner (see Figure 4.20). It was 10 cm thick and measured 1.63 m east to west and 84 cm north to south.

Munsell color: 7.5 YR 5/3 brown

Ceramic vessels

Total sherds	63
Body sherd with diagnostic style	1 Chanapata redware

Chipped stone

Regionally available stone (50% by count, percent by weight unknown)

Slate

Debitage: 1 proximal flake (< 0.1 g)

Exotic stone (50% by count, percent by weight unknown)

Obsidian

Debitage: 1 proximal flake (< 0.1 g)

Botanical remains from flotation of 5.75 liters of soil (S-163)

6 *Chenopodium quinoa* carbonized seeds

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	3 (all from flotation)
Guinea pig (*Cavia porcellus*)	1 (all from flotation)
Unidentified	27 (all from flotation)

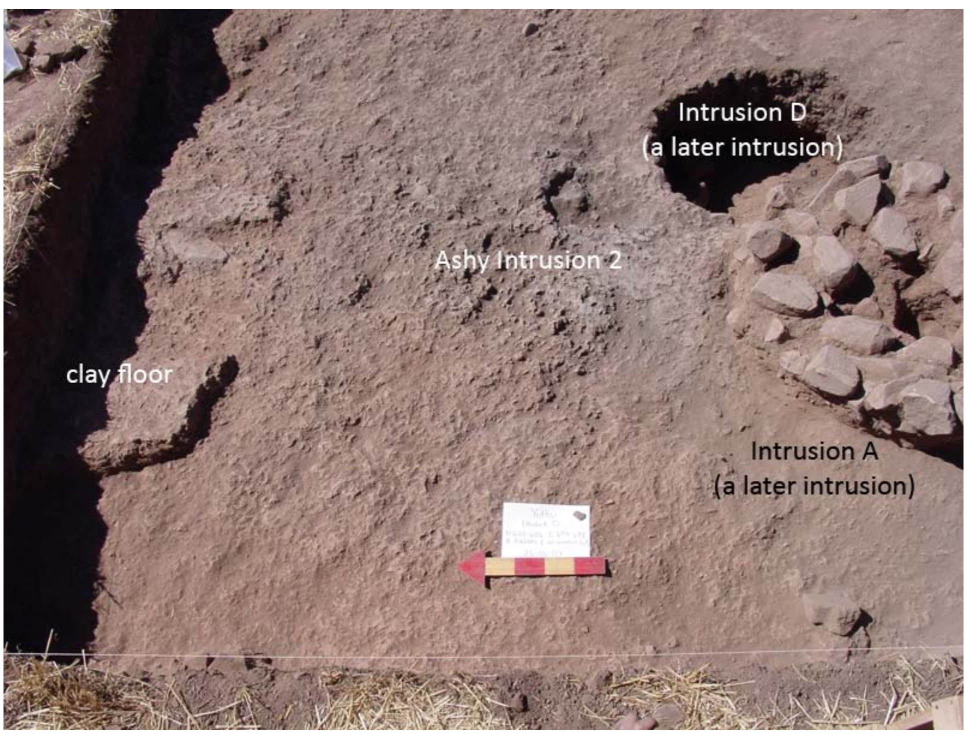


Figure 4.27: Floor 2 was the only formally prepared floor in Unit D. It was made of hard brown clay and faced Ashy Intrusion 2 to the south.

Ashy Intrusion 2 in the northwest corner (Intrusion G)

This ash-filled intrusion was associated with the clay floor. It was located directly above Ashy Intrusion 3 in the northwest corner (Intrusion J described above). Although both features were ash-filled depressions, they were not the same size or shape. They were separated by Stratum 10, a non-ashy layer that covered Ashy Intrusion 3. Ashy Intrusion 2 was between 10 and 25 cm deep with a rounded bottom. It was filled with alternating ash deposits and trampled surfaces described below, beginning with the earliest level. Many levels contained high numbers of obsidian tools including projectile points and reutilized projectile points.

Level G-1

The stratigraphically lowest level in this intrusion was semi-compact, gray soil mixed with ash that was 40 cm deep. The high density of carbonized plant remains, especially quinoa, indicates that this was probably an area for cooking.

Munsell color: 2.5 YR 5/2 grayish brown

Ceramic vessels	
Total sherds	437
Restricted vessels with a neck	2 Chanapata redware, 19 plainware
Open vessels	12 plainware
Lid	1 plainware
Body sherds with diagnostic style	6 Chanapata redware, 6 pattern burnished, 1 indeterminate
Reworked ceramic sherd	
Non-disc	1 plainware

Chipped stone

Locally available stone (30.77% by count, 73.89% by weight)

Fine grain quartzitic sandstone

Debitage: 1 fragment of angular shatter (0.8 g)

Quartzite

Tool: 1 bimarginal flake tool (14.5 g)

Debitage: 4 proximal flakes (5.6 g), 1 fragment of flake shatter (2.8 g), 1 fragment of angular shatter (8.0 g)

Regionally available stone (19.23% by count, 1.17% by weight)

Slate

Debitage: 2 proximal flakes (< 0.1 g)

Andesite
Debitage: 1 proximal flake (0.1 g)
Diorite
Debitage: 2 proximal flakes (0.4 g)
Exotic stone (50% by count, 24.94% by weight)
Obsidian
Tools: 2 hafted biface reutilized projectile points (8.1 g), 1 unimarginal flake tool reutilized projectile point (0.5 g), 1 bimarginal flake tool (2.1 g)
Debitage: 9 proximal flakes (< 0.1 g)

Figure 4.28: Chipped stone tools found in the lowest level of Ashy Intrusion 2 in the northwest corner (left to right): 1 quartzite bimarginal flake tool, 2 hafted biface reutilized projectile points, 1 unimarginal flake tool reutilized projectile point.

Groundstone

A roughly spherical stone that fit into one hand with flattened surfaces created by grinding with back and forth or circular strokes (Group 1, Type A). The stone had pecking marks. It measured 7.29 x 6.91 x 4.95 cm; it weighed 350 g.

Stone that could be pinched between the fingers with a flattened surface created by back and forth or circular strokes (Small Group 3, Type P). The stone measured 2.11 x 1.99 x 1.88 cm; it weighed 10 g.

Fragment of a palm-sized mortar (Type R). The length was unknown; it was 9.17 cm long and 4.10 cm tall. The fragment weighed 500 g.

Three nondescript fragments of grinding stones that weighed 170, 120, and 20 g.

Botanical remains from flotation of 5.8 liters of soil (S-143)
10 *Chenopodium quinoa* carbonized seeds
2 *Galium sp.* carbonized seeds

Botanical remains from flotation of 4.8 liters of soil (S-145)
50 *Chenopodium quinoa* carbonized seeds

1 *Galium sp.* carbonized seed
8 *Zea mays* carbonized cupule fragments
1 *Poaceae* carbonized seed

Botanical remains from flotation of 5.35 liters of soil (S-182)
18 *Chenopodium quinoa* carbonized seeds
1 *Fabaceae* carbonized seed
1 *Ambrosia sp.* carbonized seed
1 *Zea mays* carbonized seed

Animal bone (NISP)

Mammals	
Llama or alpaca (*Lama sp.*)	17 (7 from flotation)
White-tailed deer (*Odocoileus virginianus*)	3
Guinea pig (*Cavia porcellus*)	7 (3 from flotation)
Field mouse (*Muridae*)	25 (all from flotation)
Unidentified	51 (all from flotation)
Birds	
Coot (*Fulica sp.*)	1
Eagle hawk (*Geranoetus sp.*)	1

<u>Trampled Surface G-2</u>

This trampled surface formed on part of the surface of Level G-1. It was dark gray and with an irregular shape and measured 2.5 m north to south and 60 cm east to west. The high density of carbonized plant remains is a result of the high density in Level G-1.

Munsell color: 2.5 YR 5/2 grayish brown

Ceramic vessels

Total sherds	7
Body sherd with diagnostic style	1 pattern burnished

Chipped stone
Regionally available stone (50% by count, percent by weight unknown)
Andesite
Debitage: 1 proximal flake (< 0.1 g)
Exotic stone (50% by count, percent by weight unknown)
Obsidian
Debitage: 1 proximal flake (< 0.1 g)

Botanical remains from flotation of 3.65 liters of soil (S-151)
18 *Chenopodium quinoa* carbonized seeds
4 *Galium sp.* carbonized seeds

2 *Zea mays* carbonized cupule fragments
10 *Poaceae* carbonized seeds

Animal bone (NISP)
Mammals

Field mouse (*Muridae*)	8 (all from flotation)
Unidentified	10 (all from flotation)

Level G-3

Levels G-1 and G-2 were covered with semi-compact ashy soil 42 cm deep that was grayish brown. Compared with the first ash level, the density of carbonized plant remains was lower.

Munsell color: 2.5 YR 5/2 grayish brown

Ceramic vessels

Total sherds	635
Restricted vessels with a neck	1 Chanapata redware, 19 plainware
Restricted vessels without a neck	3 plainware
Open vessel	1 plainware
Open vessel with a diameter greater than 30 cm	1 plainware
Lid	1 plainware
Body sherds with diagnostic style	5 pattern burnished

Chipped stone
Locally available stone (30% by count, 65.19% by weight)
Fine grain quartzitic sandstone
Debitage: 2 proximal flakes (2.6 g)
Quartzite
Debitage: 4 proximal flakes (13.8 g), 2 fragments of angular shatter (5.3 g)
Chert
Debitage: 1 fragment of angular shatter (0.4 g)
Regionally available stone (10% by count, 4.42% by weight)
Andesite
Debitage: 3 proximal flakes (1.5 g)
Exotic stone (60% by count, 30.38% by weight)
Obsidian
Tools: 1 unhafted biface projectile point (1.0 g), 4 unimarginal flake tools (0.9 g), 2 bimarginal flake tools (1.7 g), 1 bimarginal flake tool projectile point (2.1 g), 1 combination flake tool (1.4 g), 1 unidirectional core (1.1 g), 1 multidirectional core (0.8 g)
Debitage: 7 proximal flakes (1.3 g)

Reworked ceramic sherd

Disc	1 plainware

Figure 4.29: Level G-3 contained many obsidian tools and fragments of obsidian debitage. These are only four examples (left to right): 1 bimarginal flake tool projectile point, 1 unimarginal flake tool projectile point, 1 unhafted biface projectile point, 1 bimarginal flake tool

Worked bone

1 tool made from a single carnivore tooth set in a worked jaw fragment

1 broad, flat long bone shaft fragment with pointed tip

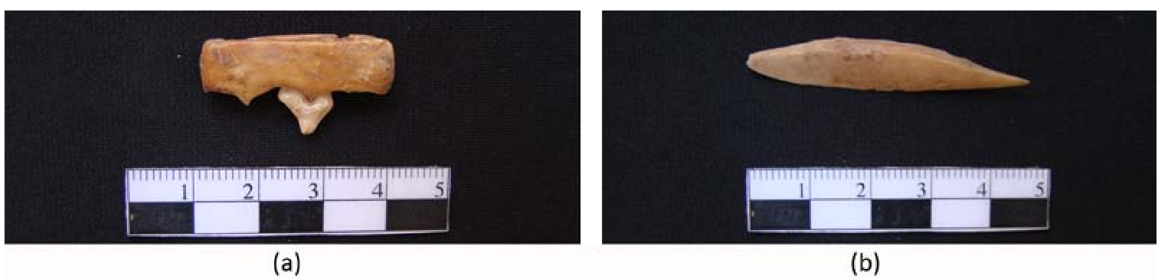


Figure 4.30: Bone tools found in Level G-3 of Ashy Intrusion 2 in the northwest corner (Intrusion G): (a) a tool made from a single carnivore tooth set in a smoothed jaw fragment, and (b) a long bone shaft fragment with one pointed and one slightly rounded end.

Botanical remains from flotation of 5 liters of soil (S-134)

10 *Chenopodium quinoa* carbonized seeds

2 *Galium sp.* carbonized seeds

3 *Ambrosia sp.* carbonized seeds

Botanical remains from flotation of 4.95 liters of soil (S-137)

16 *Chenopodium quinoa* carbonized seeds

3 *Galium sp.* carbonized seeds

4 *Ambrosia sp.* carbonized seeds

4 *Zea mays* carbonized cupule fragments

Animal bone (NISP)

Mammals	
Llama or alpaca (*Lama sp.*)	29 (7 from flotation)
Guinea pig (*Cavia porcellus*)	8
Unidentified	36 (23 from flotation)
Birds	
Duck (*Anas sp.*)	2

Trampled Surface G-4

Part of the surface of Level G-3 was trampled, forming a hard, dark grayish brown surface. It was located directly above Trampled Surface G-2 and had nearly the same spatial extent, measuring 2.6 m north to south by 80 cm east to west. The traffic patterns within this intrusion (and therefore the way the space was used) remained the same over time.

Munsell color: 10 YR 4/2 dark grayish brown

Ceramic vessels

Total sherds	101
Open vessel	1 plainware
Lids	2 plainware
Body sherds with diagnostic style	3 pattern burnished

Reworked ceramic sherds

Disc	1 plainware

Botanical remains from flotation of 3.85 liters of soil (S-148)

2 *Chenopodium quinoa* carbonized seeds
2 *Zea mays* carbonized cupule fragments

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	5
Unidentified	5 (3 from flotation)

Level G-5

The stratigraphically highest level in the intrusion was loose, gray ash 16 cm deep. No trampled surfaces formed on top of this level. Compared to earlier levels, the density of carbonized plant remains was lower.

Munsell color: 10 YR 5/1 gray

Ceramic vessels

Total sherds	96
Restricted vessels with a neck	4 plainware
Restricted vessels without a neck	5 plainware
Lids	2 plainware
Body sherds with diagnostic style	1 Chanapata redware, 6 pattern burnished

Chipped stone

Locally available stone (33.33% by count, 20.78% by weight)

Fine grain quartzitic sandstone

Debitage: 1 proximal flake (0.2 g)

Quartzite

Debitage: 1 proximal flake (1.1 g), 1 fragment of angular shatter (0.3 g)

Exotic stone (66.67% by count, 79.22% by weight)

Obsidian

Tools: 2 unimarginal flake tools (2.6 g), 2 bimarginal flake tools (3.5 g)

Debitage: 2 proximal flakes (< 0.1 g)

Botanical remains from flotation of 4.65 liters of soil (S-131)

8 *Chenopodium quinoa* carbonized seeds

1 *Galium sp.* carbonized seed

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	1
Unidentified	7

Stratum 9

Stratum 9 was a very small area 25 cm deep of loose dirt that was excavated along with Stratum 8 and Stratum 3.

Munsell color: 7.5 YR 4/3 brown

Stratum 8

Stratum 8 was a small area of loose, light brown dirt 12 cm deep located along the western edge of Unit D.

Munsell color: 7.5 YR 4/3 brown

Ceramic vessels

Total sherds	74
Restricted vessel with a neck	1 plainware
Body sherd with diagnostic style	1 Chanapata redware

Chipped stone

Locally available stone (100% by count and weight)

Quartzite

Tools: 1 unimarginal flake tool (2.7 g), 2 unidirectional cores (19.7 g)

Worked bone

1 broad, flat long bone shaft fragment with pointed tip

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	2
Unidentified	2

Stratum 7

Stratum 7 was orangish-brown dirt mixed with a very small amount of ash about 16 cm deep in the southeast corner of Unit D.

Munsell color: 7.5 YR 4/4 brown

Ceramic vessels

Total sherds	2,449
Restricted vessels with a neck	10 Chanapata redware, 1 Chanapata blackware, 85 plainware
Restricted vessels without a neck	19 plainware, 1 pattern burnished
Open vessels	2 Chanapata redware, 16 plainware
Open vessels with a diameter greater than 30 cm	3 Chanapata redware, 2 plainware
Lids	1 Chanapata redware, 1 Chanapata blackware, 2 plainware
Body sherds with diagnostic style	24 Chanapata redware, 6 Chanapata blackware, 2 Chanapata incised, 3 pattern burnished

Reworked ceramic sherds

Disc	1 plainware
Non-discs	6 plainware

Chipped stone

Locally available stone (57.14% by count, 72.03% by weight)

Fine grain quartzitic sandstone

Debitage: 3 proximal flakes (3.0 g)

Quartzite

Tools: 1 unimarginal flake tool (1.1 g), 1 multidirectional core (16.0 g)

Debitage: 1 proximal flake (2.0 g), 4 fragments of angular shatter (38.1 g)

Chert

Tool: 1 bimarginal flake tool (5.5 g)

Organic limestone

Debitage: 1 proximal flake (5.9 g)

Regionally available stone (14.29% by count, 22.43% by weight)

Andesite

Tool: 1 unimarginal flake tool (6.3 g),

Microdiorite

Tool: 1 unimarginal flake tool (10.7 g)

Debitage: 1 fragment of angular shatter (5.3 g)

Exotic stone (28.57% by count, 5.53% by weight)

Obsidian

Tools: 1 hafted biface reutilized projectile point (0.9 g), 1 unimarginal flake tool (2.4 g), 1 unimarginal flake tool reutilized projectile point (0.7 g), 1 multidirectional core reutilized projectile point (1.5 g)

Debitage: 2 proximal flakes (< 0.1 g)

Worked bone

1 broad, flat long bone shaft fragment with rounded tip
1 rib fragment with square tip
1 notched long bone

Botanical remains from flotation of 6.7 liters of soil (S-110)

1 *Chenopodium quinoa* carbonized seed
1 *Asteraceae* carbonized seed

Botanical remains from flotation of 6.375 liters of soil (S-122)

10 *Chenopodium quinoa* carbonized seeds

Animal bone (NISP)

Mammals	
Llama or alpaca (*Lama sp.*)	65 (1 from flotation)
Guinea pig (*Cavia porcellus*)	8
Field mouse (*Muridae*)	6
Unidentified	51 (7 from flotation)
Birds	
Duck (*Anas sp.*)	2
Eagle hawk (*Geranoetus sp.*)	1
Unidentified	5
Human bone	1

Features of Stratum 7

<u>*Burial 19*</u>

Burial 19, an 11-12 year old child of indeterminate sex, was buried in a cavity that cut down into Stratum 7. The body was tightly flexed and surrounded by a rectangle of stones (see Figure 4.32). There were no associated grave goods. The skeleton was in excellent condition and complete except for the cranium (100% completeness). All other bones were found in the correct anatomical position, including fingers, toes, and all vertebrae. There were no cut marks to indicate that the cranium had been cut from the mandible or vertebra.

This individual likely underwent multiple phases of mortuary treatment after his or her death. The presence of some upper teeth in the burial clearly demonstrates that the cranium was present in an early phase of burial treatment. The absence of cut marks on the vertebrae and mandible indicates that the body must have been in an advanced state of decay when the cranium was removed. The soft tissue, including muscles and tendons, must have decayed sufficiently for the cranium to be taken without cutting and without disturbing the attached bones (see Figure 4.33). Yet, the soft tissue must have remained in place to prevent displacement of unstable articulations like those of the fingers and toes. This individual was the first person who was stored as a dessicated mummy before final burial (Burial Type 4).

Although scholars sometimes suggest that a tightly flexed position (like that of Burial 19) indicates that a body was wrapped as a bundle, taphonomic studies show that this can result from compression from the sediment covering the body during the process of decay (Duday and Guillon 2006). Although the flexed position does not provide convincing evidence that the body was wrapped, keeping the mummy in a bundle would have provided an extra level of security against loss and would have allowed the targeted removal of the cranium without disturbing any other bones since the head would have been easily identifiable. The mummy was probably stored in an accessible space, because, if the bundle had been buried, even careful exhumation to remove a single bone would have probably disturbed other elements. No evidence recovered at Yuthu indicates where the cranium was stored or how it was used after it was removed.

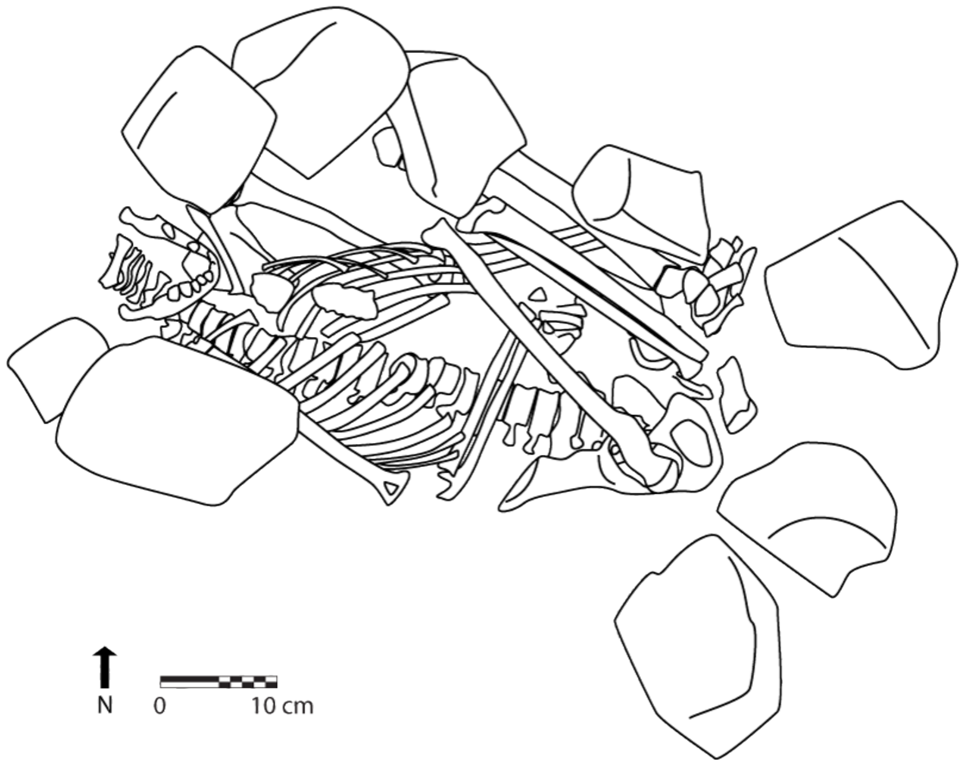


Figure 4.31: Burial 19 was an 11-12 year old child in a tightly flexed position that was complete except for the cranium.

Figure 4.32: The cranium of Burial 19 was removed without disturbing any of the surrounding bones.

The structure in the southeast corner

Several closely associated features in the southeast corner rested on or intruded into Stratum 7 (see Figure 4.34). When considered together, it seems likely that these features were the remains of an above ground domestic structure which is described below in three sections: (1) a series of trampled surfaces alternating with ashy deposits, (2) a wall located along the northwest edge of the floors, and (3) an ashy intrusion east of the floors.

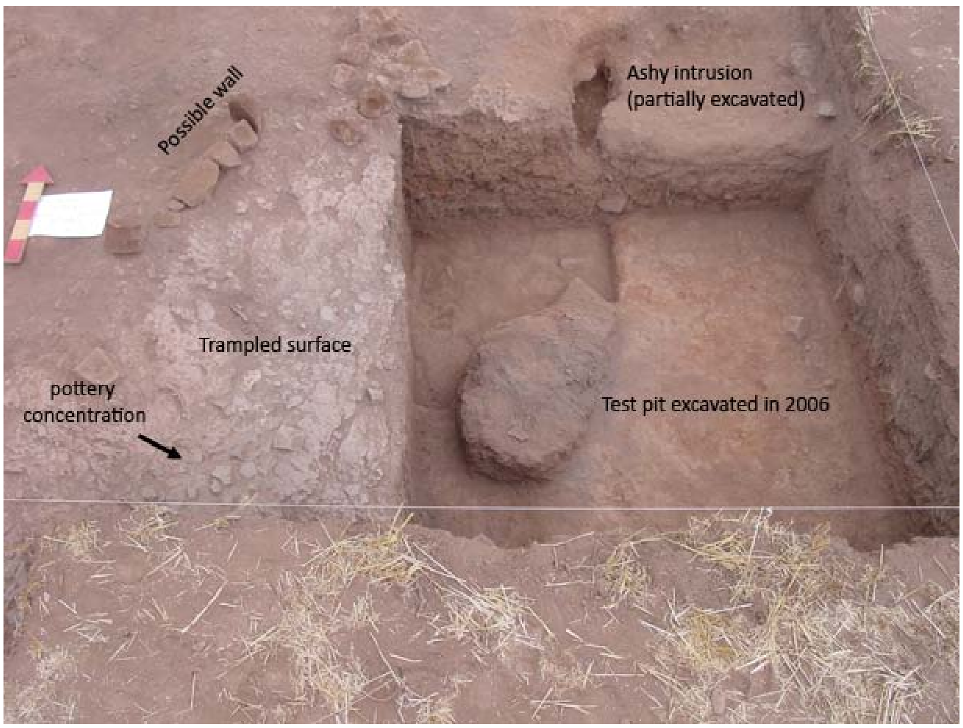


Figure 4.33: An above-ground domestic structure in the southeast corner of Unit D had three parts: (1) a series of superimposed trampled surfaces (the latest appears in this photo and dates to 409 – 209 BC), (2) a possible wall foundation along the northwest corner of the trampled surfaces, and (3) an intrusion filled with multiple layers of ash.

Alternating trampled surfaces and layers of ash

Three superimposed floor surfaces separated by thin layers of ashy soil formed part of the interior of the above ground domestic structure. These alternating layers appear in the southern profile (see Figure 4.1).

The first trampled surface

The first trampled surface was the stratigraphically lowest living surface. It measured 140 by 40 cm.

Munsell color: 7.5 YR 5/3 brown

Ceramic vessels

Total sherds	7
Restricted vessels without a neck	2 plainware

Worked bone

1 carved antler (see Figure 4.35)
1 broad, flat long bone shaft fragment with pointed tip

Figure 4.34: A carved antler found on the first trampled surface of the structure in the southeast corner.

Beads

1 bone bead

Botanical remains from flotation of 5.55 liters of soil (S-162)

8 *Chenopodium quinoa* carbonized seeds
1 *Verbena sp.* carbonized seed
3 *Ambrosia sp.* carbonized seeds
3 *Zea mays* carbonized seeds

Animal bone (NISP)

Mammals

Unidentified	36 (all from flotation)

<u>The second trampled surface</u>

The second trampled surface formed on top of a very thin layer of ash that rested on top of the first trampled surface. It measured 110 cm by 80 cm. The ash could not be separated during excavation and so it was excavated along with this trampled surface.

Munsell color: 7.5 YR 5/3 brown

Ceramic vessels

Total sherds	175
Restricted vessels with a neck	8 plainware
Restricted vessels without a neck	3 plainware
Open vessels	4 plainware
Open vessels with a diameter greater than 30 cm	4 plainware
Lid	1 plainware
Body sherds with diagnostic style	2 Chanapata redware, 1 Chanapata blackware

Botanical remains from flotation of 5.6 liters of soil (S-152)

14 *Chenopodium quinoa* carbonized seeds
2 *Ambrosia sp.* carbonized seeds
2 *Zea mays* carbonized cupule fragments

<u>Ashy soil between the second and third trampled surfaces</u>

The second trampled surface was covered by a stratum of ashy soil about 4 cm thick.

Munsell color: 7.5 YR 4/3 brown

Ceramic vessels

Total sherds	161
Restricted vessel with a neck	1 plainware
Restricted vessels without a neck	8 plainware
Open vessels	2 plainware
Open vessel with a diameter greater than 30 cm	1 plainware
Body sherd with diagnostic style	1 pattern burnished

Chipped stone

- *Locally available stone* (66.67% by count, 98.78% by weight)
  - Fine grain quartzitic sandstone
    - Debitage: 1 fragment of angular shatter (12.7 g)
  - Quartzite
    - Tool: 1 unhafted biface (43.70 g) (see Figure 4.36)
    - Debitage: 2 proximal flakes (0.2 g)
- *Regionally available stone* (16.67% by count, 0.87% by weight)
  - Slate
    - Debitage: 1 proximal flake (0.5 g)
- *Exotic stone* (16.67% by count, 0.35% by weight)
  - Obsidian
    - Tool: 1 bimarginal flake tool (0.2 g)

Figure 4.35: A quartzite unhafted biface found on top of the third trampled surface in the structure in the southeast corner.

Metal

One broken point of a metal pin was found within the matrix of this trampled surface (in the heavy fraction of S-135). It had a round cross-section and weighed less than 0.1 g.

Botanical remains from flotation of 5.9 liters of soil (S-135)
12 *Chenopodium quinoa* carbonized seeds

Animal bone (NISP)

Mammals	
Llama or alpaca (*Lama sp.*)	4 (2 from flotation)
Unidentified	8 (7 from flotation)
Birds	
Unidentified	1

The third trampled surface

The latest trampled surface formed on top of ashy soil (see Figure 4.34). It was the largest of the three superimposed floors, though its full size and shape are unknown because it extended beyond the southern limit of the excavation unit. The excavated portion measured 2.2 m north to south and 1.3 m east to west. There was a concentration of pottery located on the surface. A seed that was trampled into this floor was processed as a radiocarbon date.

Munsell color: 7.5 YR 4/1 dark gray

Radiocarbon date: AA84435 \ Yuthu RC-216, 2,295 ± 38 uncalibrated radiocarbon years BP, 391 – 203 BC calibrated without modeling (95.4% confidence)

Ceramic vessels from the concentration of pottery on the floor surface

Total sherds	56
Restricted vessels with a neck	2 plainware
Restricted vessels without a neck	3 plainware
Lid	1 plainware

Ceramic vessels in the matrix of the trampled surface

Total sherds	34
Restricted vessel with a neck	1 plainware
Restricted vessels without a neck	2 plainware
Body sherds with diagnostic style	2 Chanapata incised, 4 pattern burnished

Chipped stone

Exotic stone (100% by count and weight)

Obsidian

Debitage: 2 proximal flakes (< 0.1 g), 2 fragments of angular shatter (< 0.1 g)

Botanical remains from flotation of 6.7 liters of soil (S-133)

10 *Chenopodium quinoa* carbonized seeds
1 *Trifolium sp.* carbonized seed
1 *Ambrosia sp.* carbonized seed

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	1
Guinea pig (*Cavia porcellus*)	2 (1 from flotation)
Unidentified	10 (all from flotation)

<u>Ashy soil on top of the third trampled surface</u>

Ashy soil about 2 cm thick accumulated on top of the third trampled surface.

Munsell color 7.5 YR 5/3 brown

Ceramic vessels

Total sherds	144
Restricted vessels with a neck	1 plainware
Restricted vessels without a neck	3 plainware
Open vessels	3 plainware
Body sherds with diagnostic style	2 Chanapata redware, 1 pattern burnished

Chipped stone

Locally available stone (100% by count and weight)

Quartzite

Debitage: 1 proximal flake (9.6 g), 1 fragment of angular shatter (11.2 g)

Groundstone

Fragment of a grinding stone that fit in one hand with plano-convex cross section and flattened surfaces created by grinding with back and forth and rocking motions (Group 1, Type B). The stone had pecking marks. About 50% of the object was present. Length was unknown; it was 10.36 cm wide and 4.96 cm long. The fragment weighed 480 g.

An unmodified flat stone that may have been used as a base for small scale grinding or pulverizing (Type R). The stone measured 3.96 x 3.96 x .85 cm; it weighed 20 g.

Botanical remains from flotation of 2.525 liters of soil (S-141)
2 *Chenopodium quinoa* carbonized seeds

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	3 (all from flotation)
Field mouse (*Muridae*)	4 (all from flotation)
Unidentified	13 (10 from flotation)

<u>*A wall along the northwest edge of the trampled surfaces*</u>

There was a one-course alignment of unworked field stones along the northwest edge of the trampled surfaces. These stones probably formed a simple wall foundation and were covered by two layers of soil described below.

<u>Loose dark red soil</u>

Loose, dark red or orange soil about 4 cm thick surrounded the stones.

Munsell color: 7.5 YR 3/3 dark reddish brown

Ceramic vessels

Total sherds	305
Restricted vessels with a neck	1 Chanapata redware, 13 plainware
Restricted vessel without a neck	4 plainware
Open vessels	2 plainware
Open vessels with a diameter greater than 30 cm	2 plainware
Lid	1 Chanapata redware

Body sherds with diagnostic style	1 Chanapata redware, 1 pattern burnished

Worked bone

2 thin objects with square cross-section and pointed ends (see Figure 4.37)

Figure 4.36: Bone tools found along the northwest wall of the structure in the southeast corner: (a) a short thin tool with a pointed end, and (b) a long thin tool with a pointed end.

Groundstone

Fragment of a grinding stone that fit in two hands with plano-convex cross section and flattened surfaces created by grinding with back and forth and rocking motions (Group 1, Type C). The stone had pecking marks. The length was unknown; it was 9.21 cm wide and 5.51 cm tall. The fragment weighed 460 g.

Nondescript fragment of grinding stone that weighed 20 g.

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	11
Guinea pig (*Cavia porcellus*)	5
Unidentified	13

<u>Compact red soil</u>

Compact red soil covered the stones and loose reddish soil. This stratum was 6 cm thick and mixed with and surrounded by bits of ash. It is likely that this soil was the remains of mortar, a superstructure made partially of mud or clay (like wattle and daub), or adobe blocks (like those located just west of the structure). The very compact texture and deep red color of the soil as well as the nearby bits of ash suggest that this structure might have been burned.

Munsell color: 7.5 YR 4/4 brown

Ceramic vessels

Total sherds	45
Restricted vessels with a neck	2 plainware
Restricted vessel without a neck	1 plainware

Groundstone

Fragment of a doughnut-shaped clod-breaker. About 50% of the stone was present. It was 7.14 cm in diameter and 3.26 cm in height; the fragment weighed 110 g.

Animal bone (NISP)

Mammals	
Llama or alpaca (*Lama sp.*)	1
Unidentified	4
Human bone	3

<u>*The ashy intrusion (Intrusion F)*</u>

The ashy intrusion cut into Strata 7 and 18. It was 1.35 m from east to west, 75 cm north to south, and 44 cm deep. Although the edges of the trampled surfaces and this intrusion do not meet, this intrusion cut into the same stratum that earliest trampled surfaces (the lowest and middle trampled surfaces) were seated on, suggesting that the floors and this feature were roughly contemporary.

The feature was filled with 3 strata (described below). Compared with most cooking features, these strata have low densities of carbonized plant remains.

<u>Level F-1</u>

The lowest stratum that filled this intrusion was loose soil mixed with ash, 25 cm thick, that sloped up along the southern edge.

Munsell color: 7.5 YR 4/4 brown

Ceramic vessels

Total sherds	87
Restricted vessels with a neck	8 plainware
Open vessels	4 plainware
Body sherds with diagnostic style	2 pattern burnished

Chipped stone

Locally available stone (68.75% by count, 89.47% by weight)

Fine grain quartzitic sandstone

Debitage: 1 proximal flake (0.2 g)

Quartzite
Debitage: 8 proximal flakes (0.5 g)
Chert
Debitage: 1 proximal flakes (4.4 g)
Organic limestone
Debitage: 1 fragment of flake shatter (< 0.1 g)
Regionally available stone (25% by count, < 1% by weight)
Slate
Debitage: 3 proximal flakes (< 0.1 g)
Andesite
Debitage: 1 proximal flake (< 0.1 g)
Exotic stone (6.25% by count, 10.53% by weight)
Obsidian
Tool: 1 hafted biface projectile point (0.6 g) (see Figure 4.39.a)

Botanical remains from flotation of 6.87 liters of soil (S-187)
2 *Chenopodium quinoa* carbonized seeds
4 *Brassica sp.* carbonized seeds

Botanical remains from flotation of 6.2 liters of soil (S-188)
2 *Chenopodium quinoa* carbonized seeds
2 *Ambrosia sp.* carbonized seeds
2 *Zea mays* carbonized cupule fragments

Animal bone (NISP)

Mammals	
Llama or alpaca (*Lama sp.*)	3
Guinea pig (*Cavia porcellus*)	1
15 (all from flotation)	
Unidentified	16 (all from flotation)

Level F-2

The second stratum was compact ashy soil about 20 cm deep.

Munsell color: 7.5 YR 4/4 brown

Ceramic vessels

Total sherds	245
Restricted vessels with a neck	3 plainware
Restricted vessels without a neck	2 plainware, 3 pattern burnished
Lid	1 plainware
Body sherd with diagnostic style	1 Chanapata incised

Chipped stone
Locally available stone (64.29% by count, 92.80% by weight)

Coarse grain quartzitic sandstone
Debitage: 1 proximal flake (1.3 g)
Quartzite
Tool: 1 unidirectional core (10.3 g) (see Figure 4.39.b)
Debitage: 5 proximal flakes (19.8 g), 2 fragments of angular shatter (15.0 g)
Regionally available stone (28.57% by count, 6% by weight)
Slate
Debitage: 3 proximal flakes (< 0.1 g)
Rhyolite
Debitage: 1 proximal flake (3.0 g)
Exotic stone (7.14% by count, 1.20% by weight)
Obsidian
Debitage: 1 fragment of angular shatter (0.6 g)

Botanical remains from flotation of 6.55 liters of ashy soil (S-114)
8 *Chenopodium quinoa* carbonized seeds
2 *Ambrosia sp.* carbonized seeds

Botanical remains from flotation of 4.65 liters of soil (S-128)
1 *Chenopodium quinoa* carbonized seed

Animal bone (NISP)
Mammals

Llama or alpaca (*Lama sp.*)	6
Guinea pig (*Cavia porcellus*)	3
Field mouse (*Muridae*)	13 (all from flotation)
Unidentified	32 (all from flotation)

<u>Level F-3</u>

A layer of ashy soil about 20 cm deep filled the rest of the intrusion.

Munsell color: 7.5 YR 4/3 brown

Ceramic vessels

Total sherds	643
Restricted vessels with a neck	1 Chanapata red, 25 plainware
Restricted vessels without a neck	14 plainware
Open vessels	1 Chanapata redware, 1 Chanapata painted and incised, 7 plainware
Lid	1 plainware
Body sherds with diagnostic style	1 Chanapata blackware, 3 pattern burnished

Chipped stone
  Locally available stone (77.78% by count, 99.77% by weight)
    Coarse grain quartzitic sandstone
      Tool: 1 bimarginal flake tool (177.9 g) (see Figure 4.39.d)
      Debitage: 2 proximal flakes (114.4 g)
    Fine grain quartzitic sandstone
      Debitage: 2 proximal flakes (5.0 g)
    Quartzite
      Tools: 2 unimarginal flake tools (11.4 g), 1 bimarginal flake tool (4.6 g), 1 multidirectional core (20.8 g) (see Figure 4.39.c)
      Debitage: 4 proximal flakes (4.7 g), 1 fragment of angular shatter (7.7 g)
  Regionally available stone (16.67% by count, < 1% by weight)
    Slate
      Debitage: 3 proximal flakes (< 0.1 g)
  Exotic stone (5.56% by count, 0.23% by weight)
    Obsidian
      Tool: 1 unimarginal flake tool (0.8 g)

Reworked ceramic sherds
    Non-disc 1 plainware

Worked bone
    1 thin object with square cross section and pointed end

Figure 4.37: A thin stone tool with a pointed end found in the ashy intrusion of the structure in the southeast corner of Unit D (Intrusion F).

Groundstone

Stone that could be pinched between the fingers with a flattened surface created by back and forth or circular strokes (Small Group 3, Type P). The stone measured 1.76 x 1.64 x 1.18 cm; it weighed 10 g.

Nondescript fragment of a grinding stone that weighed 10 g.

Botanical remains from flotation of 6.7 liters of soil (S-111)
    1 *Oxalis sp.* carbonized seed

Botanical remains from flotation of 5.0 liters of soil (S-160)

6 *Chenopodium quinoa* carbonized seeds
2 *Ambrosia sp.* carbonized seeds

Animal bone (NISP)

Mammals	
Llama or alpaca (*Lama sp.*)	11
Guinea pig (*Cavia porcellus*)	1
Field mouse (*Muridae*)	16 (15 from flotation)
Unidentified	32 (20 from flotation)
Birds	
Heron (*Ardeidae*)	1
Amphibians	
Toad (*Bufo sp.*)	1 (from flotation)

<u>Level F-4</u>

A narrow boot-shaped intrusion of loose ash cut into Level F-3 and then into Levels F-2 and F-1. It was 40 cm from north to south, 20 cm from east to west, and 44 cm deep.

Munsell color: 7.5 YR 3/3 dark brown

Ceramic vessels

Total sherds	42
Restricted vessel without a neck	1 plainware
Open vessel	1 plainware
Body sherd with diagnostic style	1 Chanapata incised

Chipped stone

Locally available stone (44.44% by count, 99.08% by weight)
Quartzite
Debitage: 4 fragments of angular shatter (21.6 g)
Regionally available stone (55.56% by count, 0.92% by weight)
Slate
Debitage: 4 proximal flakes (< 0.1 g)
Andesite
Debitage: 1 proximal flake (0.2 g)

Botanical remains from flotation of 1.25 liters of soil (S-129)

3 *Chenopodium quinoa* carbonized seeds
1 *Ambrosia sp.* carbonized seed

Botanical remains from flotation of 5.325 liters of soil lower in the intrusion (S-130)

20 *Chenopodium quinoa* carbonized seeds
6 *Poaceae* carbonized seeds

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	8 (7 from flotation)
Field mouse (*Muridae*)	9 (all from flotation)
Unidentified	26 (2 from floation)

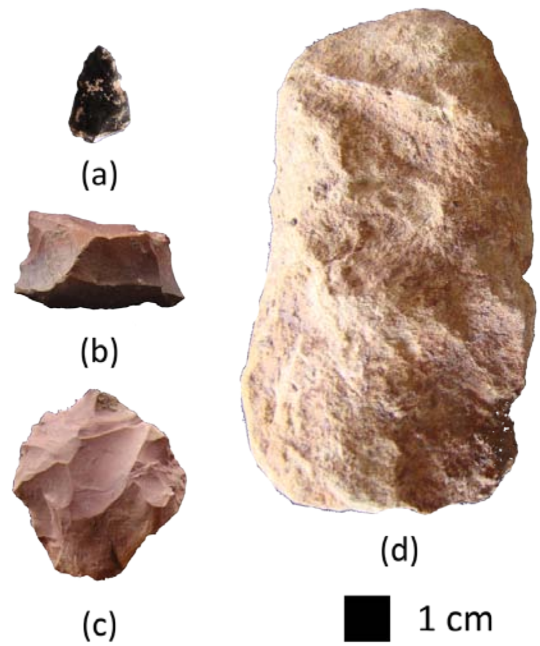


Figure 4.38: Chipped stone tools found in the ashy intrusion: (a) obsidian hafted biface projectile point (Level F-1), (b) quartzite unidirectional core tool (Level F-2), (c) quartzite multidirectional core tool (Level F-3), (d) coarse grain quartzitic sandstone bimarginal flake tool (Level F-3).

Discussion of the structure in the southeast corner

Although the features described above were disturbed, several characteristics suggest that they are the remains of an above ground domestic structure with a simple stone foundation and a mud or clay superstructure. On what was most likely the interior of the structure, heavy foot traffic created trampled surfaces that extended to the wall. In addition, there was an ashy intrusion inside the structure that was likely a cooking feature, though the density of carbonized plant remains was rather low compared with other cooking features.

Although the poorly preserved structure may not have been very sturdy or substantial, the series of 3 superimposed living floors and 4 strata filling the ashy intrusion indicate that it was probably used as a house for some time. Notably, this structure was roughly coeval with nearby Burial 19. Therefore, it is likely that this individual was part of the family that occupied this house.

Stratum 6

Stratum 6 was soil mixed with ash 10 cm thick covering the remains of the structure in the southeast corner.

Munsell color: 7.5 YR 4/4 brown

Ceramic vessels

Total sherds	668
Restricted vessels with a neck	14 plainware
Restricted vessels without a neck	12 plainware
Open vessels	2 plainware
Lids	2 plainware
Body sherds with diagnostic style	1 Chanapata redware, 2 pattern burnished
Figurine	1 plainware

Chipped stone

Locally available stone (80% by count, 84.08% by weight)

Coarse grain quartzitic sandstone

Debitage: 1 proximal flake (0.2 g)

Fine grain quartzitic sandstone

Debitage: 1 proximal flake (2.5 g)

Quartzite

Tool: 1 unimarginal flake tool (0.4 g)

Debitage: 2 proximal flakes (3.5 g)

Chert

Debitage: 2 proximal flakes (3.5 g), 1 fragment of flake shatter (10.2 g)

Exotic stone (20% by count, 15.92% by weight)

Obsidian

Tool: 1 combination flake tool reutilized projectile point (2.7 g)

Debitage: 1 proximal flake (0.5 g)

Figure 4.39: Fragment of a bone bead found in Stratum 6.

Worked bone
1 tubular bead fragment (see Figure 4.40)

Groundstone

Stone that could be pinched between the fingers with a flattened surface created by back and forth or circular strokes (Small Group 3, Type P). The stone measured 5.40 x 3.39 x 2.99 cm; it weighed 80 g.

Nondescript fragment of a grinding stone that weighed 100 g.

Botanical remains from flotation of 6.28 liters of soil (S-136)
16 *Chenopodium quinoa* carbonized seeds
1 *Ambrosia sp.* carbonized seed

Animal bone (NISP)

Mammals	
Llama or alpaca (*Lama sp.*)	14
Field mouse (*Muridae*)	15 (all from flotation)
Unidentified	18 (3 from flotation)
Birds	
Unidentified	1

A large hearth in the southwest corner (Intrusion E)

A large intrusion 52 cm deep cut into Strata 8, 9, 26, 14, and 17 in the southwest corner of Unit D. The true length and width of this feature are not known because it extended beyond the southern and western limits of the excavation unit. However, the dimensions of the excavated portion (2.73 m north to south and 2.68 m east to west) indicate that it was probably very large. The intrusion was filled with a series of ash layers and trampled surfaces (see Figure 4.42 and Figure 4.43), but fire-cracked rock was absent. In addition, unworked field stones were arranged to support a cooking pot, or *olla,* at the base of the feature. Therefore, the feature was probably used as an open cooking pit, rather than a buried roasting pit. Evidence of craft production like bone tool manufacture indicates that this hearth was the central feature of a generalized outdoor activity area.

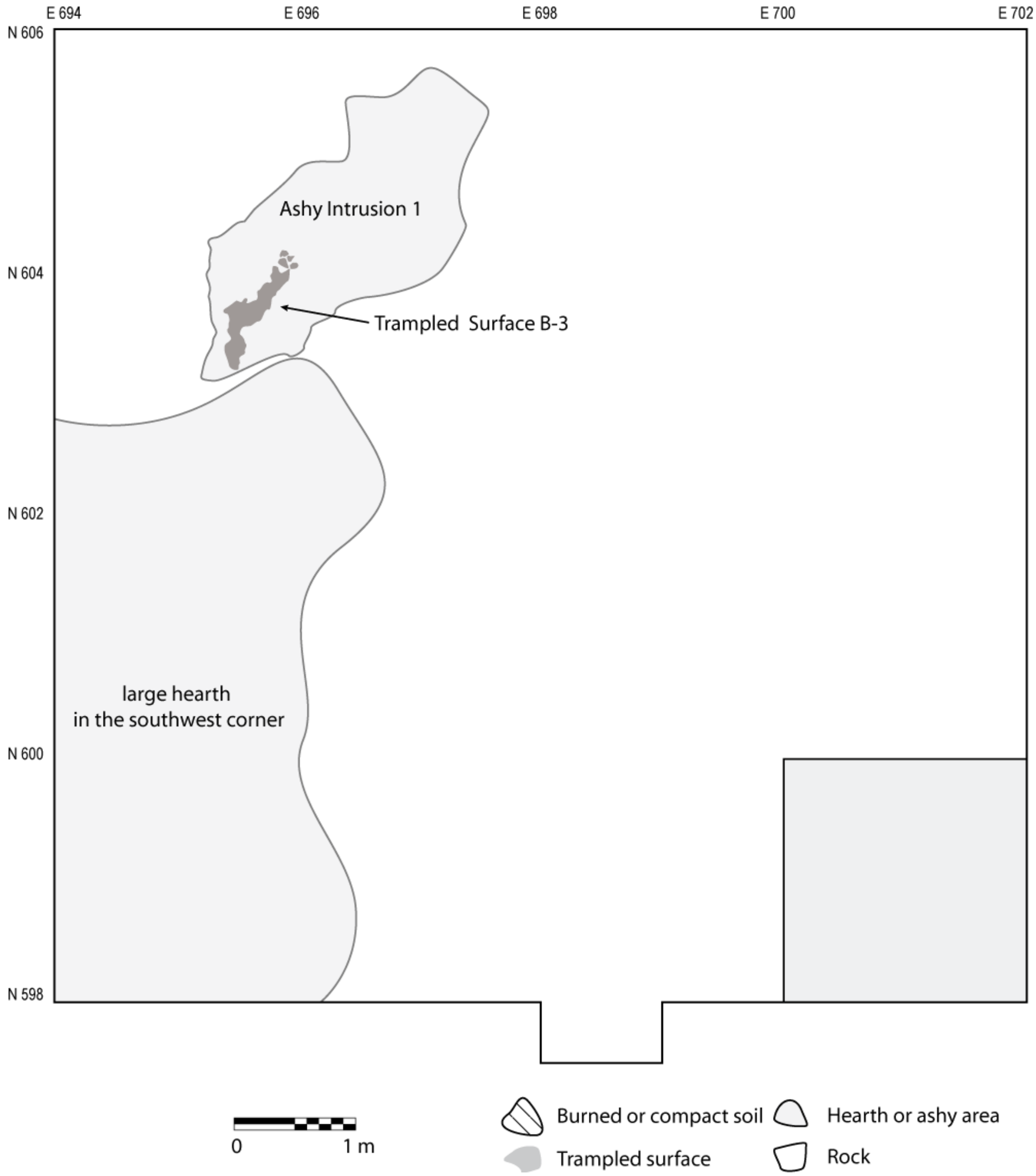


Figure 4.40: There were two large intrusions filled with ash and trampled surfaces in the western side of Unit D. The large hearth in the southwest corner was filled with four phases of alternating ash and trampled surfaces, suggesting that it was used for some time as an open-air cooking pit (Intrusion E). Ashy Intrusion 1 (Intrusion B) in the northwest corner was filled with ash and partly covered by Trampled Surface E-3. Because the strata did not overlap, it is not possible to determine whether these features were contemporary with or post-date the structure in the southeast corner.

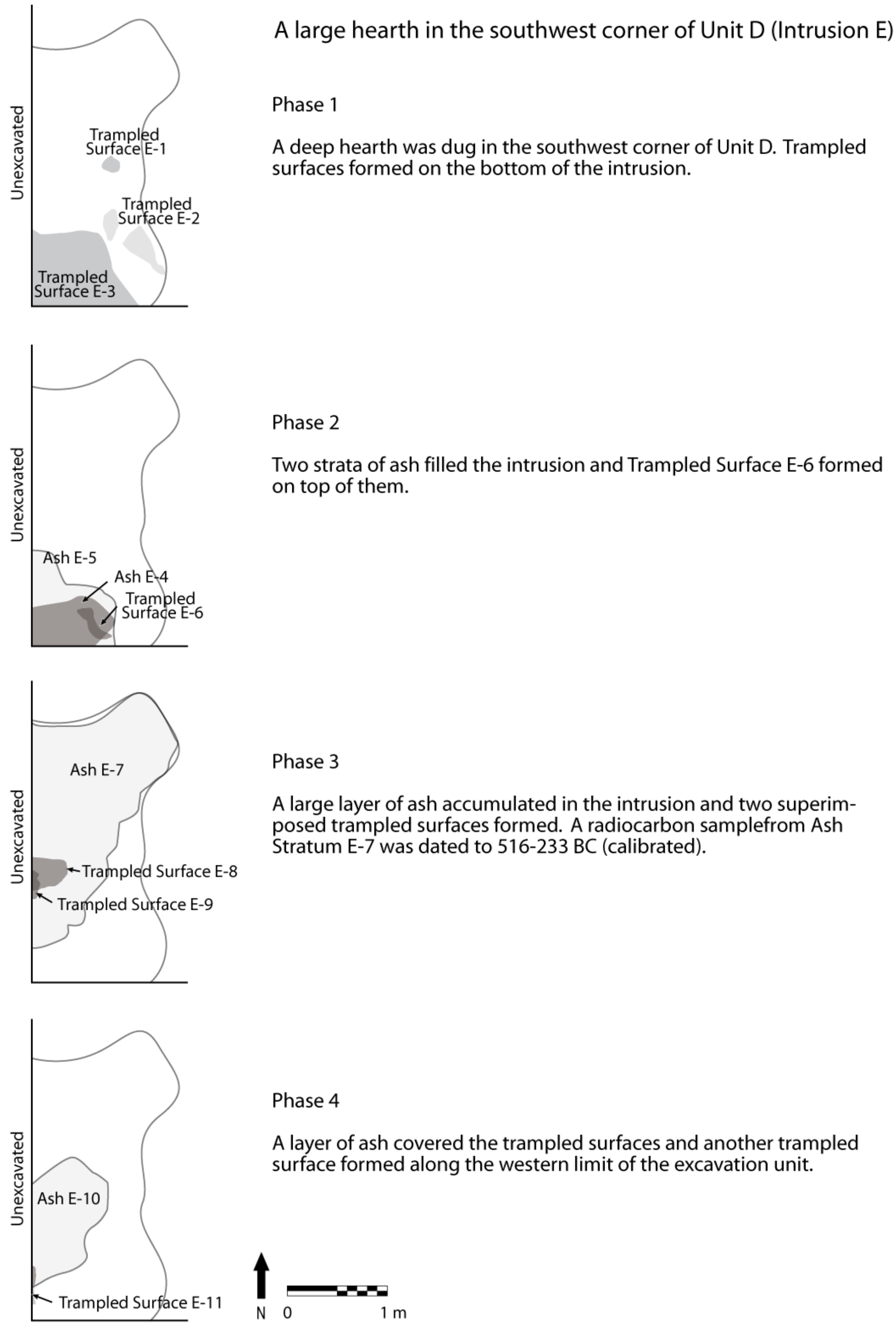


Figure 4.41: A large cooking pit in the southwest corner of Unit D was filled with ash layers and trampled surfaces.

Figure 4.42: A large pit was excavated in the southwest corner of Unit D (Intrusion E). The pit was filled with alternating layers of ash and trampled surfaces. It was an open cooking pit and an outdoor activity area.

The strata that filled the intrusion in the southwest corner are described below, starting with the earliest deposits. Three trampled surfaces formed along the base of the intrusion, on top of the newly re-exposed strata that had been cut through. Therefore, when considering the contents of the earliest trampled surfaces, it is important to remember their matrix formed from soil that was deposited long before this hearth was built and used. As a result, only a small proportion of cultural materials recovered from the floors were deposited during the use of the hearth.

<u>Trampled Surface E-1</u>

Trampled Surface E-1 formed on top of the exposed surface of Stratum 17; it was 45 cm north to south and 50 cm east to west. This feature was excavated along with Level E-7.

Munsell color: 10 YR 4/2 dark grayish brown

No artifacts were analyzed from this feature.

Trampled Surface E-2

Trampled Surface E-2 formed on top of the exposed surface of Stratum 17. It was comprised of two sections of floor that measured 1.57 m from northwest to southeast and 46 cm from southwest to northeast.

Munsell color: 7.5 YR 4/3 brown

Ceramic vessels

Total sherds	17
Restricted vessels with a neck	1 Chanapata blackware, 1 plainware
Body sherd with diagnostic style	1 Chanapata blackware

Chipped stone
Exotic stone (100% by count and weight)
Obsidian
Debitage: 1 proximal flake (< 0.1 g)

Botanical remains from flotation of 5.55 liters of soil (S-184)
8 *Chenopodium quinoa* carbonized seeds

Animal bone (NISP)
Mammals

Field mouse (*Muridae*)	4 (all from flotation)
Unidentified	19 (all from flotation)

Trampled Surface E-3

Trampled Surface E-3 formed on top of the exposed surface of Stratum 20. The total size is unknown because it extended beyond the southwest corner of the unit, but the excavated portion measured 1.4 m north to south by 2 cm east to west.

Munsell color: 7.5 YR 5/4 Brown

Ceramic vessels

Total sherds	282
Restricted vessels with a neck	2 Chanapata redware, 12 plainware
Restricted vessel without a neck	1 plainware
Open vessels	2 Chanapata redware
Body sherds with diagnostic style	5 Chanapata redware, 2 Chanapata blackware

Reworked ceramic sherds

Discs	2 plainware

Chipped stone

Locally available stone (83.33% by count, 100% by weight)

Fine grain quartzitic sandstone

Debitage: 1 proximal flake (< 0.1 g)

Quartzite

Debitage: 2 proximal flakes (3.7 g), 1 fragment of angular shatter (18.3 g)

Exotic stone (16.67% by count, < 1% by weight)

Obsidian

Debitage: 1 proximal flake (< 0.1 g)

Groundstone

Small oval stone with plano-convex cross section that could be held between the fingers (Small Group 2, Type O). The stone measured 6.00 x 3.65 x 3.25 cm; it weighed 100 g.

Grinding stone that fit in one hand with plano-convex cross section and flattened surfaces created by grinding with back and forth and rocking motions (Group 1, Type B). The stone had pecking marks. It measured 10.88 x 9.20 x 3.98 cm; it weighed 660 g.

Nondescript fragment of a grinding stone that weighed 30 g.

Botanical remains from flotation of 5.65 liters of soil (S-173)

24 *Chenopodium quinoa* carbonized seeds
3 *Ambrosia sp.* carbonized seeds
2 *Zea mays* carbonized seeds
1 *Scirpus sp.* carbonized seed

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	7 (6 from flotation)
Field mouse (*Muridae*)	4 (all from flotation)
Unidentified	25 (17 from flotation)

Level E-4

Level E-4 was very ashy, gray soil 10 cm deep that included rocks arranged to support a cooking pot.

Munsell color: 10 YR 5/2 grayish brown

Ceramic vessels

Total sherds	375
Restricted vessels with a neck	1 Chanapata redware, 8 plainware
Open vessels	3 Chanapata redware, 5 plainware
Body sherds with diagnostic style	11 Chanapata redware, 2 Chanapata blackware, 2 pattern burnished

Reworked ceramic sherds

Discs	2 plainware
Non-disc	1 plainware

Chipped stone

Locally available stone (20% by count, 17.53% by weight)

Quartzite

Tool: unimarginal flake tool (1.7 g) (see Figure 4.44, right)

Debitage: 1 proximal flake (< 0.1 g)

Regionally available stone (10% by count, 65.98% by weight)

Microdiorite

Tool: 1 unimarginal flake tool (6.4 g) (see Figure 4.44, left)

Exotic stone (70% by count, 16.49% by weight)

Obsidian

Tool: 1 unimarginal flake tool (1.5 g)

Debitage: 6 proximal flakes (0.1 g)

Figure 4.43: Chipped stone tools found in Level E-4 in the hearth in the southwest corner (left to right): 1 microdiorite unimarginal flake tool and 1 quartzite unimarginal flake tool.

Worked bone

1 broad, flat long bone shaft fragment with square tip (see Figure 4.45)

Figure 4.44: A long bone shaft fragment with square tip found in the lowest level of the hearth in the southwest corner.

Groundstone

Roughly spherical stone that fit into one hand with flattened surfaces created by grinding with back and forth or circular strokes (Group 1, Type A). The stone had pecking marks. It measured 6.88 x 6.08 x 5.56; it weighed 320 g.

Roughly spherical stone that fit into one hand with flattened surfaces created by grinding with back and forth or circular strokes (Group 1, Type A). The stone had pecking marks. It measured 7.11 x 6.93 x 5.41; it weighed 340 g.

Roughly spherical stone that fit into one hand with flattened surfaces created by grinding with back and forth or circular strokes (Group 1, Type A). The stone had pecking marks. It measured 9.98 x 7.21 x 5.42; it weighed 500 g.

Roughly spherical stone that fit into one hand with flattened surfaces created by grinding with back and forth or circular strokes (Group 1, Type A). It measured 9.69 x 7.81 x 5.27; it weighed 520 g.

Fragment of a grinding stone that fit in two hands with plano-convex cross section and flattened surfaces created by grinding with back and forth and rocking motions (Group 1, Type C). The length and height were unknown; it was 7.21 cm wide. The fragment weighed 530 g.

Botanical remains from flotation of 4.5 liters of soil (S-174)

8 *Chenopodium quinoa* carbonized seeds
2 *Galium sp.* carbonized seeds
2 Ambrosia sp. carbonized cupule fragments

Botanical remains from flotation of 5.2 liters of soil (S-159)

1 *Amaranthus sp.* carbonized seed
8 *Chenopodium quinoa* carbonized seeds

4 *Galium sp.* carbonized seeds

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	17 (1 from flotation)
Field mouse (*Muridae*)	38 (all from flotation)
Unidentified	11 (3 from flotation)

<u>Level E-5</u>

Level E-5 was gray soil about 6 cm thick comprised primarily of ash. It was associated with a few unworked stones that were arranged to support a cooking pot.

Munsell color: 7.5 YR 4/2 brown

Ceramic vessels

Total sherds	540
Restricted vessels with a neck	20 plainware
Open vessels	1 Chanapata redware, 2 plainware
Body sherds with diagnostic style	5 Chanapata redware, 3 pattern burnished

Chipped stone

Exotic stone (100% by count and weight)

Obsidian

Debitage: 4 proximal flakes (< 0.1 g)

Groundstone

Stone that could be pinched between the fingers with a flattened surface created by back and forth or circular strokes (Small Group 3, Type P). The stone measured 5.35 x 3.85 x 3.29 cm; it weighed 90 g.

Botanical remains from flotation of 5.0 liters of soil (S-155)

18 *Chenopodium quinoa* carbonized seeds
6 *Galium sp.* carbonized seeds
8 *Ambrosia sp.* carbonized seeds
7 *Zea mays* carbonized cupule fragments

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	50 (47 from flotation)
Unidentified	6

Trampled Surface E-6

Trampled Surface E-6 formed on the surface of Level E-5. It was 60 cm north to south and 65 cm east to west.

Munsell color: 7.5 YR 5/1 gray

Ceramic vessels

Total sherds	6
Body sherd with diagnostic style	1 pattern burnished

Botanical remains from flotation of 1.9 liters of soil (S-154)

4 *Chenopodium quinoa* carbonized seeds
1 *Galium sp.* carbonized seed
2 *Poaceae* carbonized seeds
1 *Scirpus sp.* carbonized seed

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	1 (all from flotation)
Unidentified	4 (all from flotation)

Level E-7

Level E-7 was a layer of very ashy loose soil that was 12 cm deep. This stratum contained several finished, pointed long bone shaft tools as well as several bones that might have been pre-forms for these tools. Therefore, bone tool manufacture probably took place near the hearth, perhaps utilizing bones from the same animals that were being cooked. The stratum also contained several chipped stone tools.

Munsell color: 10 YR 4/2 dark grayish brown

Radiocarbon date: AA84434 \ Yuthu RC-214, 2,329 ± 37 uncalibrated radiocarbon years BP, 403 – 206 BC calibrated without modeling (95.4% confidence)

Ceramic vessels

Total sherds	2,524
Restricted vessels with a neck	1 Chanapata redware, 84 plainware
Restricted vessels without a neck	17 plainware
Open vessels	1 Chanapata redware, 13 plainware

Open vessels with a diameter greater than 30 cm	1 Chanapata redware, 3 plainware
Lids	2 Chanapata incised
Body sherds with diagnostic style	16 Chanapata redware, 3 Chanapata blackware, 2 Chanapata incised, 44 pattern burnished

Reworked ceramic sherds

Non-discs	4 plainware

Figure 4.45: Several chipped stone tools were in Level E-4 (left to right starting at the top): 1 obsidian unimarginal flake tool, 1 obsidian combination flake tool, 1 obsidian bimarginal flake too projectile point, 1 obsidian multidirectional core tool, 1 obsidian unimarginal flake tool reutilized projectile point, 1 chert combination flake tool, 1 quartzite unidirectional core, 1 quartzite multidirectional core, 1 quartzite bimarginal flake tool, 1 laminar andesite bimarginal flake tool (although this material resembles slate, laminar andesite is much more durable).

Chipped stone (see Figure 4.46)

Locally available stone (59.26% by count, 95.05% by weight)

Coarse grain quartzitic sandstone

Tools: 1 unimarginal flake tool (22.0 g), 1 unidirectional core (23.3 g)

Debitage: 2 proximal flakes (97.6 g)

Quartzite

Tools: 1 bimarginal flake tool (5.7 g), 1 unidirectional core (46.3 g), 1 multidirectional core (34.4 g)

Debitage: 3 proximal flakes (19.2 g), 1 fragment of flake shatter (3.0 g), 3 fragments of angular shatter (10.2 g)

Chert

Tools: 1 combination flake tool (2.3 g), 1 multidirectional core (12.5 g)

Regionally available stone (3.70% by count, 2.92% by weight)

Andesite

Tools: 1 bimarginal flake tool (8.5 g)

Exotic stone (37.04% by count, 2.03% by weight)

Obsidian

Tools: 3 unimarginal flake tools (2.0 g), 1 unimarginal flake tool reutilized projectile point (0.7 g), 1 bimarginal flake tool projectile point (1.8 g), 1 combination flake tool (< 0.1 g), 1 multidirectional cores (1.4 g)

Debitage: 3 proximal flakes (< 0.1 g)

Figure 4.46: Worked bone from Level E-6: (a) one pointed tool made from a long bone shaft (bottom) and four unworked shaft fragments that may have been pre-forms for making similar tools. These bones were all found near Trampled Surface E-1. (b and c) broad, flat pointed tools made from a long bone shaft fragment; (d) a tool with a pointed tip off to one side made from a long bone shaft.

Worked bone (see Figure 4.47)

4 broad, flat long bone shaft fragments with pointed tips
1 broad, flat long bone shaft fragment with pointed end off to one side

Groundstone

Small oval stone with plano-convex cross section that could be held between the fingers (Small Group 2, Type O). The stone had pecking marks. It measured 5.90 x 2.83 x 1.96 cm; it weighed 50 g.

Stone that could be pinched between the fingers with a flattened surface created by back and forth or circular strokes (Small Group 3, Type P). The stone measured 2.55 x 1.83 x 1.33 cm; it weighed 10 g.

Unmodified flat stone that may have been used as a base for small grinding or pulverizing. Length and width were unknown. The stone was 8.7 cm thick and weighed 30 g.

Unmodified flat stone that may have been used as a base for small grinding or pulverizing. Length was unknown; the stone was 4.49 cm wide and 1.23 cm thick. The fragment weighed 20 g.

Nondescript fragment of a grinding stone that weighed 20 g.

Botanical remains from flotation of 5.075 liters of soil (S-132)

24 Chenopodium quinoa carbonized seeds
1 *Galium sp.* carbonized seed
3 *Ambrosia sp.* carbonized seeds

Botanical remains from flotation of 5.5 liters of soil (S-146)

3 *Chenopodium quinoa* carbonized seeds
1 *Galium sp.* carbonized seed

Animal bone (NISP)

Mammals	
Llama or alpaca (*Lama sp.*)	72
White-tailed deer (*Odocoileus virginianus*)	2
Guinea pig (*Cavia porcellus*)	8
Unidentified	86 (54 from flotation)
Birds	
Duck (*Anas sp.*)	2
Coot (*Fulica sp.*)	1
Unidentified	1

Trampled Surface E-8

Two trampled surfaces formed along the western limit of the hearth feature. Trampled Surface E-8 was the stratigraphically lower of these two floors and formed on the surface of Level E-7. The floor extended beyond the western limit of Unit D, so its width is not known. However, the excavated portion measured 70 cm east to west and 60 cm north to south.

Munsell color: 7.5 YR 4/4 brown

Ceramic vessels

Total sherds	10
Restricted vessel with a neck	1 plainware
Restricted vessel without a neck	1 plainware
Body sherd with diagnostic style	1 pattern burnished

Botanical remains from flotation of 6.15 liters of soil (S-157)

12 *Chenopodium quinoa* carbonized seeds
4 *Ambrosia sp.* carbonized seeds
6 *Zea mays* carbonized seeds
2 *Scirpus sp.* carbonized seeds

Animal bone (NISP)

Mammals

Guinea pig (*Cavia porcellus*)	2 (all from flotation)
Unidentified	8 (all from flotation)

Trampled Surface E-9

Trampled Surface E-9 formed on top of Trampled Surface E-8. It was 60 cm long, but only 10 centimeters extended out from the western profile, so it was not excavated.

Munsell color: 7.5 YR 4/4 brown

No artifacts were recovered from this feature.

Level E-10

Level E-9 was dirt mixed with ash and bits of charcoal 22 cm deep.

Munsell color: 7.5 YR 2/4 brown

Ceramic vessels

Total sherds	526
Restricted vessels with a neck	20 plainware, 2 pattern burnished
Restricted vessels without a neck	1 Chanapata redware, 1 plainware
Open vessels	2 Chanapata redware, 1 plainware
Body sherds with diagnostic style	2 Chanapata redware, 1 pattern burnished

Reworked ceramic sherds

Non-discs	2 plainware

Chipped stone

Locally available stone (18.75% by count, < 1% by weight)

Quartzite

Debitage: 3 proximal flakes (< 0.1 g)

Regionally available stone (6.25% by count, 2.56% by weight)

Andesite

Debitage: 1 proximal flake (< 0.1 g)

Exotic stone (75.00% by count, 97.44% by weight)

Obsidian

Tools: 1 unimarginal flake tool reutilized projectile point (0.4 g), 1 bimarginal flake tool projectile point (0.3 g), 1 multidirectional core reutilized projectile point (1.1 g) (see Figure 4.48)

Debitage: 7 proximal flakes (0.4 g), 2 fragments of flake shatter (1.6 g)

Figure 4.47: Obsidian tools found in Level E-10 of the hearth in the southwest corner. A bimarginal flake tool projectile point, a unimarginal flake tool projectile point, and a multidirectional core reutilized projectile point (from left to right).

Worked bone (see Figure 4.49)

1 tubular bead

1 broad, flat long bone shaft fragment with pointed tip

Metal

A very small fragment of metal was found in the heavy fraction of S-116 from Level E-10. It was 1.9 mm long and 0.6 mm in diameter. It weighed less than 0.1 g.

Figure 4.48: Worked bone from Level E-10 of the hearth in the southwest corner. (a) A tubular bead made from a long bone shaft; and (b) a long bone shaft fragment with pointed tip.

Botanical remains from flotation of 5.4 liters of soil (S-115)

No identifiable plant remains were recovered from this sample.

Botanical remains from flotation of 5.43 liters of soil (S-144)

20 *Chenopodium quinoa* carbonized seeds
1 *Galium sp.* carbonized seed
2 *Ambrosia sp.* carbonized seeds
2 Zea mays carbonized seeds

Animal bone (NISP)

Mammals	
Llama or alpaca (*Lama sp.*)	29 (7 from flotation)
Guinea pig (*Cavia porcellus*)	3
Field mouse (*Muridae*)	8 (all from flotation)
Unidentified	52 (35 from flotation)
Birds	
Duck (*Anas sp.*)	1
Coot (*Fulica sp.*)	1
Unidentified	4 (2 from flotation)

<u>Trampled Surface E-11</u>

A trampled surface formed on top of Level E-10. It was 72 cm from north to south, but it was not excavated because only 7 cm extended into Unit D. This was the last deposit that formed while the intrusion was used as a cooking pit.

Munsell color: 7.5 YR 4/4 brown

No artifacts were recovered from this feature.

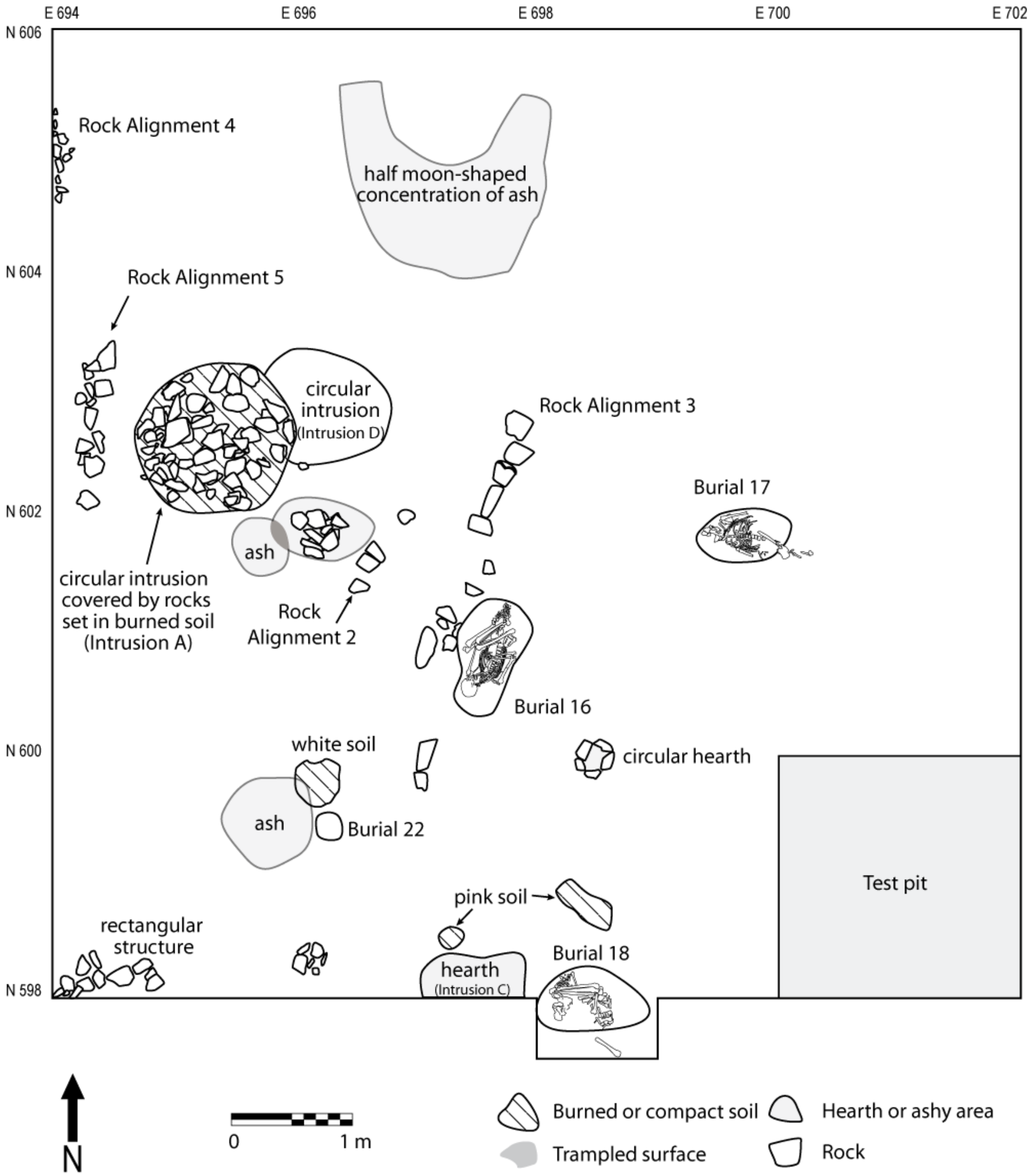


Figure 4.49: The final phase of use in Unit D included a half moon-shaped ash deposit in the northwest corner, two circular intrusions, four stone alignments, a small hearth along the southern profile, and several small deposits of ash and colored soil. Four human burials were associated with a small circular stone hearth including the secondary burial of a 26 to 35 year old man (Burial 16), a 16 to 17 year old young woman (Burial 17), a 26 to 35 year old woman (Burial 18), and an infant (Burial 22).

Rectangular structure in the southwest corner

A "corner" made of one course of unworked field stones was seated on top of Level E-9 of the hearth in the southwest corner. These stones probably formed the corner of a foundation for an above ground rectangular structure. Unfortunately, most of the structure extended beyond the limits of Unit D. Therefore, the shape and size are unknown.

Unlike the structure in the southeast corner, many displaced rocks surrounded those found *in situ*. Therefore it is possible that the foundation included more than one course of stones, or that there was a more significant stone superstructure that has been disturbed by modern plowing.

Stratum 5

Stratum 5 was compact, dark orange soil 12 cm thick covering the stones that formed the foundation for a rectangular structure. It included many displaced field stones. In fact, this soil may have been the remains of clay mortar or another type of superstructure made, at least partially, of dirt or clay.

Munsell color: 5 YR 3/3 dark reddish brown

Ceramic vessels

Total sherds	161
Restricted vessels with a neck	8 plainware
Open vessels	2 plainware
Lid	1 Chanapata redware
Body sherds with diagnostic style	2 pattern burnished

Chipped stone

Locally available stone (33.33% by count, 73.74% by weight)

Quartzite

Tool: 1 unimarginal flake tool (20.5 g)

Regionally available stone (33.33% by count, 23.74% by weight)

Andesite

Tool: 1 unimarginal flake tool (6.6 g)

Exotic stone (33.33% by count, 2.52% by weight)

Obsidian

Tool: 1 unimarginal flake tool (0.7 g)

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	2
White-tailed deer (*Odocoileus virginianus*)	1

Stratum 4

Stratum 4 was semi-loose dirt mixed with a little bit of ash. This stratum was restricted to the southwestern corner of the excavation unit, in and around the depression left by the hearth in the southwest corner. Part of Stratum 4 was disturbed by plowing, and therefore the materials from the upper part of the stratum were not considered in analysis.

Munsell color: 7.5 YR 4/3 brown

Ceramic vessels

Total sherds	1,255
Restricted vessels with a neck	1 Chanapata redware, 1 Chanapata blackware, 44 plainware
Restricted vessels without a neck	16 plainware
Open vessels	1 Chanapata incised, 9 plainware
Open vessel with a diameter greater than 30 cm	1 plainware
Lids	7 plainware
Body sherds with diagnostic style	3 Chanapata redware, 2 Chanapata blackware, 2 Chanapata incised, 1 Chanapata incised and painted, 4 pattern burnished

Reworked ceramic sherds

Non-disc	1 plainware

Chipped stone

Locally available stone (36.84% by count, 75.42% by weight)

Coarse grain quartzitic sandstone

Debitage: 1 proximal flake (< 0.1 g)

Quartzite

Tools: 2 unimarginal flake tools (19.6 g)

Debitage: 3 fragments of angular shatter (0.1 g)

Chert

Tools: 1 unimarginal flake tool projectile point (3.0 g)

Regionally available stone (15.79% by count, < 1% by weight)

Slate
- Debitage: 3 proximal flakes (< 0.1 g)

Exotic stone (47.37% by count, 24.58% by weight)

Obsidian
- Tools: 1 unhafted biface (2.0 g), 2 bimarginal flake tools (1.9 g), 1 bimarginal flake tool projectile point (1.3 g), 1 bimarginal flake tool reutilized projectile point (1.5 g), 1 combination flake tool (0.7 g)
- Debitage: 3 proximal flakes (< 0.1 g)

Groundstone

Fragment of a roughly spherical stone that fit into one hand with flattened surfaces created by grinding with back and forth or circular strokes (Group 1, Type A). The stone had pecking marks. About 20% of the object was present. Length was unknown; it was 6.50 cm wide and 5.97 cm tall. The fragment weighed 130 g.

Fragment of a long and narrow stone that could be grasped between the fingers and had an oval cross section (Small Group 1, Type J). The stone had pecking marks. About 40% of the object was present. Length was unknown; it was 2.27 cm wide and 2.05 cm tall. The fragment weighed 30 g.

Fragment of a long and narrow stone with triangular cross section that could be held between the fingers (Small Group 1, Type L). About 50% of the stone was present. Length is unknown; the stone was 2.27 cm wide and 2.05 cm tall. The fragment weighed 20 g.

Fragment of a small oval stone with plano-convex cross section that could be held between the fingers (Small Group 2, Type O). About 25% of the object was present. Length and width were unknown; it was 2.5 cm tall. The fragment weighed 60 g.

Botanical remains from flotation of 5.75 liters of soil (S-105)
- 5 *Chenopodium quinoa* carbonized seeds
- 2 *Zea mays* carbonized seeds

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	19 (3 from flotation)
White-tailed deer (*Odocoileus virginianus*)	1
Guinea pig (*Cavia porcellus*)	5 (2 from flotation)
Field mouse (*Muridae*)	1
Unidentified	60 (38 from flotation)

Birds

Coot (*Fulica sp.*)	1
Unidentified	3

Features of Stratum 4

<u>*Circular Intrusion (Intrusion D)*</u>

A cylindrical intrusion cut through Stratum 4 into Ashy Intrusions 1 and 2 of the northwest corner. It was 110 cm east to west, 95 cm north to south, and 62 cm deep. The strata that filled the intrusion are described below, starting with the earliest or stratigraphically lowest.

<u>Level D-1</u>

Several rocks and an adobe brick broken into two large pieces rested on the bottom of the intrusion (see Figure 3.25). They were surrounded by a stratum of semi-compact brown soil about 15 cm deep. This level had a high density of carbonized quinoa seeds, but no other carbonized plant remains. It seems likely that this intrusion was used as a storage pit. Then after it was abandoned, the intrusion filled with discarded construction materials and other rubbish.

Munsell color: 5 YR 4/3 reddish brown

Ceramic vessels

Total sherds	101
Restricted vessels with a neck	1 Chanapata incised, 5 plainware
Open vessel with a diameter greater than 30 cm	1 Chanapata redware
Body sherds with diagnostic style	1 Chanapata blackware, 4 pattern burnished

Reworked ceramic sherds

Discs	2 plainware

Chipped stone

Locally available stone (87.50% by count, 100% by weight)

Quartzite

Debitage: 3 proximal flakes (3.1 g), 3 fragments of angular shatter (28.0 g)

Chert

Tool: 1 multidirectional core (1.7 g)

Regionally available stone (12.50% by count, < 1% by weight)

Slate
Debitage: 1 proximal flake (< 0.1 g)

Botanical remains from flotation of 7.075 liters of soil (S-124)
60 *Chenopodium quinoa* carbonized seeds

Animal bone (NISP)
Mammals

Llama or alpaca (*Lama sp.*)	3
Field mouse (*Muridae*)	32 (30 from flotation)
Unidentified	2 (all from flotation)

Level D-2

Level D-2 was a layer of loose brown dirt about 20 cm deep that covered the tops of the loose stones.

Munsell color: 7.5 YR 5/2 brown

Ceramic vessels

Total sherds	218
Restricted vessels with a neck	13 plainware
Restricted vessels without a neck	4 plainware
Lid	1 plainware
Body sherds with diagnostic style	3 Chanapata redware, 3 pattern burnished

Chipped stone
Locally available stone (33.33% by count, 96.81% by weight)
Fine grain quartzitic sandstone
Debitage: 3 proximal flakes (8.0 g)
Quartzite
Debitage: 1 proximal flake (1.1 g)
Regionally available stone (50% by count, 3.19% by weight)
Slate
Debitage: 6 proximal flakes (0.3 g)
Exotic stone (16.67% by count, < 1% by weight)
Obsidian
Debitage: 2 proximal flakes (< 0.1 g)

Worked bone
1 carved bone (see Figure 4.51)

Figure 4.50: Concentric circles were carved into a long bone shaft found in the circular intrusion in Unit D (Intrusion D).

Groundstone

Roughly spherical stone that fit into one hand with flattened surfaces created by grinding with back and forth or circular strokes (Group 1, Type A). The stone had pecking marks. It measured 7.93 x 7.07 x 5.87 cm; it weighed 420 g.

Roughly spherical stone that fit into one hand with flattened surfaces created by grinding with back and forth or circular strokes (Group 1, Type A). The stone had pecking marks. It measured 8.66 x 7.41 x 5.16 cm; it weighed 480 g.

Fragment of an oval stone with rectangular cross section created by rocking the stone side to side along its edge (Group 2, Type D). Approximately 20% of the object was present. The length and width were unknown; it 4.72 cm tall. The fragment weighed 300 g.

Nondescript fragment of a grinding stone that weighed 10 g.

Botanical remains from flotation of 6.9 liters of soil lower in the level (S-120)

14 *Chenopodium quinoa* carbonized seeds
2 *Zea mays* carbonized cupule fragments
1 *Scirpus sp.* carbonized seed

Botanical remains from flotation of 7.15 liters of soil higher in the level (S-119)

14 *Chenopodium quinoa* carbonized seeds
1 *Galium sp.* carbonized seed
1 *Ambrosia sp.* carbonized seed

Animal bone (NISP)	
Mammals	
Llama or alpaca (*Lama sp.*)	12 (3 from flotation)
White-tailed deer (*Odocoileus virginianus*)	1
Field mouse (*Muridae*)	5 (all from flotation)
Unidentified	50 (46 from flotation)
Birds	
Duck (*Anas sp.*)	1
Unidentified	1

Level D-3

Level D-3 was a round deposit of compact brown soil about the same shape as the intrusion, but smaller with a diameter of 80 cm. It cut into Level D-2 and was 15 cm deep.

Munsell color: 7.5 YR 4/3 brown

Ceramic vessels	
Total sherds	60
Restricted vessels with a neck	2 plainware

Chipped stone
Locally available stone (100% by count and weight)
Quartzite
Tool: 1 unidirectional core (11.7 g)
Debitage: 1 fragment of angular shatter (12.2 g)

Animal bone (NISP)	
Mammals	
Unidentified	2

Area of ashy soil

A circular area of loose rocks surrounded by dense gray ash about 85 cm in diameter and 20 cm deep was located south of the circular intrusion.

Munsell color: 10 YR 5/2 grayish brown

Ceramic vessels	
Total sherds	111
Restricted vessels with a neck	19 plainware
Restricted vessels without a neck	5 plainware
Open vessel with a diameter greater than 30 cm	1 plainware

Body sherds with diagnostic style	3 Chanapata redware, 1 Chanapata blackware

Worked bone

1 broad, flat long bone shaft fragment with rounded tip (see Figure 4.52).

Figure 4.51: A broad, flat tool with a rounded tip made from a long bone shaft fragment was found in an area of ashy soil.

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	22
Unidentified	13

<u>*Depression filled with loose dirt with ash*</u>

A small circular depression about 6 cm deep and 50 cm in diameter filled with ash was located in the southwest corner of Unit D.

Munsell color: 10 YR 4/2 dark grayish brown

Ceramics

No pottery was analyzed from this context.

<u>*Loose soil covered by a pile of rocks*</u>

Loose dark brown soil about 70 cm in diameter and 9 cm deep was covered by a pile of loose rocks.

Munsell color 7.5 YR 3/3 dark brown

Ceramic vessels

Total sherds	64
Restricted vessel with a neck	1 plainware
Open vessels	2 plainware
Body sherds with diagnostic style	1 Chanapata blackware, 5 pattern burnished

Chipped stone

Locally available stone (57.14% by count, 94.44% by weight)

Quartzite

Debitage: 2 proximal flakes (0.1 g), 1 fragment of angular shatter (0.5 g)

Chert

Debitage: 1 fragment of angular shatter (2.8 g)

Regionally available stone (28.57% by count, 5.56% by weight)

Andesite

Debitage: 2 proximal flakes (0.2 g)

Exotic stone (14.29% by count, < 1% by weight)

Obsidian

Debitage: 1 proximal flake (< 0.1 g)

Botanical remains from flotation of 6.95 liters of soil (S-102)

2 *Chenopodium quinoa* carbonized seeds

1 *Galium sp.* carbonized seed

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	1
Field mouse (*Muridae*)	20 (all from flotation)
Unidentified	12 (all from flotation)

<u>*Rock Alignments 3 and 2*</u>

Rock Alignment 3 was a single course of stones 3.25 m long that ran southwest to northeast. It was located just 10 cm northwest of Burial 16 (see below) and 75 cm from Rock Alignment 2, a shorter parallel alignment of rocks 1.5 m long. No evidence of a superstructure such as adobes or wattle and daub was recovered.

An area with burials surrounding a small circular stone hearth

Compared with the Southern Sector of the site, far fewer human bones were found on the surface of the Northern Sector. Therefore, I believed that the Northern Sector was not used for burials. When we broke ground in the 8 x 8 m excavation unit, I breathed a sigh of relief, optimistically believing that this season we would quickly remove the topsoil to reveal deposits from an exciting variety of daily domestic activities, free from the excavation-slowing task of carefully cleaning and documenting human burials. On the sixth day of excavation, just after the disturbed topsoil had been removed, we unpacked the dental picks and paintbrushes.

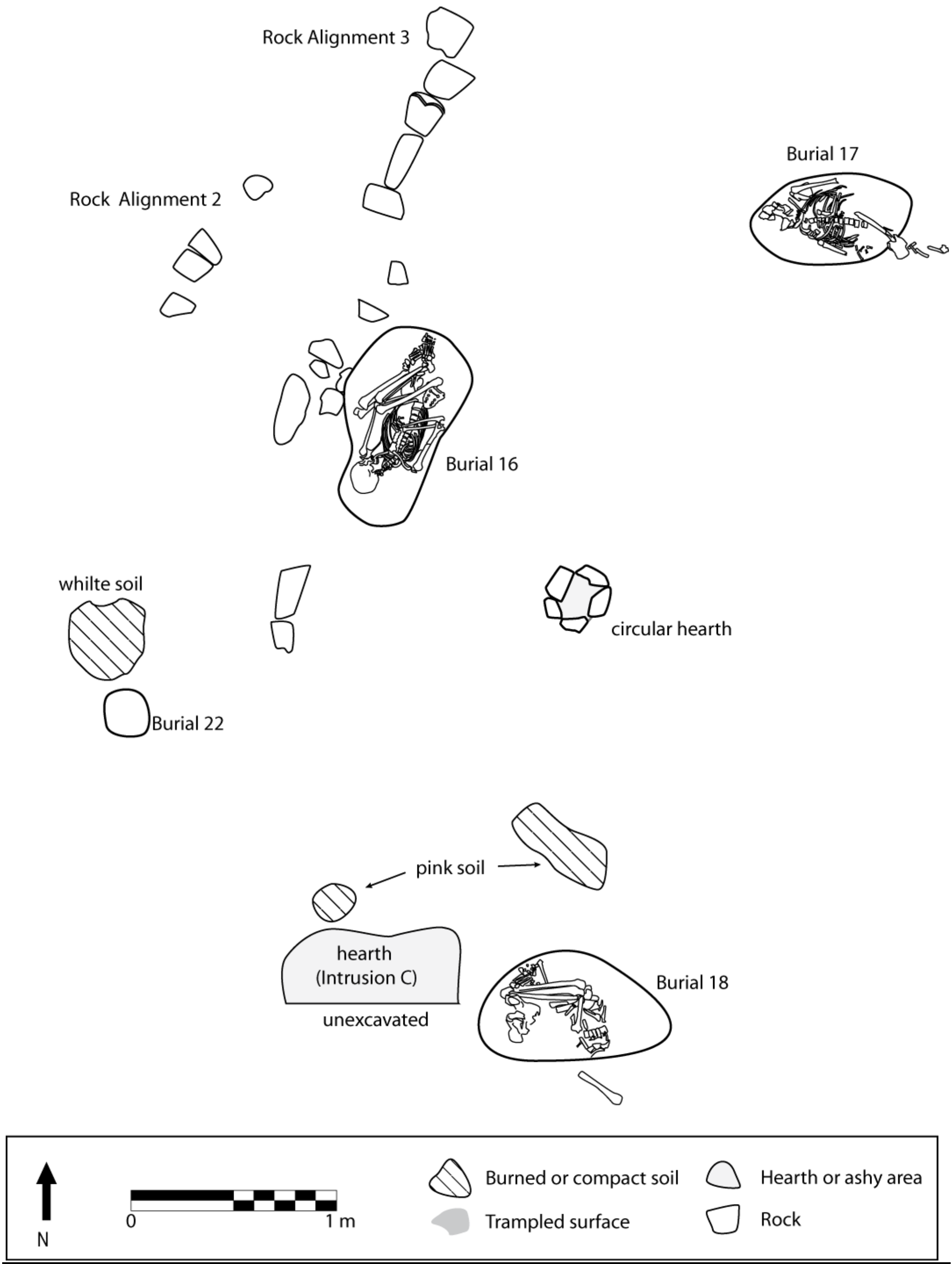


Figure 4.52: Four human burials surrounded a small circular stone hearth. They included the mummy of a 26 to 35 year old man (Burial 16), a 16 to 17 year old young woman (Burial 17), a 26 to 35 year old woman (Burial 18), and an infant (Burial 22). Burial 18 was associated with a small hearth, and there were several deposits of pink and white soil surrounding the burials. Burials 17 and 18 were disturbed by modern plowing.

Although there were more burials in total in the Southern Sector (15 vs. 7), the number of burials in the last phase was nearly the same, six in the Southern Sector and four in the Northern Sector. One of the most intriguing areas from the last phase in the Northern Sector included four burials surrounding a small circular stone hearth (see Figure 4.53). Although these burials were clearly related, it is not possible to determine if they were buried at the same moment or separately over time.

<u>Small semi-circular stone hearth</u>

A small circle of five unworked field stones was seated on top of Stratum 5 (see Figure 4.54). This circle of stones was filled with ash, and it was surrounded by scattered ash mixed with soil. This feature was closely associated with four human burials (Burials 16, 17, 18, and 22) and was nearly identical to a hearth found inside the mud structure in Unit A (see Chapter 5, Figure 5.61). The lack of carbonized food remains suggests that this hearth was not used for cooking. Rather, it is likely that it was used to burn materials during mortuary rituals conducted for the nearby human burials—either once when they were buried or multiple times as part of ongoing periodic ritual conducted after their burials.

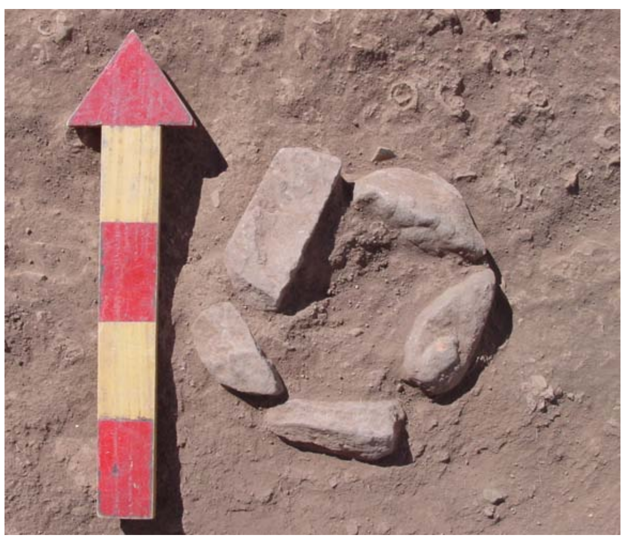


Figure 4.53: A small circular hearth was associated with Burials 16, 17, 18, and 22.

<u>Inside the stone circle</u>

Munsell color: 7.5 YR 4/3 brown

Ceramic vessels

Total sherds	5

Restricted vessel with a neck	1 plainware

Botanical remains from flotation of 1.3 liters of soil, the entire contents of the hearth (S-127)

1 *Chenopodium quinoa* carbonized seed

Animal bone (NISP)

Mammals

Field mouse (*Muridae*)	3 (all from flotation)
Unidentified	3 (all from flotation)

<u>Ashy soil surrounding the stone circle</u>

Munsell color: 7.5 YR 4/3 brown

Ceramic vessels

Total sherds	198
Restricted vessels with a neck	3 plainware
Restricted vessel without a neck	1 plainware
Open vessels	1 Chanapata blackware, 1 plainware
Body sherds with diagnostic style	2 Chanapata redware, 1 Chanapata blackware, 3 pattern burnished

Chipped stone

Locally available stone (69.23% by count, 96.07% by weight)

Coarse grain quartzitic sandstone

Debitage: 2 proximal flakes (9.2 g)

Fine grain quartzitic sandstone

Debitage: 1 fragment of angular shatter (3.2 g)

Quartzite

Tools: 1 unimarginal flake tool (3.0 g), 1 multidirectional core (14.6 g)

Debitage: 3 proximal flakes (5.8 g), 1 fragment of angular shatter (0.9 g)

Regionally available stone (7.69% by count, 1.83% by weight)

Andesite

Debitage: 1 proximal flake (0.7 g)

Exotic stone (23.08% by count, 2.09% by weight)

Obsidian

Tool: 1 multidirectional core (0.8 g)

Debitage: 1 proximal flake (< 0.1 g), 1 fragment of angular shatter (< 0.1 g)

Botanical remains from flotation of 7.15 liters of soil (S-109)

4 *Chenopodium quinoa* carbonized seeds

Animal bone (NISP)
Mammals

Llama or alpaca (*Lama sp.*)	2 (all from from flotation)
Guinea pig (*Cavia porcellus*)	5 (3 from flotation)
Unidentified	55 (35 from flotation)

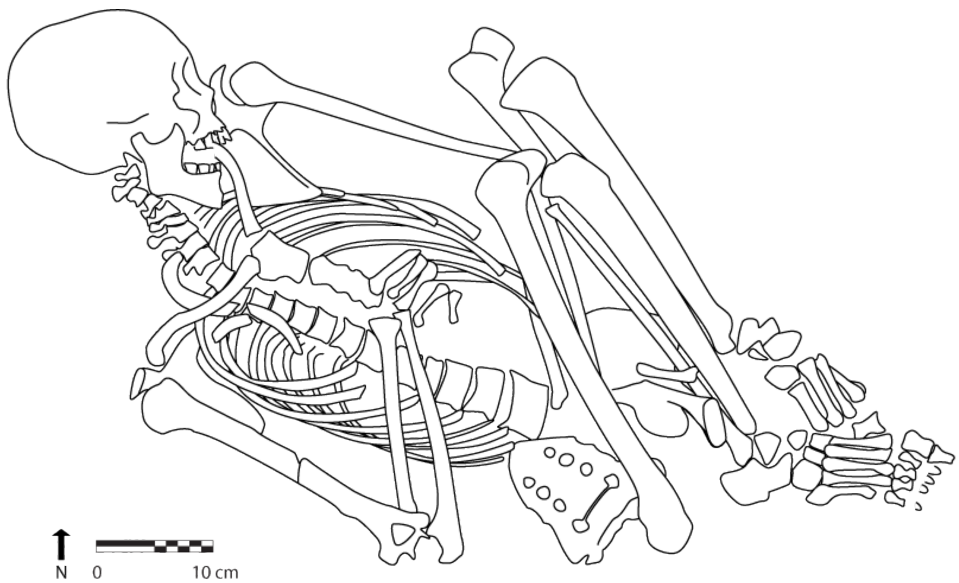


Figure 4.54: Burial 16 was the tightly flexed secondary burial of a 26-35 year old man. The right side of the pelvis was removed, and the sacrum was rotated approximately 180 degrees from its natural position.

<u>*Burial 16*</u>

Burial 16 was a man between 26 and 35 years of age with tabular erect cranial modification, buried in a cavity that cut into Stratum 4 (see Figure 4.55). There were no grave goods associated with this burial, though there was a small rock located at his right elbow. The skeleton was tightly flexed on its back, in good condition, and was complete except for the right half of the pelvis (100% completeness). In addition, the skeleton was in correct articulated position except for the sacrum (which was rotated 180 degrees from its original position) and the scattered fingers of the left hand located in the man's lap. There were no cut marks on the sacrum, femur, or left side of the pelvis. Like the cranium in Burial 19, the pelvis would have been impossible to remove if the connective tissue were not already very decayed. Therefore, like Burial 19, the tightly flexed position, completeness, and articulation of the skeleton suggest that this man was stored above ground as a mummy for a significant amount of time before being buried at Yuthu (Burial Type 4). Although I found no evidence of where or how this particular pelvis was used, a fragment of the right ilium (pelvis) of an adult was found in the final phase of use of the Southern Sector. It was included in a group burial of three children resting on the feet of a 1 to 2 year old (see Chapter 5).

This individual showed many signs of healed trauma including a cranial vault fracture, fractures of the right and left nasals, healed fractures to the left frontal, zygomatic process, and left zygomatic body, and a fracture of the transverse process of the 7th cervical vertebra.

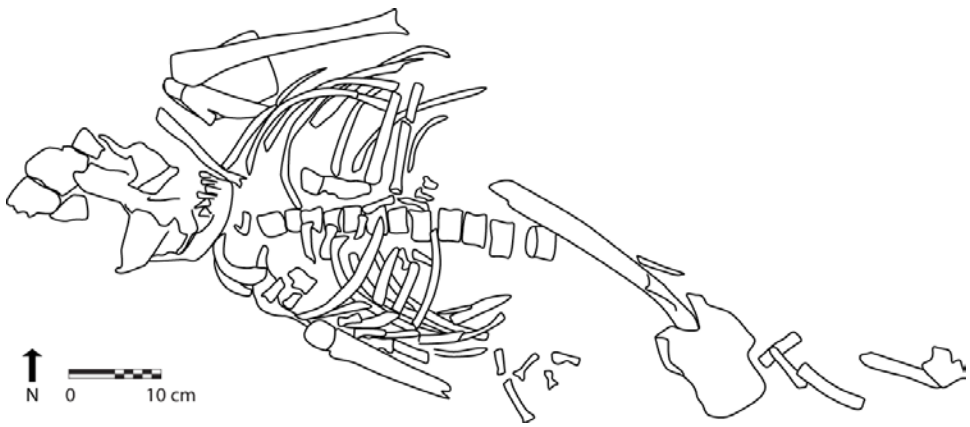


Figure 4.55: Burial 17 was a 16-17 year old young woman. This burial was disturbed by modern plowing.

Burial 17

Burial 17 was a 16 to 17 year old young woman with tabular erect cranial modification buried in a cavity that intruded into Stratum 4 (see Figure 4.56). The skeleton was incomplete (21%) and in poor condition because it had been disturbed by modern plowing. The body may have been buried in a flexed position facing up, though this cannot be determined with certainty. Although it is difficult to say for sure, I would suggest that this was a primary burial (Burial Type 1). There were no grave goods associated with this burial.

Burial 18

Burial 18 was a 26 to 35 year old woman buried in a cavity that cut into Stratum 4 (see Figure 4.57). The condition of the skeleton was fair even though it had been disturbed my modern plowing and was incomplete (57%). The body was flexed and buried on her right side, facing north. It is impossible to determine with any certainty, but I suspect that this was a primary interment (Burial Type 1).

This woman shared the congenital trait of a double-headed first right rib with the infant in Burial 23 (see above). Because this burial was one of the latest in Unit D, this demonstrates that related people (at least related women) used the site from the earliest through latest periods. In addition, the skeleton showed many healed traumas, including a fractured right middle rib, a healed clavicle fracture, a Colles' fracture to the left radius, a fractured distal left ulna, and a fractured 5^{th} metacarpal.

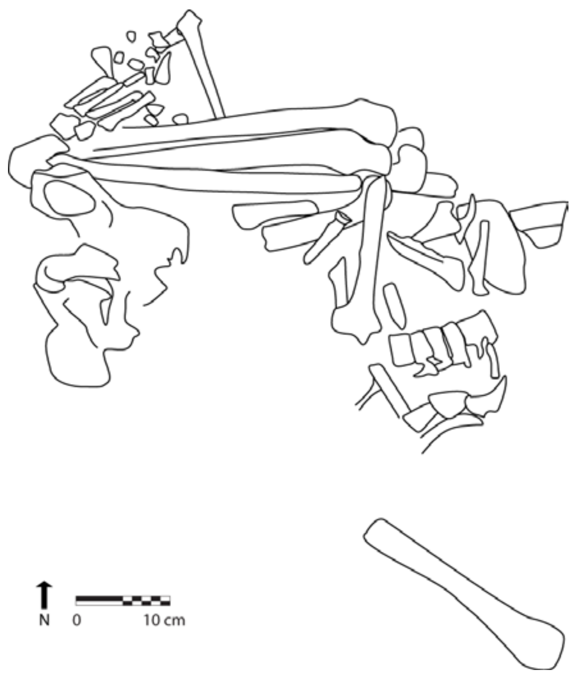


Figure 4.56: Burial 18 was a 26 to 35 year old woman. She had a double-headed first rib, a congenital condition that she shared with the infant in Burial 23. This burial was disturbed by modern plowing.

<u>*Burial 22*</u>

Burial 22, an infant who likely did not survive childbirth, was buried in a cavity in Stratum 4. My assistant did not realize that he had encountered a human burial, so the orientation of the body was not recorded. Despite this, 50% of the delicate skeleton was recovered from the animal bone bag in good condition, indicating that this was a primary burial in which the individual was probably interred shortly after he or she died (Burial Type 1).

<u>Mound of white soil</u>

A circular area of loose dirt with chunks of white soil was located about 40 cm north of Burial 22. It was 40 cm in diameter and 9 cm deep.

Munsell color: 7.5 YR 4/4 brown

Ceramic vessels

Total sherds	21

Reworked ceramic sherds

Discs	2 plainware

Botanical remains from flotation of 3.7 liters of soil (S-112)

No identifiable plant remains were recovered from this sample.

Animal bone (NISP)

Mammals

Unidentified	7 (all from flotation)

<u>Very small area of compact pink soil</u>

There was a small semi-circular area of pinkish earth (with white flecks) about 16 cm in diameter and 3 cm deep located near Burial 18.

Munsell color: 5 YR 6/2 pinkish gray

Ceramic vessels

Total sherds	2

No diagnostic sherds were found in this feature.

Botanical remains from flotation of 5.475 liters of soil (S-118)

9 *Chenopodium quinoa* carbonized seeds
2 *Zea mays* carbonized seeds

Animal bone (NISP)

Mammals

Guinea pig (*Cavia porcellus*)	1 (from flotation)

<u>Larger area of pink soil</u>

There was a small lump of pink soil that measured 40 cm north to south by 40 cm east to west. The entire feature was taken as a soil sample.

Munsell color: 5 YR 4/4 reddish brown

Ceramic vessels

Total sherds	15
No diagnostic sherds were found	

Botanical remains from flotation of 6.325 liters of soil (S-138)

10 *Chenopodium quinoa* carbonized seeds

Animal bone (NISP)

Mammals

Field mouse (*Muridae*)	10 (all from flotation)
Unidentified	12 (all from flotation)

<u>*Intrusion C*</u>

Intrusion C was filled with loose, ashy soil 32 cm deep that cut into Stratum 4 very close to Burial 18. It was 40 cm north to south by 90 cm east to west. Although this was an area for burning, the low density of carbonized plants suggests that it was not a cooking hearth. Like the circular stone hearth, it may have been used to burn offerings during mortuary rituals.

Munsell color: 10 YR 5/2 grayish brown

Ceramic vessels

Total sherds	68
Restricted vessels with a neck	2 plainware
Restricted vessels without a neck	2 plainware
Open vessel	1 plainware
Open vessel with a diameter greater than 30 cm	1 plainware
Body sherd with diagnostic style	1 pattern burnished

Groundstone

Roughly spherical stone that fit into one hand with flattened surfaces created by grinding with back and forth or circular strokes (Group 1, Type A). The stone had pecking marks. It measured 10.35 x 7.56 x 6.26 cm; it weighed 800 g.

Roughly spherical stone that fit into one hand with flattened surfaces created by grinding with back and forth or circular strokes (Group 1, Type A). The stone measured 9.60 x 7.01 x 5.38; it weighed 500 g.

Fragment of an oval stone with rectangular cross section created by rocking the stone side to side along its edge (Group 2, Type D). About 25% of the object was present. The length and width were unknown; it was 4.41 cm tall. The fragment weighed 460 g.

Botanical remains from flotation of 7.3 liters of soil (S-108)
6 *Chenopodium quinoa* carbonized seeds

Animal bone (NISP)

Mammals	
Field mouse (*Muridae*)	1
Unidentified	12

Stratum 3

Stratum 3 was a thick stratum of semi-compact brown soil. At its deepest point, along the northern profile, the stratum was 50 cm deep. However, in the rest of the excavation unit, it was between 10 and 20 cm deep.

Munsell color: 7.5 YR 5/3 brown

Ceramic vessels

Total sherds	7,314
Restricted vessels with a neck	8 Chanapata redware, 2 pattern burnished, 232 plainware
Restricted vessels without a neck	86 plainware, 1 pattern burnished
Open vessels	8 Chanapata redware, 2 Chanapata blackware, 44 plainware
Open vessels with a diameter greater than 30 cm	2 Chanapata redware, 1 plainware
Lids	1 Chanapata redware, 6 plainware
Body sherds with diagnostic style	72 Chanapata redware, 8 Chanapata blackware, 4 Chanapata incised, 5 pattern burnished, 2 indeterminate style

Reworked ceramic sherds

Discs	6 plainware
Non-discs	2 plainware

Chipped stone

Locally available stone (58.65% by count, 82.69% by weight)

Coarse grain quartzitic sandstone

Debitage: 3 proximal flakes (50.8 g)

Fine grain quartzitic sandstone

Tools: 1 hafted biface (7.0 g), 1 unimarginal flake tool (6.3 g), 1 bimarginal flake tool (12.4 g), 1 multidirectional core (12.2 g)

Debitage: 1 proximal flake (20.9 g), 2 fragments of angular shatter (15.6 g)

Quartzite

Tools: 6 unimarginal flake tools (35.2 g), 4 bimarginal flake tool (12.3 g), 2 unidirectional cores (37.5 g), 7 multidirectional cores (200.8 g)

Debitage: 15 proximal flakes (48.1 g), 3 fragments of flake shatter (5.9 g), 10 fragments of angular shatter (50.2 g)

Chert

Tools: 3 unimarginal flake tools (43.2 g), 1 bimarginal flake tool (3.8 g)

Regionally available stone (6.73% by count, 12.31% by weight)

Slate

Debitage: 1 proximal flake (< 0.1 g)

Andesite

Tools: 2 unimarginal flake tools (24.3 g), 1 bimarginal flake tool (42.9 g)

Debitage: 1 proximal flake (7.1 g), 1 fragment of angular shatter (6.2 g)

Rhyolite

Debitage: 1 proximal flake (3.2 g)

Exotic stone (32.69% by count, 4.72% by weight)

Obsidian

Tools: 1 hafted biface (5.3 g), 1 hafted biface projectile point (1.2 g), 1 unhafted biface reutilized projectile point (0.9 g), 5 unimarginal flake tools (3.3 g), 1 unimarginal flake tool projectile point (1.8 g), 4 bimarginal flake tools (2.0 g), 1 bimarginal flake tool projectile point (1.5 g), 2 bimarginal flake tool reutilized projectile points (1.3 g), 2 combination flake tools (1.8 g), 1 combination flake tool reutilized projectile point (1.3 g), 3 multidirectional cores (4.3 g)

Debitage: 6 proximal flakes (2.4 g), 2 fragments of flake shatter (0.9 g), 3 fragments of angular shatter (2.1 g)

Unidentified (1.92% by count, 0.28% by weight)

Tool: 1 unimarginal flake tool (< 0.1 g)

Debitage: 1 fragment of angular shatter (1.9 g)

Figure 4.57: A miniature ceramic bowl with small incisions that resemble the pattern burnished decoration on the interior of many Chanapata bowls was found in Stratum 3.

Miniature ceramic vessel

1 miniature pattern burnished bowl (see Figure 4.58)

Worked bone

2 bone awls, or *ruk'is*
4 broad, flat long bone shaft fragments with pointed tips
1 thin object with round cross section and pointed end
1 rib fragment with square tip
1 cut proximal end of a mandible

Groundstone

Roughly spherical stone that fit into one hand with flattened surfaces created by grinding with back and forth or circular strokes (Group 1, Type A). This stone had pecking marks. It measured 7.30 x 7.12 x 6.14 cm and weighed 410 g.

One fragment of a roughly spherical stone that fit into one hand with flattened surfaces created by grinding with back and forth or circular strokes (Group 1, Type A). The stone had pecking marks. About 50% of the object was present. It was 7.95 cm long, 7.56 cm wide; the height was unknown. The fragment weighed 320 g.

Roughly spherical stone that fit into one hand with flattened surfaces created by grinding with back and forth or circular strokes without evidence of pecking (Group 1, Type A). The stone measured 6.77 x 6.16 x 4.70 cm; it weighed 270 g.

Grinding stone that fit in one hand with plano-convex cross section and flattened surfaces created by grinding with back and forth and rocking motions (Group 1, Type B). The stone had pecking marks. It measured 8.85 x 7.95 x 4.56 cm; it weighed 460 g.

Two fragments of stones that fit in one hand with plano-convex cross section and flattened surfaces created by grinding with back and forth and rocking motions (Group 1, Type B). The first had unknown length; it was 4.18 cm wide and 2.29 cm tall. The fragment weighed 80 g. The second fragment had unknown length and width; it was 2.11 cm tall and weighed 90 g.

Fragment of a grinding stone that fit in two hands with plano-convex cross section and flattened surfaces created by grinding with back and forth and rocking motions (Group 1, Type C). The stone had pecking marks. About 30% of the object was present. The length was unknown; it was 10.11 cm wide and 7.38 cm tall. The fragment weighed 1.05 kg.

Oval stone with rectangular cross section created by rocking the stone side to side along its edge (Group 2, Type D). The stone measured 13.98 x 9.79 x 3.97 cm; it weighed 880 g.

A disc-shaped stone with rectangular cross section created by rocking the stone side to side along its edge (Group 2, Type E). The stone measured 8.79 x 8.73 x 3.85 cm; it weighed 500 g.

Fragment of a pestle with pecking marks (Group 3, Type G). The length was unknown; it was 6.90 cm wide and 6.71 cm in height. It weighed 260 g.

Four small oval stones with no flat surfaces that may have been in an early phase of use (Small Group 2, Type N). The first measured 3.98 x 2.68 x 1.93 cm and weighed 30 g. The second measured 5.50 x 3.56 x 2.49 cm and weighed 70 g. The third measured 5.11 x 4.56 x 3.14 cm and weighed 90 g. The fourth measured 4.19 x 2.86 x 1.03 cm and weighed 20 g.

Two small oval stone with plano-convex cross sections that could be held between the fingers (Small Group 2, Type O). The first stone had pecking marks. It measured 7.64 x 5.47 x 4.85 cm and weighed 260 g. The second stone had no pecking marks. It measured 5.74 x 2.93 x 2.84 cm and weighed 80 g.

Four stones that could be pinched between the fingers with a flattened surface created by back and forth or circular strokes (Small Group 3, Type P). The first measured 3.53 x 3.26 x 2.17 cm and weighed 30 g. The second measured 3.49 x 2.90 x 2.48 cm and weighed 30 g. The third measured 5.77 x 3.88 x 2.51 cm and weighed 70 g. The fourth measured 4.68 x 3.71 x 2.79 cm and weighed 60 g.

Nondescript fragment of a grinding stone that weighed 40 g.

Two unmodified flat stones that may have been used as a base for small scale grinding or pulverizing.

Groundstone awl that measured 4.03 x 2.33 x 1.64 cm and weighed 10 g.

Fragment of a doughnut-shaped clod-breaker. About 50% of the object was present. It was 9 cm in diameter and 4.25 cm tall; the fragment weighed 230 g.

Fragment of a groundstone axe. About 50% of the object was present. The total length was unknown; it was 2.87 cm wide and 1.6 cm tall. The fragment weighed 50 g.

Fragment of a groundstone basin. About 15% of the object was present. It was probably round with a 26 cm diameter. It was 9.23 cm tall and weighed 430 g.

Beads

1 slate bead (see Figure 4.59)

Figure 4.58: A slate bead found in Stratum 3.

Figurines

1 unique double headed figurine made of bone (see Figure 4.60)

Figure 4.59: A unique bone figurine with two heads (facing left) found in Stratum 3.

Metal

A long piece of metal with a round cross section was found in Stratum 4. It was 4.11 cm long and 5.8 cm in diameter. It weighed 4.8 g.

Figure 4.60: A long metal item with a round cross section was found in Stratum 4.

Botanical remains from flotation of 5.9 liters of soil (S-121)

9 *Chenopodium quinoa* carbonized seeds

Botanical remains from flotation of 5.65 liters of soil (S-125)

3 *Chenopodium quinoa* carbonized seeds

Botanical remains from flotation of 6.75 liters of soil (S-149)

16 *Chenopodium quinoa* carbonized seeds
2 *Galium sp.* carbonized seeds
4 *Ambrosia sp.* carbonized seeds
4 *Zea mays* carbonized cupule fragments

Animal bone (NISP)

Mammals	
Llama or alpaca (*Lama sp.*)	205 (8 from flotation)
White-tailed deer (*Odocoileus virginianus*)	4
Guinea pig (*Cavia porcellus*)	27 (9 from flotation)
Andean fox (*Dusycion culpaeus*)	1
Pampas cat (*Felis cf. colocolo*)	1
Field mouse (*Muridae*)	8 (4 from flotation)
Unidentified	136 (48 from flotation)
Birds	
Coot (*Fulica sp.*)	3
Burrowing owl (*Athene cunicularia*)	5
Eagle hawk (*Geranoetus sp.*)	4
Unidentified	10 (1 from flotation)
Human bone	3

Features of Stratum 3

<u>*A narrow linear intrusion*</u>

A narrow linear intrusion filled with loose soil cut into Stratum 3. I originally thought that it might have been a narrow wall trench, but when we inserted a long steel bar into it, we could not find the bottom. This line of loose soil became known as "*el serpiente*," the mysterious snake-like feature. The origin of the intrusion remained unclear until the last week of excavation when we found Intrusion K, the semi-subterranean domestic structure in the northeast corner (see above). The mystery was solved; "*el serpiente*" was located directly above the western wall of Intrusion K where the soil had shifted or settled over time, forming a small fault-like crack that had opened and been filled with loose soil.

Munsell color: 7.5 YR 4/3 brown

No artifacts were analyzed from this feature.

Figure 4.61: A narrow linear feature filled with loose soil first appeared cutting into Stratum 4. It was a fault-like crack that formed over the western wall of Intrusion K, the semi-subterranean domestic structure in the northeast corner of Unit D.

<u>Dark soil and charcoal in the northeast corner</u>

A thin stratum of soil 3-14 cm deep consisting of loose, dark brown soil mixed with charcoal intruded into Stratum 3 in the northeast corner of the excavation unit.

Munsell color: 7.5 YR 3/4 dark brown

Ceramic vessels

Total sherds	1,533
Restricted vessels with a neck	1 Chanapata redware, 43 plainware
Restricted vessels without a neck	14 plainware
Open vessels	22 plainware
Open vessels with a diameter greater than 30 cm	1 Chanapata redware, 2 plainware
Lid	1 plainware
Body sherds with diagnostic style	7 Chanapata redware, 3 Chanapata incised, 3 pattern burnished

Reworked ceramic sherds

Discs	2 plainware
Non-disc	1 plainware

Chipped stone

Locally available stone (52.78% by count, 87.89% by weight)

Coarse grain quartzitic sandstone

Debitage: 1 fragment of angular shatter (19.2 g)

Fine grain quartzitic sandstone

Tools: 2 unimarginal flake tools (18.7 g)

Debitage: 2 proximal flakes (14.3 g), 1 fragment of angular shatter (13.9 g)

Quartzite

Tools: 3 unidirectional cores (72.3 g), 2 multidirectional cores (27.9 g)

Debitage: 2 proximal flakes (10.6 g), 3 fragments of angular shatter (27.0 g)

Chert

Tool: 1 bimarginal flake tool projectile point (3.8 g)

Debitage: 1 proximal flake (4.6 g)

Quartz

Debitage: 1 unmodified manuport (35.3 g)

Regionally available stone (2.78% by count, 8.38% by weight)

Andesite

Debitage: fragment of angular shatter (23.6 g)

Exotic stone (44.44% by count, 3.73% by weight)

Obsidian

Tools: 1 hafted biface (1.3 g), 1 unhafted biface reutilized projectile point (1.8 g), 4 unimarginal flake tools (1.7 g), 1 bimarginal flake tool reutilized projectile point (1.4 g), 1 combination flake tool (2.0 g), 1 combination flake tool reutilized projectile point (1.1 g), 1 multidirectional core (1.0 g)

Debitage: 5 proximal flakes (< 0.1 g), 1 fragment of flake shatter (0.2 g)

Worked bone (see Figure 4.63)

1 broad, flat long bone shaft fragment with rounded tip

1 thin object with round cross section and pointed end

Figure 4.62: Worked bone from dark soil in the northeast corner: (a) a broad, flat tool with a rounded tip and (b) a thin tool with a rounded cross section and pointed tip.

Groundstone

Grinding stone that fit in one hand with plano-convex cross section and flattened surfaces created by grinding with back and forth and rocking motions (Group 1, Type B). The stone measured 8.40 x 6.91 x 3.82 cm; it weighed 340 g.

Small oval stone with plano-convex cross section that could be held between the fingers (Small Group 2, Type O). The stone measured 5.65 x 3.18 x 2.51 cm; it weighed 60 g.

Andesite groundstone axe with pecking marks. The stone measured 81.5 x 36.8 x 1.6 cm; it weighed 50 g.

Botanical remains from flotation of 7.0 liters of soil (S-107)
6 *Chenopodium quinoa* carbonized seeds
1 *Zea mays* carbonized cupule fragment

Botanical remains from flotation of 6.125 liters of soil (S-168)
6 *Chenopodium quinoa* carbonized seeds
2 *Poaceae* carbonized seeds

Animal bone (NISP)

Mammals	
Llama or alpaca (*Lama sp.*)	22
Guinea pig (*Cavia porcellus*)	4
Field mouse (*Muridae*)	7 (all from flotation)
Unidentified	74 (43 from flotation)
Birds	
Unidentified	1
Human bone	1

<u>*Rock Alignment 4*</u>

Rock Alignment 4 was a linear arrangement of very small stones that ran north to south in the northwest corner. The excavated portion was 80 cm long, but the true length is unknown because the feature extended beyond the western limit of Unit D.

<u>*Rock Alignment 5*</u>

Rock Alignment 5 was a line of rocks 1.4 m north to south. It was located 25 cm west of the circular intrusion covered by rocks set in burned soil.

<u>*Ashy Intrusion 1 in the northwest corner (Intrusion B)*</u>

This intrusion was the latest of three that were located in roughly the same location. All three were filled with alternating strata of ash and trampled surfaces, indicating that this was a cooking location in several different phases. The popularity of this particular spot may have been related to the depression left by Intrusion H, one that provided a ready-made wind block.

Ashy Intrusion 1 cut into Stratum 3. It was 2.9 m north to south, 2.11 m east to west, and about 30 cm deep. The strata that filled the intrusion are described below, starting with the stratigraphically lowest deposit.

<u>Level B-1</u>

The lowest level that filled in this intrusion was 18 cm of dark gray semi-compact ash.

Munsell color: 10 YR 4/2 dark grayish brown

Ceramic vessels

Total sherds	200
Restricted vessels with a neck	8 plainware
Restricted vessel without a neck	1 plainware
Open vessels	4 plainware
Body sherd with diagnostic style	1 pattern burnished

Chipped stone
- *Locally available stone* (30% by count, 10.64% by weight)
  - Fine grain quartzitic sandstone
    - Tool: 1 unimarginal flake tool (0.3 g)
  - Quartzite
    - Debitage: 2 proximal flakes (0.2 g)
- *Regionally available stone* (20% by count, < 1% by weight)
  - Andesite
    - Debitage: 2 proximal flakes (< 0.1 g)
- *Exotic stone* (50% by count, 89.36% by weight)
  - Obsidian
    - Tools: 1 unhafted biface reutilized projectile point (1.8 g), 1 bimarginal flake tool (2.4 g)
    - Debitage: 3 proximal flakes (< 0.1 g)

Worked bone

1 broad, flat long bone shaft fragment with pointed tip (see Figure 4.64)

Figure 4.63: A broad, flat long bone shaft fragment with pointed tip was found in Ashy Intrusion 1 in the northwest corner (Intrusion B).

Groundstone

Fragment of a roughly spherical stone that fit into one hand with flattened surfaces created by grinding with back and forth or circular strokes (Group 1, Type A). The stone had pecking marks. About 45% of the object was present. It was 7.92 cm long and 7.12 cm wide; the height was unknown. The fragment weighed 260 g.

Fragment of a roughly spherical stone that fit into one hand with flattened surfaces created by grinding with back and forth or circular strokes (Group 1, Type A). About 45% of the object was present. It was 7.94 cm long and 7.11 cm wide; the height was unknown. The fragment weighed 280 g.

Botanical remains from flotation of 4.6 liters of soil (S-106)

3 *Chenopodium quinoa* carbonized seeds
2 *Ambrosia sp.* carbonized seeds

Animal bone (NISP)

Mammals	
Llama or alpaca (*Lama sp.*)	6
Unidentified	9 (all from flotation)

Level B-2

Level B-2 was loose brown dirt (without ash) 15 cm deep.

Munsell color: 7.5 YR 5/3 brown

Ceramic vessels

Total sherds	87
Restricted vessels with a neck	3 plainware
Restricted vessel without a neck	1 plainware
Open vessel	1 plainware
Open vessel with a diameter greater than 30 cm	1 plainware
Body sherds with diagnostic style	2 Chanapata redware

Animal bone (NISP)

Mammals	
Llama or alpaca (*Lama sp.*)	3
Birds	
Unidentified	3

Trampled Surface B-3

Part of the top of Level B-2 became a thin, light brown trampled surface that measured 95 cm from north to south and 30 cm from east to west.

Munsell color: 5 YR 4/3 reddish brown

Ceramic vessels

Total sherds	4
No diagnostic sherds were found	

Chipped stone

Locally available stone (100% by count and weight)

Chert

Debitage: 1 proximal flake (< 0.1 g), 1 fragment of angular shatter (0.4 g)

Botanical remains from flotation of 2.3 liters of soil (S-123)

1 *Zea mays* carbonized cupule fragment

Animal bone (NISP)

Mammals

Unidentified	1 (from flotation)

Half moon-shaped ashy area

A thin, moon-shaped layer of ashy soil 4 cm thick was located near the northern edge of Unit D. It was 1.64 m from north to south and 1.73 m from east to west. It cut into Stratum 4 and Ashy Intrusion 1 in the northwest corner.

Munsell 7.5 YR 4/3 brown.

Ceramic vessels

Total sherds	8
Restricted vessel without a neck	1 plainware
Body sherd with diagnostic style	1 pattern burnished

Chipped stone

Regionally available stone (40% by count, 100% by weight)

Slate

Debitage: 2 proximal flakes (0.1 g)

Exotic stone (60% by count, < 1% by weight)

Obsidian

Debitage: 2 proximal flakes (< 0.1 g), 1 fragment of angular shatter (< 0.1 g)

Botanical remains from flotation of 5.125 liters of soil (S-103)
16 *Chenopodium quinoa* carbonized seeds

Animal bone (NISP)
Mammals

Llama or alpaca (*Lama sp.*)	5

Birds

Unidentified	1

<u>*A circular intrusion covered by rocks set in burned soil (Intrusion A)*</u>

A second circular intrusion (78 cm deep) cut through Stratum 4 and the earlier circular intrusion. It was covered by rocks set in hard, burned soil that measured 130 cm east to west and 135 cm north to south. The rocks were mostly loose field stones, but also included a mortar with a deep circular depression. The intrusion was filled with several layers of soil that are described below starting with the earliest, or stratigraphically lowest, and ending with the cap of burned earth and rocks.

Figure 4.64: The circular intrusion covered by rocks set in burned soil cut into Stratum 3 and the earlier circular intrusion. The hole in the center of the stones was soil removed for a flotation sample.

<u>Level A-1</u>

The deepest level in this intrusion was light brown semi-compact soil with flecks of charcoal 3 cm deep.

Munsell color 7.5 YR 5/3 brown

Ceramic vessels

Total sherds	23

No diagnostic sherds were recovered from this context.

Chipped stone

Locally available stone (25% by count, 100% by weight)

Quartzite

Debitage: 2 proximal flakes (0.3 g)

Regionally available stone (25% by count, < 1% by weight)

Slate

Debitage: 1 proximal flake (< 0.1 g)

Rhyolite

Debitage: 1 proximal flake (< 0.1 g)

Exotic stone (50% by count, < 1% by weight)

Obsidian

Debitage: 4 proximal flakes (< 0.1 g)

Botanical remains from flotation of 5.95 liters of soil (S-179)

18 *Chenopodium quinoa* carbonized seeds

2 *Verbena sp.* carbonized seeds

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	2
Field mouse (*Muridae*)	2 (all from flotation)
Unidentified	14 (all from flotation)

<u>Level A-2</u>

A narrow strip of loose, light brown soil cut into Level 1 along the western side of the intrusion. It was 40 cm east to west, 90 cm north to south, and 3 cm deep.

Munsell color 7.5 YR 4/4 brown

Ceramic vessels

Total sherds	6
Open vessel	1 plainware
Body sherd with diagnostic style	1 pattern burnished

Chipped stone

Locally available stone (60% by count, 100% by weight)

Fine grain quartzitic sandstone

Debitage: 1 proximal flake (0.2 g)

Quartzite
Debitage: 2 proximal flakes (< 0.1 g)
Exotic stone (40% by count, < 1% by weight)
Obsidian
Debitage: 1 proximal flake (< 0.1 g), 1 fragment of angular shatter (< 0.1 g)

Botanical remains from flotation of 6.2 liters of soil (S-178)
26 *Chenopodium quinoa* carbonized seeds

Level A-3

A layer of reddish brown soil 15 cm deep included some burned earth which was taken as a flotation sample.

Munsell color: 5 YR 5/3 reddish brown

Ceramic vessels

Total sherds	99
Restricted vessels with a neck	5 plainware
Restricted vessel without a neck	1 plainware
Open vessel	1 plainware
Body sherds with diagnostic style	4 Chanapata blackware, 1 Chanapata incised

Chipped stone
Locally available stone (100% by count and weight)
Quartzite
Debitage: 2 proximal flakes (< 0.1 g)
Chert
Debitage: 1 proximal flake (0.1 g)

Groundstone

Fragment of a grinding stone that fit in one hand with plano-convex cross section and flattened surfaces created by grinding with back and forth and rocking motions (Group 1, Type B). About 50% of the object was present. Length was unknown; it was 8.35 cm wide and 3.45 cm tall. The fragment weighed 280 g.

Botanical remains from flotation of 6.3 liters of soil (S-177)
6 *Chenopodium quinoa* carbonized seeds
1 *Trifolium sp.* carbonized seed
1 *Galium sp.* carbonized seed
1 *Ambrosia sp.* carbonized seed
3 *Poaceae* carbonized seeds

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	1
Unidentified	9 (7 from flotation)

Level A-4

Level 4 was very hard, burned earth 50 cm thick with inset rocks forming an uneven circular surface. The stones included unworked field stones, but also grinding stones and mortars.

Munsell color: 5 YR 5/3 reddish brown

Ceramic vessels

Total sherds	373
Restricted vessels with a neck	12 plainware
Restricted vessel without a neck	1 plainware
Open vessels	1 Chanapata redware, 4 plainware
Body sherds with diagnostic style	4 Chanapata redware, 2 Chanapata blackware, 1 Chanapata incised, 1 pattern burnished

Chipped stone

Locally available stone (88.89% by count, 100% by weight)

Coarse grain quartzitic sandstone

Debitage: 2 proximal flakes (12.9 g)

Fine grain quartzitic sandstone

Debitage: 3 proximal flakes (25.5 g), 3 fragments of angular shatter (28.1 g)

Quartzite

Tools: 1 unimarginal flake tool (3.6 g), 1 unidirectional core (3.5 g)

Debitage: 3 proximal flakes (5.7 g), 3 fragments of angular shatter (8.4 g)

Regionally available stone (5.56% by count, < 1% by weight)

Andesite

Debitage: 1 proximal flake (< 0.1 g)

Exotic stone (5.56% by count, < 1% by weight)

Obsidian

Debitage: 1 fragment of angular shatter (< 0.1 g)

Worked bone

2 tubular beads

Figure 4.65: Worked bone from Level 4 of the circular intrusion covered by rocks set in hard burned soil: (a) a possible bead in process of being manufactured, and (b) a tubular bone bead.

Figure 4.66: A mortar that could be used with a pestle was incorporated into the hard burned mud of a circular intrusion (Intrusion A).

Groundstone

Fragment of a grinding stone that fit in two hands with plano-convex cross section and flattened surfaces created by grinding with back and forth and rocking motions (Group 1, Type C). About 80% of the object was present. The length was unknown; it was 8.74 cm wide and 6.30 cm tall. The fragment weighed 1 kg.

Stone that could be pinched between the fingers with a flattened surface created by back and forth or circular strokes (Small Group 3, Type P). The stone measured 5.21 x 3.97 x 2.94 cm; it weighed 90 g.

A grinding slab with a concave surface and an additional deep cup-like grinding surface that could have been used as a mortar for a pestle. This stone was set into hard mud mortar (see Figure 4.67).

Botanical remains from flotation of 6.1 liters of soil (S-104)
1 *Chenopodium quinoa* carbonized seed
1 *Ambrosia sp.* carbonized seed

Animal bone (NISP)
Mammals

Llama or alpaca (*Lama sp.*)	11
Field mouse (*Muridae*)	37 (29 from flotation)
Unidentified	7

Stratum 2

Stratum 2 was compacted topsoil that was disturbed by modern agricultural plowing. In addition to Formative period artifacts, this stratum contained Colonial pottery and glass. The stratum was present throughout Unit D and was between 10 and 20 cm deep.

Munsell color: 7.5 YR 4/3 brown

No artifacts were analyzed from this disturbed stratum.

Stratum 1

The loose topsoil was between 10 and 16 cm deep. It was disturbed by modern plowing and contained not only Formative artifacts, but also modern trash like plastic bags, bottle caps, and broken glass.

Munsell color: 7.5 YR 4/4 brown

No artifacts were analyzed from this disturbed stratum.

Discussion of the deposits and features of Unit D

Before beginning excavations in the Northern Sector, I wanted to know if the distinctive pottery, stone tools, and bones found on the surface were indicative of what lay beneath. Were the kinds of structures and activity areas under the surface different from Unit A? After finding hearths and trampled surfaces in a small test pit, I was excited at the possibility that excavation of a large block would allow me to begin to learn about the everyday experiences of the families that lived at Yuthu. Before my excavations, archaeologists knew almost nothing about the daily lives of Formative villagers, a significant shortcoming of Formative period research in Cusco up to that point. Ultimately, a village is not defined by the monumental architecture it contains or the position it holds in a settlement hierarchy. Rather, it is made up of the people who eat, marry, dance, and die as neighbors. I am happy that excavations in the Northern Sector have provided important new information about domestic life in a Formative village.

In general, the deposits in Unit D had a distinctive quality. Most soil strata were deposited gradually in fine layers and contained compacted surfaces that formed from repeated trampling. These surfaces were the results of habitually performed household tasks like walking to and from the hearth or entering and exiting a house through the door.

This area had a sequence of simple domestic structures, storage features, and cooking features. The earliest occupation was comprised of two semi-subterranean domestic structures with simple thatched roofs, storage pits, a cooking pit, and human burials. After that, a thick soil layer mixed with many artifacts (but without cultural features) was probably sediment deposited by erosion of soil from uphill. The next significant feature was a large cooking pit in the northwest corner, associated with the only prepared clay floor in Unit D. Then, the first above-ground house with a simple stone foundation (and walls made of mud, adobe, or wattle and daub) was built in the southeast corner. This structure was associated with the first mummy burial at Yuthu. A very large hearth in the southwest corner may have been roughly contemporaneous with the above-ground house, though stratigraphy cannot resolve this with certainty. These features were covered by soil without cultural features. The final use of Unit D included primary and secondary burials that surrounded a small stone hearth. These burials were contemporary with stone alignments that were not associated with the remains of floors or walls.

Even though the two sets of strata without cultural features indicate that use of this area was not continuous, it is not clear what this means in terms of continuity of occupation of the entire village. Further excavation will be necessary to determine whether houses were simply located outside the area excavated or whether the site was briefly abandoned.

At Yuthu, the Northern Sector was where families slept, ate, and carried out most daily tasks. However, the area was not used exclusively for mundane endeavors. Although the principal features in this sector were houses as well as cooking and storage features, I also found ample evidence of ritual behavior as well. Human burials were found in every phase of occupation. Figurines, carved bone, and the intentional burial of an eagle hawk were rare finds, but all provided evidence that ritual was an important part of daily life for the families of Yuthu.

The final use of the Northern Sector seems to have been exclusively mortuary. This was also true in Unit A in the Southern Sector. Although I excavated only a small portion of the site, the lack of community buildings or houses and the ubiquity of human burials suggest that Yuthu may have been used as a cemetery after people no longer lived there. Although Unit D was only a small fraction of the Northern Sector, excavations in this area provided important preliminary data on domestic life in Formative Cusco society.

<u>Excavations in Unit C</u>

Unit C consisted of two small test pits located on the western edge of the Northern Sector, just across the gully from the platform in the Southern Sector. This part of the Northern Sector was a flat area next to the road. Since I didn't find walls or floors of any structures in 2006, I did not continue excavation here. The first 2 x 2 test pit that we excavated in this area (N200 E300) was only 50 cm deep when we encountered hard, white bedrock (see Figure 4.68). So, we moved 25 m east and dug another similar pit (N225 E298). It is intriguing that even though the units are so close together, the first unit (which was closer to the edge of the flat area) was only 50 cm to bedrock, and the second (which was closer to the upward slope) was 175 cm deep (see Figure 4.70).

Looking back, I am curious to know if this difference in depth might indicate that the flattened area held a subterranean structure.

Test pit N 200 E 300

The first test pit had no undisturbed cultural layers. Therefore, no artifacts were analyzed.

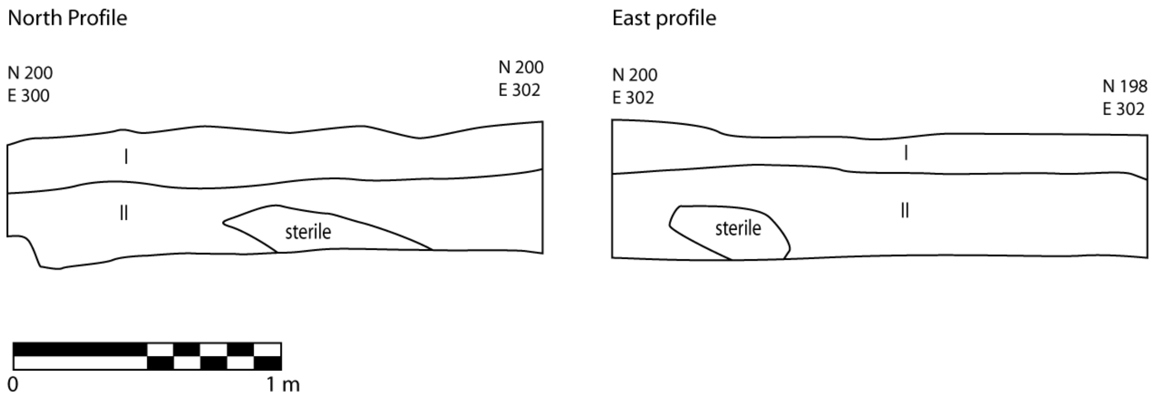


Figure 4.67: Profiles from Unit C, pit N200 E300. This unit ended in sterile gypsum bedrock after 50 centimeters. No intact Formative deposits were found.

Stratum 2

Stratum 2 was compact soil that contained modern trash and had been disturbed by plowing. This stratum was directly on top of the white gypsum bedrock.

Munsell color: 7.5 YR 5/3 brown

No artifacts were analyzed from this stratum.

Stratum 1

This stratum was disturbed by plowing. The soil included modern trash such as bits of plastic and glass.

Munsell color: 7.5 YR 4/3 brown

No artifacts were analyzed from this stratum.

Test pit N 225 E 298

When we found nothing in test pit N200 E 300, I was still curious about how this unusually flat area may have been used. Therefore, I decided to excavate another unit closer to the footpath that marks the northwestern limit of the site. The new unit was only 25 m west of the original pit, but it yielded several intact strata including a large hearth and another intrusion cut into the gypsum bedrock (see Figure 4.69 and Figure 4.70).

Figure 4.68: A hearth in the northeast corner and an intrusion in the southwest corner cut into bedrock in Unit C.

Stratum 8

Stratum 8 was gypsum bedrock. No artifacts were recovered from this context.

Munsell color: 7.5 YR 7/4 pink

Stratum 7

Stratum 7 was very hard red clay. No artifacts were recovered from this context.

Munsell color: 5 YR 4/4 reddish brown

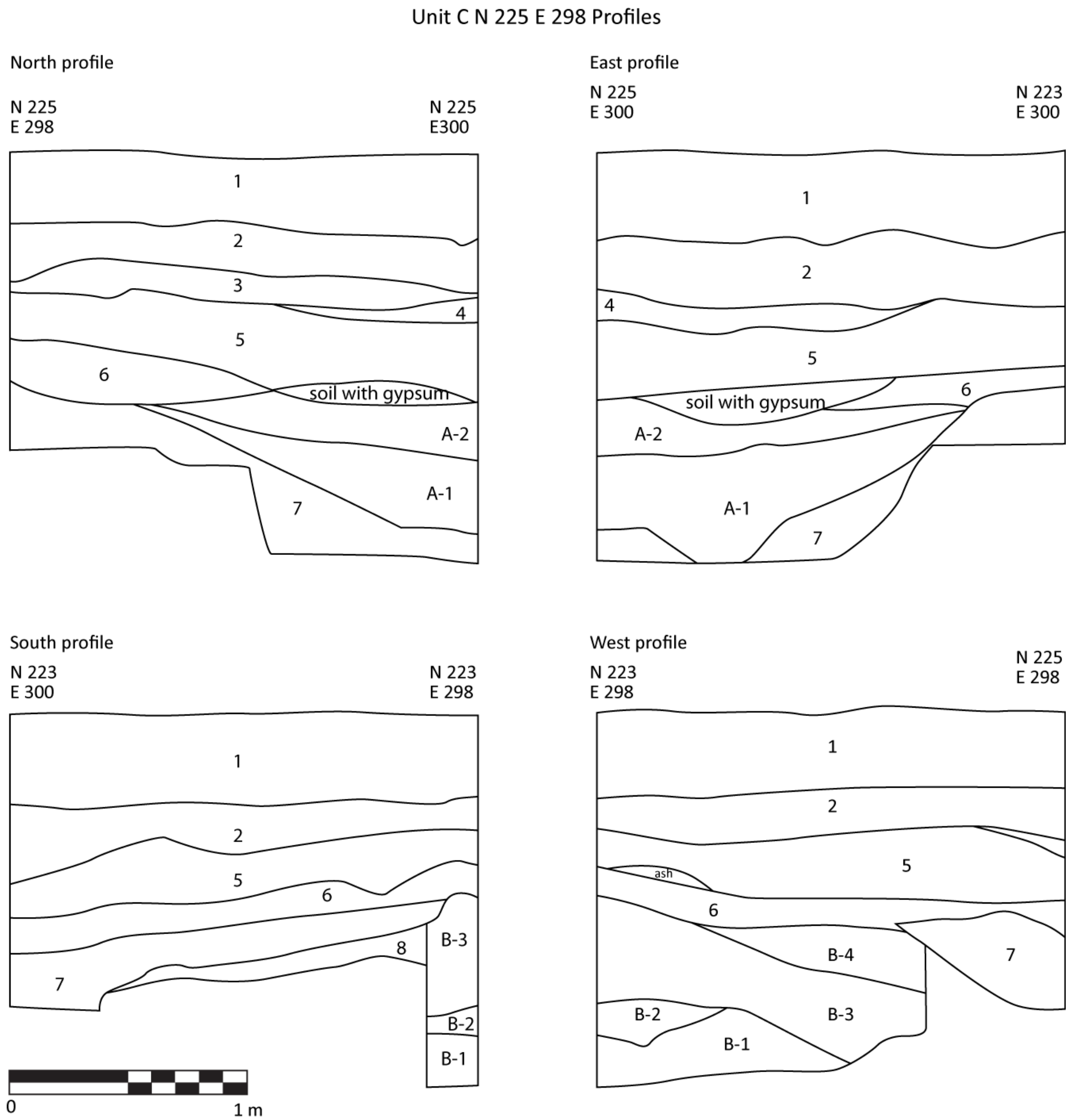


Figure 4.69: Stratigraphic profile drawings from Unit C, test pit N 225 E 298. Two intrusions were cut into bedrock. There was a hearth in the northwest corner (Intrusion A) and another pit in the southwest corner (Intrusion B).

<u>The southwest intrusion (Intrusion B)</u>

The Southwest Intrusion was excavated into bedrock. The total size is not known because most of the intrusion extended beyond the western limit of the excavation unit. The excavated portion measured 140 cm north to south and 20 cm east to west. It was 70 cm deep.

Level B-1

Level B-1 was loose soil 24 cm deep on top of the hard red soil at the base of the intrusion.

Munsell color 7.5 YR 4/3 brown

Ceramic vessels

Total sherds	31
Restricted vessels with a neck	1 plainware
Restricted vessels without a neck	1 plainware

Worked bone

1 hook shaped object (see Figure 4.71)

Figure 4.70: A hook shaped bone object
found in the intrusion in the southeast corner.

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	1
Guinea pig (*Cavia porcellus*)	1
Field mouse (*Muridae*)	1
Unidentified	2

Level B-2

Level B-2 was a thin layer of reddish brown soil. Because the intrusion was narrow and the strata were difficult to distinguish, it was excavated with Level B-3 and Level B-4.

Munsell color: 7.5 YR 4/4 reddish brown

Level B-3

Level B-3 was loose brown soil 35 cm deep. It was excavated with Levels B-2 and B-4.

Munsell color: 7.5 YR 4/3 brown

Level B-4

Level B-4 was reddish brown soil about 13 cm deep. It was excavated with Level B-2 and Level B-3.

Munsell color: 7.5 YR 4/4 reddish brown

Artifacts from Levels B-2, B-3, and B-4

Ceramic vessels	
Total sherds	10
Restricted vessels with a neck	2 plainware
Body sherds with diagnostic style	1 Chanapata redware, 1 pattern burnished

Animal bone (NISP)	
Mammals	
Llama or alpaca (*Lama sp.*)	3
Birds	
Unidentified	2

The hearth in the northwest corner (Intrusion A)

A hearth cut into the natural bedrock in the northwest corner (see Figure 4.70). The layers of soil that filled it are described below, starting with the stratigraphically lowest deposit.

Level A-1

Stratum 9 was a layer of ash 55 cm deep. Within the ash, there were two sets of rocks that were arranged to hold a cooking pot separated by an area of compact soil. Compared with other hearths, there was a relatively high density of corn.

Munsell color: 7.5 YR 3/2 dark brown

Ceramic vessels

Total sherds	599
Restricted vessels with a neck	32 plainware, 1 pattern burnished
Restricted vessels without a neck	1 Chanapata redware, 3 plainware
Open vessels	1 Chanapata redware, 1 pattern burnished, 2 plainware
Open vessels with a diameter greater than 30 cm	1 Chanapata redware, 1 pattern burnished
Lid	1 plainware
Body sherds with diagnostic style	13 Chanapata redware, 4 Chanapata redware, 2 Chanapata incised, 4 pattern burnished

Reworked ceramic sherd

Non-disc	1 plainware

Chipped stone

Locally available stone (50.0% by count, 75.3% by weight)

Quartzite

Tool: 2 unimarginal flake tools (6.1 g)

Debitage: 1 proximal flake (7.5 g), 6 fragments of angular shatter (30.4 g)

Regionally available stone (22.2% by count, 19.7% by weight)

Slate

Debitage: 1 fragment of angular shatter (2.0 g)

Andesite

Debitage: 3 proximal flakes (9.5 g)

Exotic stone (27.8% by count, 5.0% by weight)

Obsidian

Tools: 1 unhafted biface (1.1 g), 2 unimarginal flake tools (1.2 g), 1 bimarginal flake tool (0.5 g)

Debitage: 1 proximal flake (0.1 g)

Botanical remains from flotation of 5.4 liters of soil (S-28)

50 *Chenopodium quinoa* carbonized seeds

1 *Ambrosia sp.* carbonized seed

2 *Zea mays* carbonized seeds

Botanical remains from flotation of 5.25 liters of soil (S-26)

16 *Chenopodium quinoa* carbonized seeds

1 *Solanum sp.* carbonized seed

1 *Zea mays* carbonized seed

Animal bone (NISP)

Mammals	
Llama or alpaca (*Lama sp.*)	18 (6 from flotation)
Field mouse (*Muridae*)	7 (all from flotation)
Unidentified	48 (40 from flotation)
Birds	
Unidentified	2

Level A-2

A light brown stratum of loose dirt mixed with ash covered the ash from the hearth (Stratum 9). The stratum was about 20 cm deep.

Munsell color: 7.5 YR 4/2 brown

Ceramic vessels

Total sherds	293
Restricted vessels with a neck	10 plainware
Restricted vessels without a neck	2 plainware
Open vessel with a diameter greater than 30 cm	1 plainware
Lids	1 Chanapata redware, 2 plainware
Body sherds with diagnostic style	5 Chanapata redware, 1 Chanapata blackware, 1 Chanapata incised, 1 pattern burnished

Chipped stone

Exotic stone (100% by count and by weight)

Obsidian

Debitage: 3 proximal flakes (< 0.1 g)

Botanical remains from flotation of 5.5 liters of soil (S-24)

12 *Chenopodium quinoa* carbonized seeds

2 *Zea mays* carbonized seeds

Botanical remains from flotation of 5.13 liters of soil (S-25)

20 *Chenopodium quinoa* carbonized seeds

8 *Zea mays* carbonized seeds, 10 carbonized cupule fragments

Animal bone (NISP)

Mammals	
Llama or alpaca (*Lama sp.*)	1
Field mouse (*Muridae*)	13 (all from flotation)
Unidentified	21 (all from flotation)
Human bone	1

Stratum 6

Stratum 6 was semi-compact dark brown soil found throughout the unit. Much of this context was excavated with Stratum 5.

Munsell color: 7.5 YR 5/3 brown

Ceramic vessels

Total sherds	138
Restricted vessels with a neck	7 plainware
Lid	1 plainware
Body sherds with diagnostic style	5 Chanapata redware, 1 Chanapata incised, 2 pattern burnished

Reworked ceramic sherds

Discs	2 plainware

Chipped stone

Exotic stone (100% by count and by weight)

Obsidian

Tools: 1 unimarginal flake tool (0.2 g), 1 bimarginal flake tool (0.2 g)

Debitage: 2 proximal flakes (0.5 g)

Groundstone

Fragment of a groundstone axe. It was 32.7 cm wide and 18.9 cm tall. The length was unknown. The fragment weighed 70 g.

Botanical remains from flotation of 5.25 liters of soil (S-14)

16 *Chenopodium quinoa* carbonized seeds

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	8
Field mouse (*Muridae*)	3 (all from flotation)
Unidentified	35 (all from flotation)

Stratum 5

Stratum 5 was a thick layer of semi-compact soil mixed with bits of gypsum and mica that was 10-20 cm deep. There was a thin lens of ash at the base of the layer in the southwest corner.

Munsell color: 7.5 YR 3/3 dark brown

Ceramic vessels

Total sherds	518
Restricted vessels with a neck	1 Chanapata redware, 18 plainware, 3 pattern burnished
Restricted vessels without a neck	1 Chanapata redware, 2 pattern burnished
Open vessels	3 Chanapata redware, 4 plainware, 1 undetermined style
Lid	1 plainware
Body sherds with diagnostic style	10 Chanapata redware, 9 pattern burnished

Reworked ceramic sherd

Non-disc	1 plainware

Chipped stone

Locally available stone (40.0% by count, 31.7% by weight)
- Quartzite
  - Debitage: 1 proximal flake (< 0.1 g)
- Organic limestone
  - Tool: 1 unimarginal flake tool (7.2 g)

Regionally available stone (20% by count, 62.1% by weight)
- Andesite
  - Tool: 1 unimarginal flake tool (14.1 g)

Exotic stone (40% by count, 6.17% by weight)
- Obsidian
  - Tools: 1 bimarginal flake tool (0.8 g), 1 bimarginal flake tool reutilized projectile point (0.6 g)

Special objects

A black translucent quartz crystal that weighed 0.6 g.

A shell bead (see Figure 4.72)

Figure 4.71: A shell bead found in Stratum 5.

Botanical remains from flotation of 5.0 liters of soil (S-16)
4 *Chenopodium quinoa* carbonized seeds
1 *Zea mays* cupule fragment

Animal bone (NISP)

Mammals	
Llama or alpaca (*Lama sp.*)	12
Guinea pig (*Cavia porcellus*)	1
Unidentified	17
Birds	
Duck (*Anas sp.*)	1
Human bone	1

Feature of Stratum 5

Soil mixed with gypsum

Two area of compacted soil mixed with gypsum were found at the base of Stratum 5. They were excavated with Stratum 5.

Munsell color: 7.5 YR 7/4 pink

Stratum 4

Stratum 4 was a layer of ash about 10 cm deep in the northeast corner of the excavation unit.

Munsell color: 7.5 YR 4/2 brown

Ceramic vessels

Total sherds	151
Restricted vessels with a neck	2 Chanapata redware, 7 plainware
Restricted vessels without a neck	6 plainware
Lids	2 plainware
Body sherds with diagnostic style	1 Chanapata redware, 2 pattern burnished

Botanical remains from flotation of 5.4 liters of soil (S-9)
36 *Chenopodium quinoa* carbonized seeds

Animal bone (NISP)

Mammals	
Unidentified	7 (2 from flotation)

Birds

Duck (*Anas sp.*)	5

Stratum 3

Stratum 3 was a small area of light brown soil that appeared only in the northern profile of the unit. It was 10 cm deep. This soil was excavated along with Stratum 2.

Munsell color: 7.5 YR 4/4 brown

Stratum 2

Stratum 2 was compacted agricultural soil that had been disturbed by plowing.

Munsell color: 7.5 YR 4/3 brown

No artifacts were analyzed from this stratum.

Stratum 1

Stratum 1 was loose topsoil is mixed with modern trash.

Munsell color: 7.5 YR 4/2 brown

No artifacts were analyzed from this stratum.

Discussion of the features of Unit C

It is intriguing that this hearth and the southwest intrusion were so deep below the modern ground surface when bedrock in a nearby unit was only 50 cm below the surface. It is possible that these features were located in the base of some kind of sunken structure, but further excavation will be necessary to determine whether this was the case. In addition, the hearth in this area had more corn than other hearths at Yuthu. The proximity to the ceremonial Southern Sector raises the question of whether cooking in this area was for special meals associated with rituals.

Chapter 5

Excavations in the Southern Sector

Figure 5.1: The artificial platform in the Southern Sector is a striking feature on the landscape. Such flat areas are extremely rare in the Andes Mountains. This photo is a view from the northeast.

The Southern Sector is an eye-catching feature on the southern slope of Cerro Yuthu (see Figure 5.1). Today it is a very flat rectangular barley field located on a prominence that extends out from the mountain like a finger pointing toward Lake Huaypo. Because of the unusual form of the land, this part of the site was quickly identified by the Xaquixaguana Plain Archaeological Survey in 2004.

When I visited Yuthu for the first time in 2005, as I walked up the slope to the Southern Sector, I was impressed by the density of Formative period artifacts lying on the surface. Compared with many Formative period sites that I had identified nearby, this site was packed with painted pottery, stone tools, and even human remains. When I arrived to the top of the hill, I was struck by even more unique characteristics of the site. The yellowed barley drying in the *chakra* highlighted the remarkably rectangular shape of the field and the straight, steep, and unplantable banks that delimited it. The southern hillside was planted with eucalyptus because it was too steep to farm. To the west, the farm field and the scatter of Formative pottery ended suddenly at the trail to Maras. Below the barley, the surface of the field was incredibly flat, but the land sloped abruptly downward beyond the edges. I had never seen any *chakra* like it, despite having surveyed hundreds of square kilometers of the rolling Andean plains of Anta and Chinchero.

When my archaeologist eyes finally looked up from the ground, I realized that I was in one of the most beautiful places that I had seen on the plain, overlooking Lake Huaypo with its marshy perimeter and the patchwork quilt of fields planted in barley, potatoes, beans, and even corn that covered the rolling hills. The rectangular field faced Cerro Huanacaure, a mountain that rose out of the lake and surrounding plain (see Chapter 7, Figure 7.1). This mountain was an important *apu* in Inca times and continues to be one today. To the northwest, two more *apus* are visible, the glaciers Chicón and Pitusiray (see Chapter 7, Figure 7.2).

A hacienda overseer's house lay in ruins just beyond the road to Maras. I later learned that this house was built next to a natural spring that filled an "Inka bath." Unfortunately, the spring is now dry (either due to the water demands of the eucalyptus forest or the general desiccation of the Andes), and the stones of the basin were taken to be used in modern construction. As a result, I will never be able to determine if this "Inka bath" might have actually been a Formative period well or basin, which is a likely possibility given that there is no Inka site nearby.

After my first visit to Yuthu, I was hooked on the beautiful and distinctive location. I hoped that the archaeological deposits below the surface were intact, so that I could find out if the natural hill had been cut to create an artificial platform. I was also curious to learn what kinds of structures were built on top of this apparent platform. Therefore, during the exploratory season in 2005, I excavated a 4 x 4 m unit (Unit A) along the southeastern edge of the field that included part of the steep bank. I found two intriguing features – a stone-lined covered canal and a human burial, but the unit was too small to resolve my questions. I also excavated a 2 x 2 m test pit in the center of the platform, but I did not find any architectural elements or features.

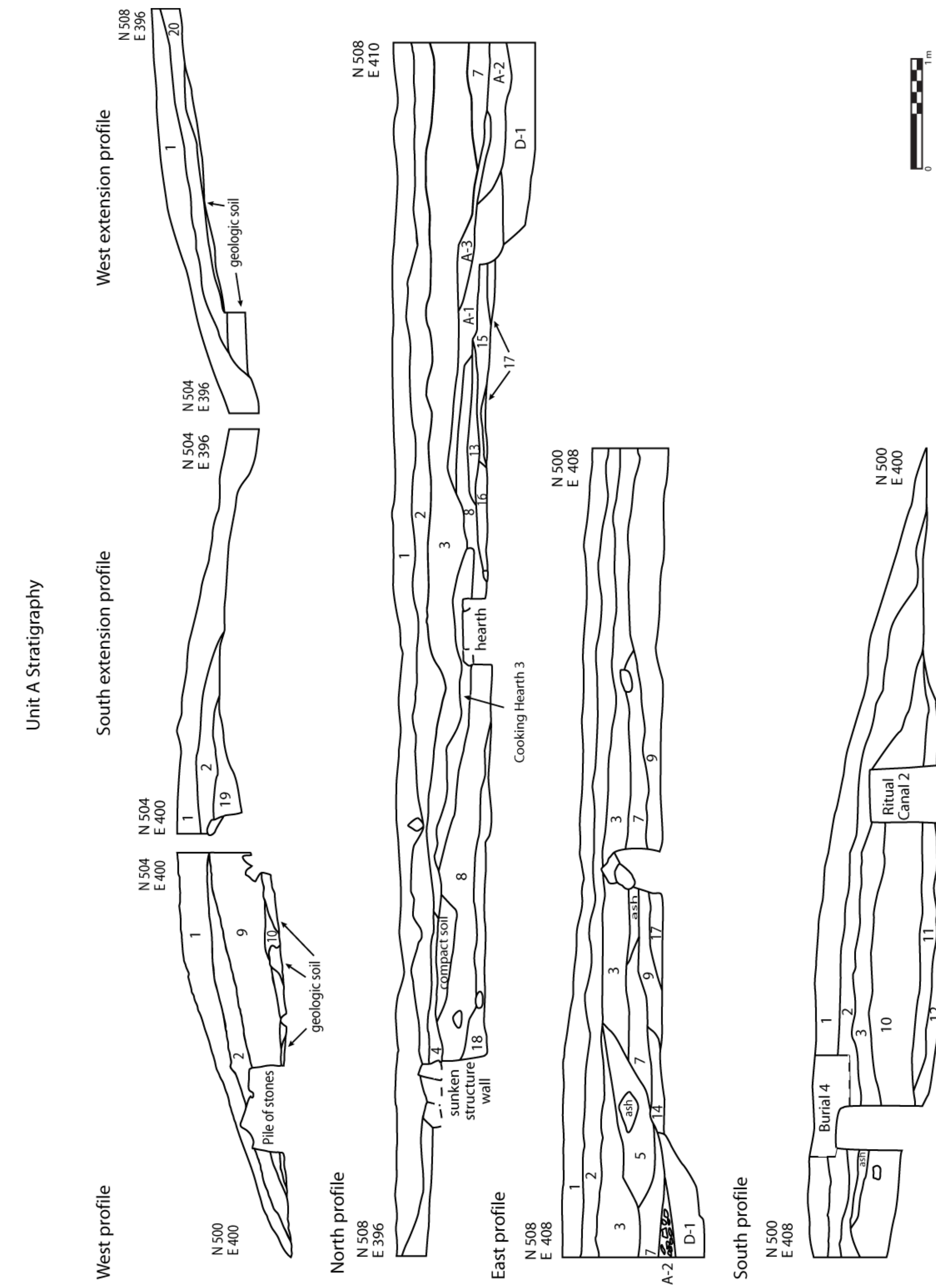


Figure 1.2: Stratigraphic profiles of Unit A. Each stratum is described in the text. Note that the interior floor of Structure 1 was 60 cm lower than the surrounding ground surface in the north profile.

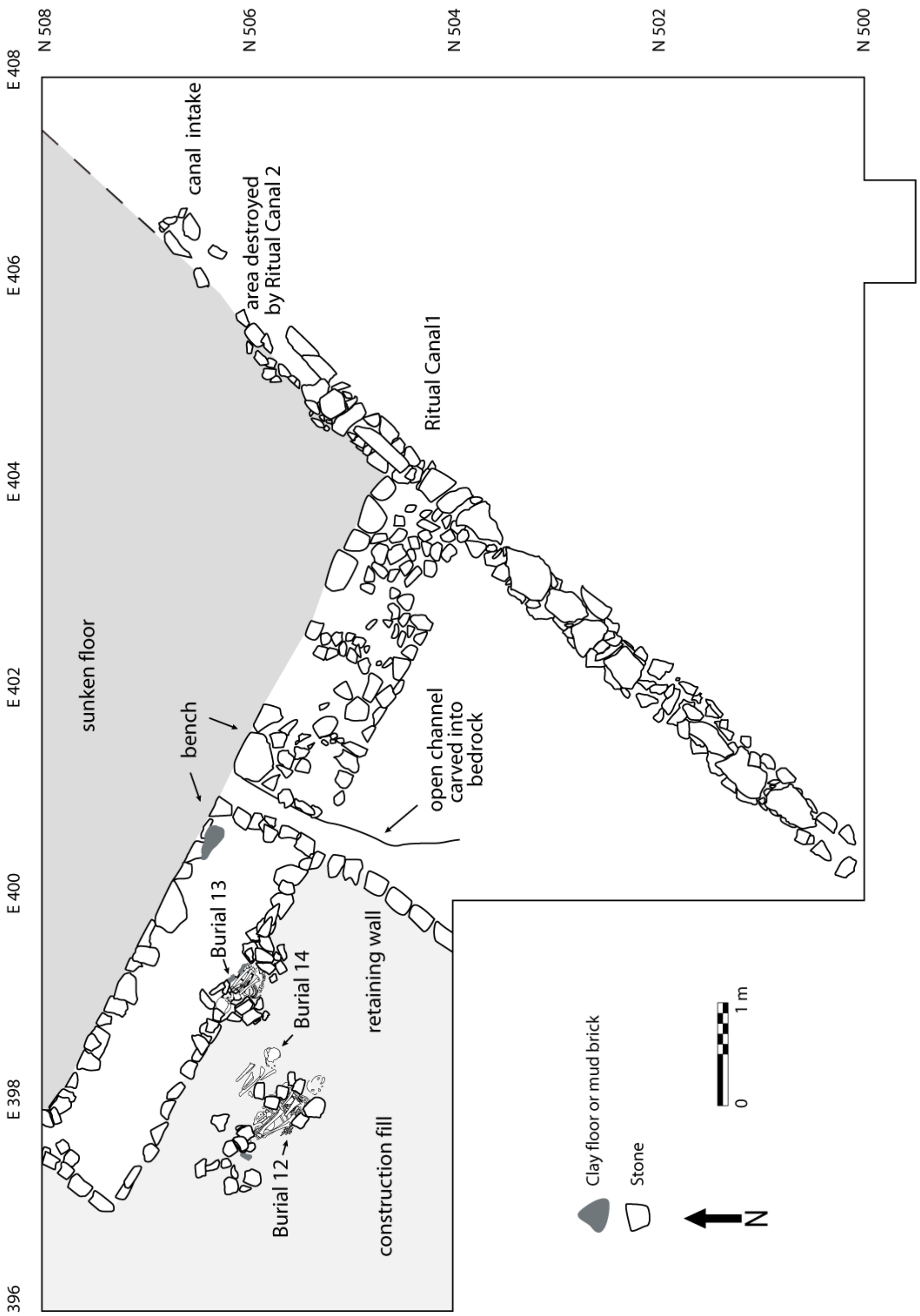


Figure 5.3: The earliest and most significant construction in Unit A was Structure 1, a sunken floor surrounded by a bench. An open channel cut into bedrock separated the east and west sections of the bench. Behind the west section of the bench, construction fill contained three secondary burials (Burials 12, 13, and 14) held in place by a retaining wall. In this part of the structure, the floor was 60 cm lower than the ground surface behind the west bench. East of the retaining wall, the interior and exterior of the structure were at the same level, so that Ritual Canal 1 was not buried. The structure may have been open toward the end of the artificial platform (located to the southeast).

When I returned in 2006, I extended Unit A to 80 m^2. By excavating a larger unit, I learned that the hill had, indeed, been cut off by Formative villagers to create a flat surface. In addition, the platform contained at least one structure with a sunken floor, stone and mortar retaining walls, stone-lined canals, a mud structure, and human burials.

Excavations in Unit A

The archaeological deposits from Unit A are described below beginning with the earliest features excavated into geologic soil and the subsequent modification of the hill to create a platform. Each stratum was assigned a number after excavation based on its relative stratigraphic position. Figure 1.2 is a stratigraphic profile of Unit A that may be referred to while reading the descriptions of the strata and features found in this unit.

Construction of Structure 1

During preliminary excavations, I did not find any evidence that the shape of the hill had been modified by Formative villagers. When I returned for further excavation in 2006, I extended Unit A (which had been 4 x 4 m) to 8 x 8 m unit, hoping that a larger area would provide proof that the mountain had been cut and shaped. After several weeks of digging, we still had not found any retaining walls or evidence of terracing. I began to doubt that there really was an artificial platform, despite the odd shape of the hill. But then, our trowels began to scrape across very hard soil in the western half of the excavation and two parallel lines of stones appeared, running southeast to northwest—the same direction as the presumed artificial platform. We continued to dig, following the natural levels of soil deposited north of these stones, and we soon discovered that the lines of were the top row of stones from the interior and exterior façades of a thick bench. At the western end, we found a gap and the corner of another wall. Unfortunately, that wall extended beyond the western limit of Unit A, and the budget and approaching rainy season would not allow many more weeks of excavation. Even so, I took a risk and added a 4 x 4 m extension to the west that I hoped would clarify what kind of structure this was. In the end, it was worth the extra time and money.

The bench belonged to Structure 1 in the Southern Sector, the largest and most carefully built structure that I found at Yuthu. It had a sunken floor that was 60 cm below the level of the surrounding ground surface. The bench, located along the southwestern edge, was at least partially responsible for the unusual shape of the hill – creating a straight southwestern edge and a flat top. Minor features included a retaining wall, stone-lined canals, and burials made during construction.

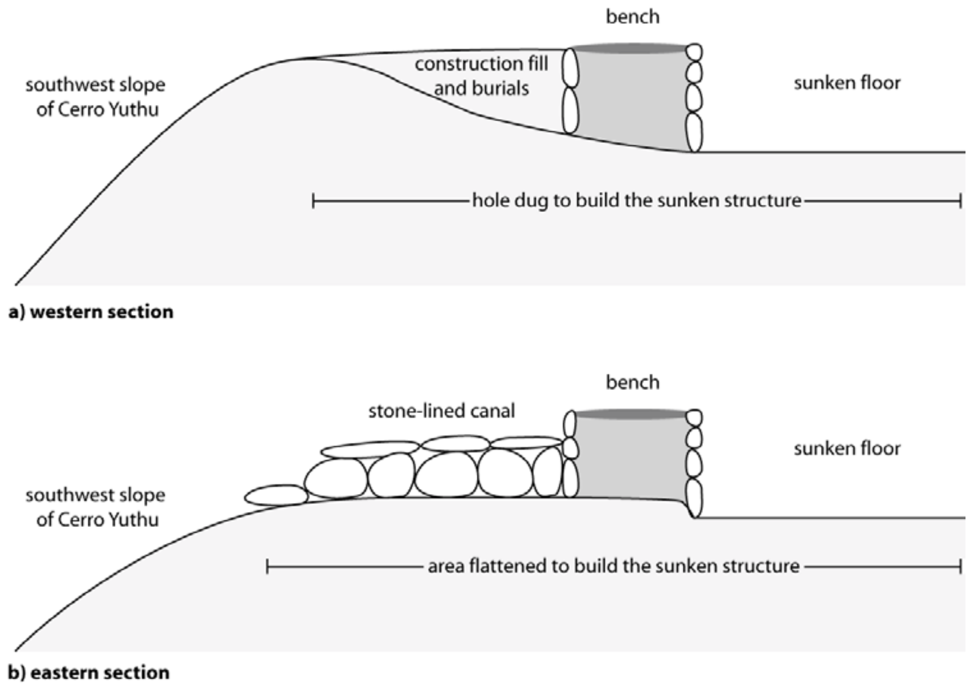


Figure 5.4: A schematic cross section of the western and eastern parts of Structure 1. The two parts were separated by a gap in the bench and a retaining wall that held construction fill. (a) In order to build the western part, an irregular hole was dug into geologic soil that was 60 cm deep and the approximate size and shape of the structure to be built. Then the stone-faced bench was built and the excess space outside the structure was filled with soil and three secondary burials (Burials 12, 13 and 14). (b) In order to build the eastern part, the hill was flattened to the level of the interior of the structure so that the exterior of the bench and the associated stone-lined canals would have been visible.

To build Structure 1, an irregular-shaped hole, slightly larger than the desired size of the structure, was dug into bedrock. Then, a thick bench was built inside the hole, parallel to the edge of the platform. The bench was 7.8 m long and 1.05 m wide. A narrow gap divided it into two sections of about equal size. Each section was stone-faced and covered by a layer of very hard clay that gave it a smooth, flat surface. However, the two sections differed slightly. The western section was faced with stones set into clay, while the southeast section was not only faced with stones but also contained smaller rocks set into the interior mortar.

Behind the northwestern section, the excess space was filled with three human burials deposited in the construction fill used to restore the ground to the original surface level. This construction fill was held in place on the east by a simple retaining wall that ran perpendicular to the east end of the bench section (see Figure 5.5). At the west end of the bench, along the northern limit of Unit A, I found the corner of the structure. Although we did not excavate much of it, the northwest edge of the sunken floor met with a narrower wall that may have been a retaining wall or stone façade set into the natural geologic soil.

Figure 5.5: The two parts of the southwestern bench were separated by a drain cut into bedrock and a retaining wall that extended out from the eastern end of the western section. In this photo, the construction fill and burials have already been excavated from behind the wall.

The eastern end of the bench abutted Ritual Canal 1, a stone-lined channel covered by stone slabs that ran northeast to southwest, approximately perpendicular to the wall. The intake was located about 2.5 m inside the wall, and the canal ended at the edge of the hill where the water would have spilled out over the steep slope. Therefore, the canal carried water from the interior to the exterior of the structure. The interlocking stones in the wall and canal show that they were built at the same time.

By returning to excavate a larger unit, I was able to answer my initial questions about the Southern Sector. The surface of the hill had been modified by Formative period construction and walls were responsible for the unusually rectangular shape of the field. Structure 1 (that was filled in when it was abandoned) created the unusual flatness.

Although the area excavated was small, I can speculate about the overall form of Structure 1. Because we found no continuation of the wall to the southeast (for 4.3 m) beyond the canal, it is possible that this structure had no southeast wall and was "open" toward the end of the platform. While the interior may have been below the ground surface in the northwestern part, it was approximately equal with the leveled ground southeast of the retaining wall—leaving the stone-lined canal visible rather than buried. In addition, the "paving" of the bench and the lack of carbonized seeds from plants used for thatch suggests that the structure was unroofed like a plaza or patio. Unfortunately, we did not excavate a large enough area to determine whether the platform contained only one such structure or if there were several. Future excavations or remote sensing will be necessary to determine this.

The soil deposits and burials associated with Structure 1 are described below.

<u>Construction fill and burials outside the western section of the southwest bench</u>

When Structure 1 was built, a larger cavity than that which would have been needed to contain it was dug into the hill behind the western section of the wall. The larger than needed area south of the wall was filled with two strata of soil and 3 burials (described below). A retaining wall held this construction fill in place.

Stratum 20

Stratum 20 was semi-compact, dark brown soil. It was the lowest layer of construction fill outside the western wall and behind the retaining wall. It was 13 cm thick. This stratum contained two secondary burials that were probably included as offerings when Structure 1 was built.

Munsell color: 7.5 YR 4/3 brown

Ceramic vessels

Total sherds	346

Restricted vessels with a neck	1 Chanapata redware, 1 Chanapata incised, 6 plainware, 2 undetermined style
Restricted vessels without a neck	1 plainware, 1 undetermined style
Open vessels	2 Chanapata redware
Open vessels with a diameter greater than 30 cm	5 Chanapata redware
Body sherds with diagnostic style	9 Chanapata redware, 1 Chanapata incised, 4 pattern burnished
Figurine	1 plainware

Reworked ceramic sherds

Disc	1 plainware
Non-disc	1 plainware

Chipped stone

Unidentified (100% by count and weight)

Debitage: 1 fragment of flake shatter (0.5 g), 1 fragment of angular shatter (< 0.1 g)

Worked bone

1 long bone shaft fragments with pointed tip (see Figure 5.6)

1 broad, flat tool made from a rib fragment

Figure 5.6: A worked bone tool found in Stratum 20.

Groundstone

Fragment of a pestle (Group 3, Type G). About 15% of the object was present. The length was unknown; it was 8.03 cm wide and 6.68 cm high. The fragment weighed 480 g.

Special objects

One fragment of a polished bone bead was found in Stratum 20 (see Figure 5.7).

Figure 5.7: A bone bead fragment found in Stratum 20.

Animal bone (NISP)
Mammals

Llama or alpaca (*Lama sp.*)	20

Features of Stratum 20

<u>*Burial 12*</u>

Burial 12, a 36-45 year old man with tabular erect cranial modification, was buried in a cavity cut into geologic soil. The body was in a flexed position on his back, surrounded by unworked fieldstones, with his head to the southwest. There was evidence of scorching on the head and the lower left leg, suggesting that burning was part of the burial ritual. The grave contained an extra, nearly complete adult right hand, with a notably different degree of preservation. The skeleton was 79% complete and in fair condition. Despite the fact that this burial cut into geologic soil covered by Stratum 20, it was very near the surface and had been disturbed by modern plowing. Although the disturbance makes it difficult to determine with certainty whether the burial was primary or secondary, the presence of an extra hand indicates that it was probably secondary (Burial Type 3).

This man had a massive healed fracture to the right tibia with ensuing chronic infection and an associated healed fracture to the right fibula. He had a fractured phalanx of the hand with an unhealed infection, and he also had spinal joint disease.

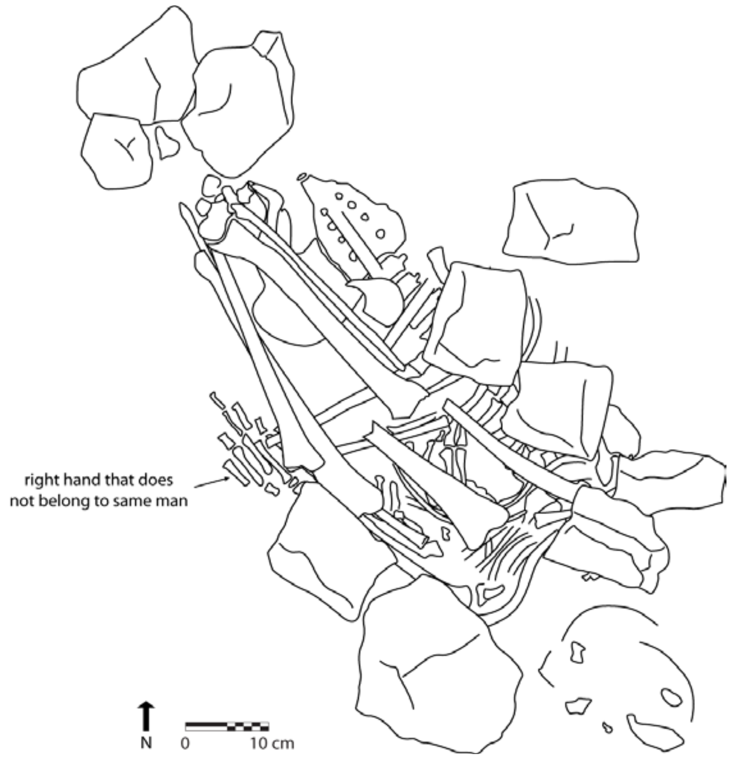


Figure 5.8: Burial 12 was the secondary burial of a 36-45 year old man placed in the construction fill of Structure 1. It included a nearly complete hand that did not belong to the principal individual in the grave.

Burial 13

Burial 13, a 26-45 year old woman with tabular erect cranial modification, was incorporated into the western section of the bench wall. Although the skeleton was only 14% complete and in poor condition, it closely approximated a flexed position in which she was resting on her left side facing the interior of the wall. The skeleton was aligned with the stones of the southern face so that her body formed part of a course of stones in the wall. The body was covered with an additional course of stones and a line of mud brick. Stone was placed in front of and around the body. The burial was covered by the paving of the western wall and construction fill. There was scorching on the left side of her head (the part resting on the stones below). This burial was clearly a secondary burial included as a dedicatory offering made during the construction of Structure 1 (Burial Type 3).

The woman suffered degenerative joint disease in her right wrist and hand and left hip, as well as chronic periostitis on the right tibia, indicating non-specific infection. She also had extreme ante-mortem tooth loss, leaving only one remaining tooth.

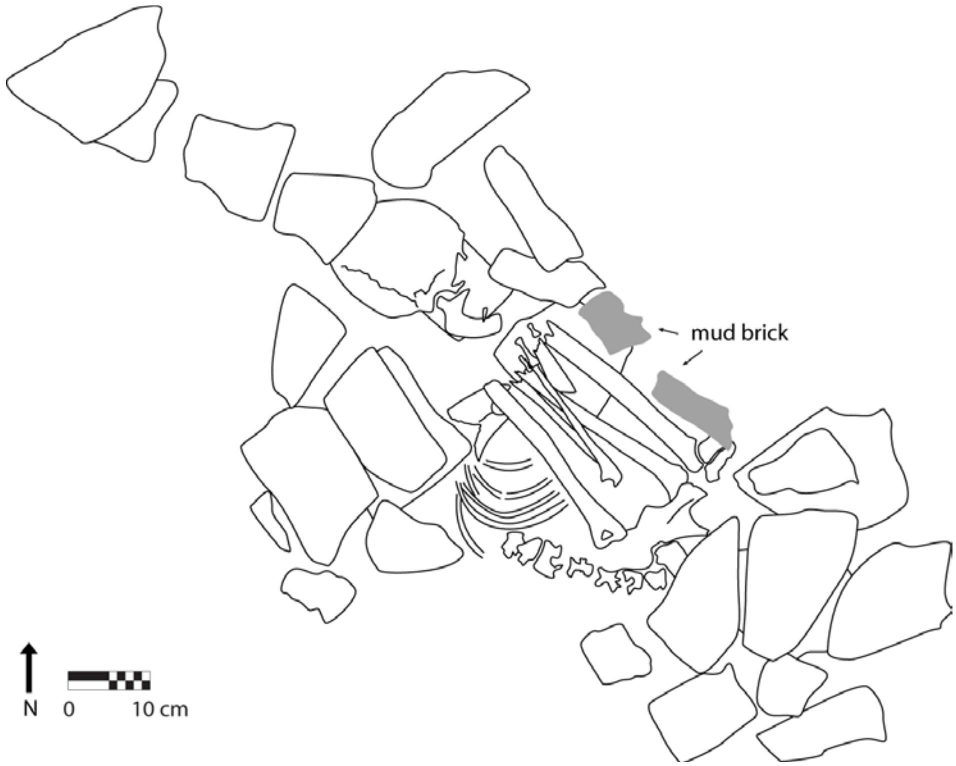


Figure 5.9: Burial 13 was a secondary burial of a 26-35 year old woman that was incorporated into the western section of the bench of Structure 1. The burial was encased in stone and mud brick and was covered by the hard clay that "paved" the top of the wall.

Figure 5.10: Burial 13 was a secondary burial of a 26-35 year old woman that was incorporated into the western section of the southwest bench.

Stratum 19

Stratum 19 was construction fill 15 cm thick resting partially on geologic soil and partially on Stratum 20 behind the western wall and the retaining wall. It was semi-compact soil mixed with bits of burned dirt. A radiocarbon date was processed from the limit with geologic soil. This sample dates the construction of Structure 1.

Munsell color: 7.5 YR 4/3 brown

Radiocarbon date:	AA84433 \ Yuthu RC-110, 2,369 ± 36 uncalibrated radiocarbon years BP, 417 – 209 BC calibrated with sequential model (95.4% confidence)

Ceramic vessels

Total sherds	1,382
Restricted vessels with a neck	2 Chanapata redware, 1 pattern burnished, 43 plainware
Restricted vessels without a neck	1 Chanapata redware, 1 Chanapata incised, 1 pattern burnished, 1 plainware
Open vessels	6 Chanapata redware, 2 Chanapata blackware, 3 plainware
Open vessels with a diameter greater than 30 cm	3 Chanapata redware, 1 Chanapata blackware
Body sherds with diagnostic style	48 Chanapata redware, 3 Chanapata blackware, 10 Chanapata incised, 10 pattern burnished

Reworked ceramic sherd

Disc	1 plainware

Chipped stone

Locally available stone (40.74% by count, 73.83% by weight)

Coarse grain quartzitic sandstone

Tool: 1 unimarginal flake tool (2.4 g)

Debitage: 2 proximal flakes (30.0 g)

Fine grain quartzitic sandstone

Tool: 1 unimarginal flake tool (5.7 g)

Debitage: 2 fragments of angular shatter (12.7 g)

Quartzite

Tool: 1 bimarginal flake tool (6.2 g)

Debitage: 3 fragments of angular shatter (42.7 g)

Chert

Debitage: 1 proximal flake (15.4 g)

Regionally available stone (22.22% by count, 22.64% by weight)

Andesite

Tool: 1 unimarginal flake tool (3.4 g)

Debitage: 1 fragment of angular shatter (2.7 g)

Rhyolite

Debitage: 4 proximal flakes (29.2 g)

Exotic stone (29.63% by count, 3.08% by weight)

Obsidian

Tools: 2 unimarginal flake tools (0.8 g), 2 bimarginal flake tools (2.1 g), 2 multidirectional cores (1.6 g)

Debitage: 1 proximal flake (< 0.1 g), 1 fragment of flake shatter (0.3 g)

Unidentified (7.41% by count, 0.45% by weight)

Debitage: 1 proximal flake (0.2 g), 1 fragment of angular shatter (0.5 g)

Worked bone

1 thin object with round cross-section (see Figure 5.11)

Figure 5.11: A thin, polished bone tool with round cross section.

Groundstone

Fragment of a doughnut-shaped clod breaker. About 50% of the object was present. It was 8 cm in diameter and 4.27 cm tall; the fragment weighed 120 g.

Roughly spherical stone that fit into one hand with flattened surfaces created by grinding with back and forth or circular strokes (Group 1, Type A). The stone measured 7.07 x 5.33 x 4.31 cm; it weighed 240 g.

Roughly spherical stone that fit into one hand with flattened surfaces created by grinding with back and forth or circular strokes (Group 1, Type A). The stone had pecking marks. It measured 6.04 x 5.27 x 4.19 cm; it weighed 220 g.

Grinding stone that fit in one hand with plano-convex cross section and flattened surfaces created by grinding with back and forth and rocking motions (Group 1, Type B). The stone measured 7.59 x 7.51 x 3.4 cm; it weighed 280 g.

Two small oval stones with plano-convex cross sections that could be held between the fingers (Small Group 2, Type O). The first stone measured 5.02 x 4.98 x 3.86 cm; it weighed 140 g. The second measured 5.33 x 3.95 x 3.45; it weighed 100 g.

Two nondescript fragments of groundstone weighing 120 and 30 g.

Special objects

1 white quartz crystal that weighed 1.1 g

Botanical remains from flotation of 6.75 liters of soil (S-78)

1 *Amaranthus sp.* carbonized seed
1 *Zea mays* carbonized cupule fragment

Animal bone (NISP)

Mammals	
Llama or alpaca (*Lama sp.*)	62 (4 from flotation)
White-tailed deer (*Odocoileus virginianus*)	1
Unidentified	12
Birds	
Unidentified	2
Human bone	13

Features of Stratum 19

Burial 14

Burial 14, a 26-45 year old woman with tabular erect cranial modification, was buried in a cavity cut into geologic soil. The body was only 7% complete and in poor condition, but the bones that were present were arranged as if the skeleton were in a flexed position facing up. Some bones showed evidence of scorching and carnivore gnawing, clearing indicating that this was a secondary burial made during the construction of Structure 1 (Burial Type 3).

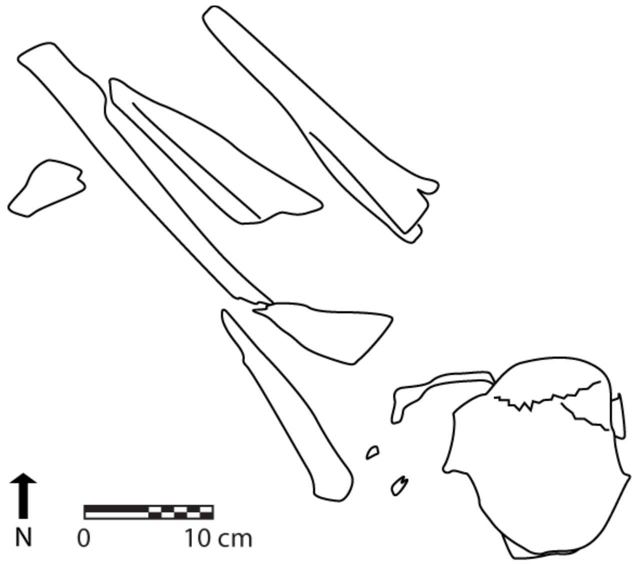


Figure 5.12: Burial 14 was the secondary burial of a
26-45 year old woman in the construction fill of Structure 1.

Paving covering the southwest bench

Very compact clay covering the western section of the southwest bench

The western wall was covered with very compact red clay. This deposit was 7 cm thick. This paving may have been used to make the surface of the bench smooth. Because it was isomorphic with the top of the wall, it is unlikely that it was collapsed adobe superstructure.

Munsell color: 7.5 YR 4/6 strong brown

Ceramic vessels

Total sherds	130
Restricted vessels with a neck	3 plainware
Lid	1 plainware
Body sherds with diagnostic style	2 pattern burnished

Reworked ceramic sherd

Disc	1 plainware

Chipped stone

Unidentified (100% by count and weight)

Debitage: 1 proximal flake (0.6 g), 1 fragment of angular shatter (0.7 g)

Botanical remains from flotation of 5.6 liters of soil (S-46)

2 *Chenopodium quinoa* carbonized seeds

1 *Trifolium sp.* carbonized seed

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	1
Field mouse (*Muridae*)	12 (all from flotation)
Unidentified	20 (17 from flotation)

Very compact clay covering the eastern section of the southwest bench

Compact reddish-brown clay covered the eastern section of the bench. It was about 5 cm thick and covered the field stones on the interior of the wall. It may have been paving to make the surface of the bench smooth.

Munsell color: 7.5 YR 4/6 strong brown

Ceramic vessels

Total sherds	312
Restricted vessels with a neck	2 Chanapata redware, 8 plainware
Restricted vessels without a neck	1 Chanapata redware, 2 plainware
Open vessel	1 Chanapata redware
Open vessel with a diameter greater than 30 cm	1 Chanapata redware
Lid	1 Chanapata blackware
Body sherds with diagnostic style	15 Chanapata redware, 1 Chanapata blackware, 2 Chanapata incised, 5 pattern burnished

Reworked ceramic sherds

Disc	1 plainware
Non-disc	1 plainware

Chipped stone

Locally available stone (33.33% by count, 95.12% by weight)

Coarse grain quartzitic sandstone

Tool: 1 bimarginal flake tool (40.5 g)

Quartzite

Debitage: 1 fragment of angular shatter (2.4 g)

Quartz

Debitage: 1 fragment of angular shatter (< 0.1 g)

Exotic stone (66.67% by count, 4.88% by weight)

Obsidian

Tool: 1 combination flake tool (1.2 g)

Debitage: 3 proximal flakes (< 0.1 g), 1 fragment of flake shatter (1.0 g), 1 fragment of angular shatter (< 0.1 g)

Groundstone

Small oval stone with no flat surface that may have been in an early phase of use (Small Group 2, Type N). Length was unknown; the stone was 4.27 cm wide by 3.51 cm tall; it weighed 30 g.

Stone that could be pinched between the fingers with a flattened surface created by back and forth or circular strokes (Small Group 3, Type P). The stone measured 3.09 x 2.32 x 2.16 cm; it weighed 20 g.

Botanical remains from flotation of 4.75 liters of soil (S-64)
4 *Chenopodium quinoa* carbonized seeds

Botanical remains from flotation of 5.9 liters of soil (S-63)
2 *Chenopodium quinoa* carbonized seeds
1 *Zea mays* carbonized seed

Botanical remains from flotation of 5.5 liters of soil (S-58)
No botanical remains were recovered.

Animal bone (NISP)

Mammals	
Llama or alpaca (*Lama sp.*)	2
Guinea pig (*Cavia porcellus*)	1 (from flotation)
Field mouse (*Muridae*)	75 (all from flotation)
Unidentified	121 (all from flotation)
Human bone	3

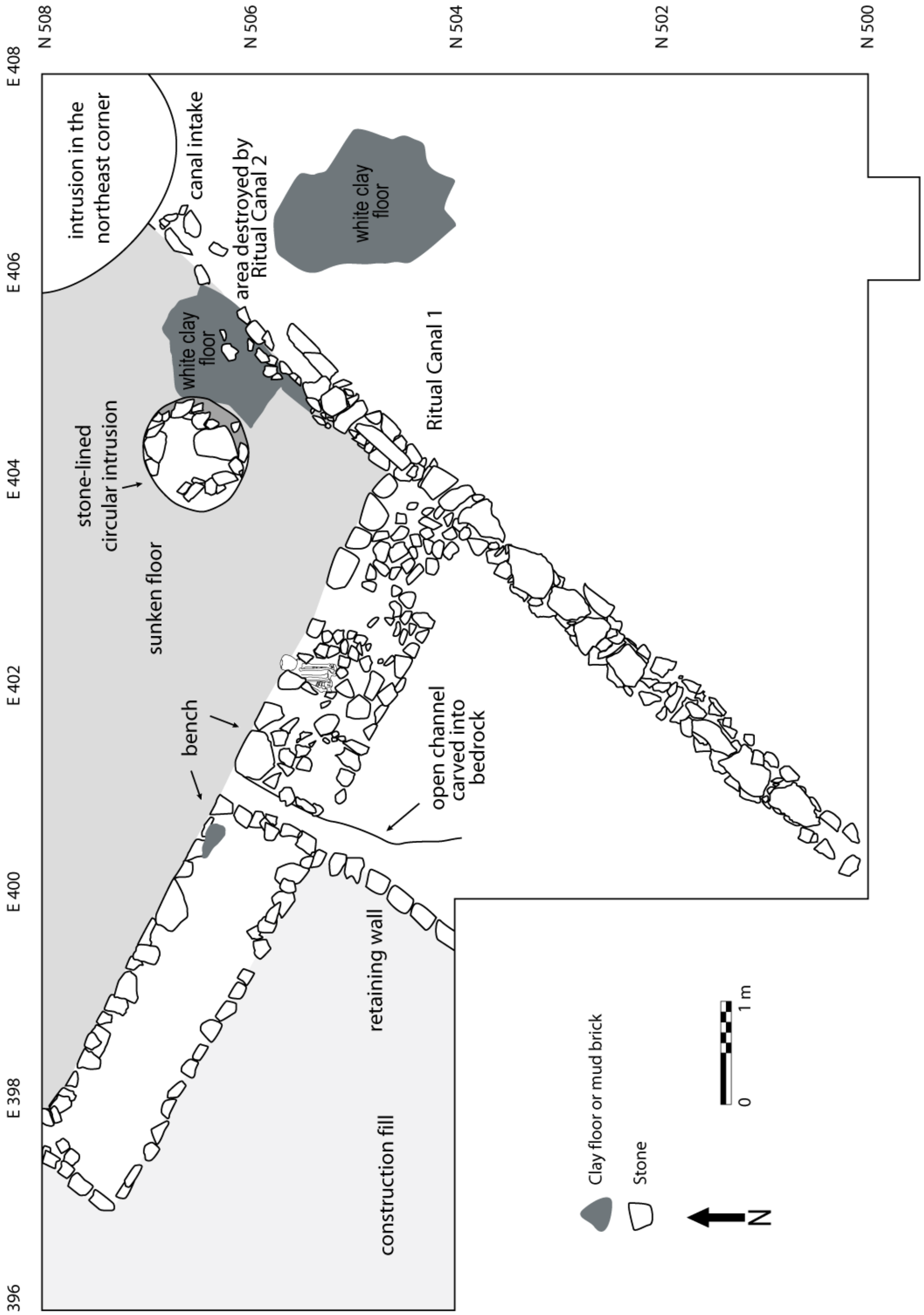


Figure 5.13: After Structure 1 was built, several features were added including: (1) Burial 15 in the eastern part of the bench, (2) an intrusion in front of the intake of Ritual Canal 1 in the northeast corner, and (3) a white clay floor associated with a stone-lined circular cist. Outside of Structure 1, an ovoid intrusion excavated into geologic soil was partially covered by compact pinkish-white soil. The intrusion was later covered by a 20 cm thick stratum of soft green earth.

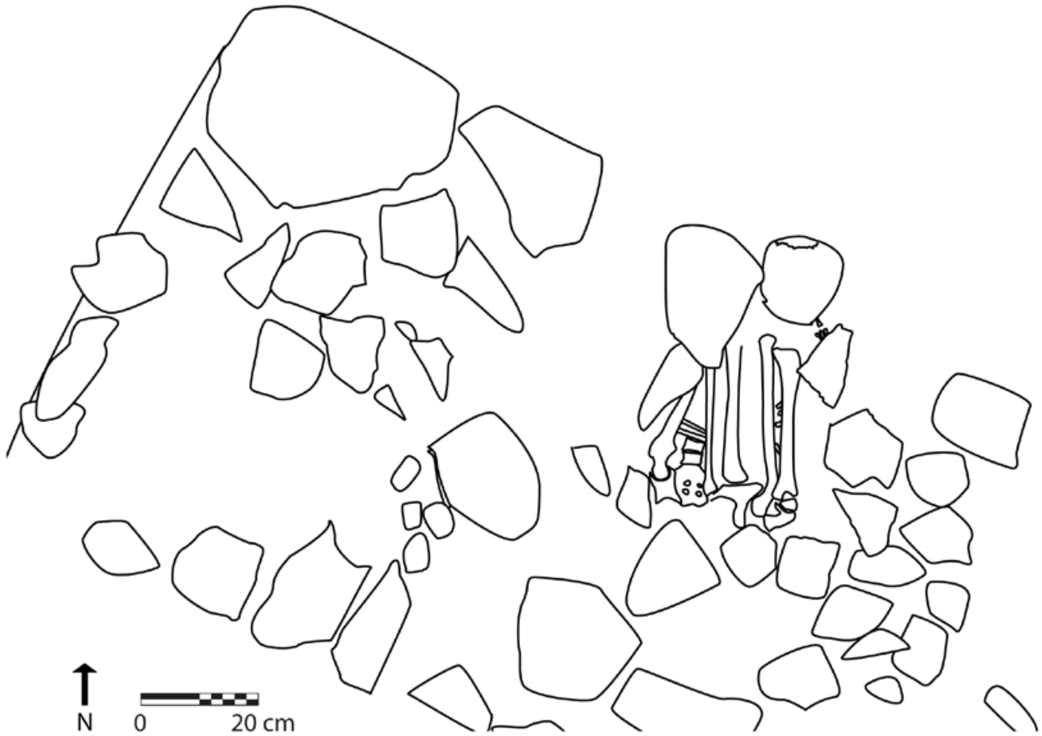


Figure 5.14: Burial 15, a secondary interment of a 36-45 year-old woman, was added to the eastern section of the southwest bench.

Additions to Structure 1

Burial 15

Burial 15, a 36-45 year old woman with tabular erect cranial modification, intruded into the mud mortar of the eastern section of the bench (see Figure 5.14). Therefore, in contrast with the other burials associated with Structure 1 that were dedicatory offerings made *during* construction (Burials 12, 13, and 14), Burial 15 was *added later*. It is not possible to determine exactly when the burial was placed in the bench, though it would have been after the original construction and before the structure was abandoned (see below).

The skeleton was facing up in a flexed position with the head toward the interior of the structure (to the northeast). The skeleton was 86% complete and in fair condition, but the face (including most of the mandible), the right foot, the right clavicle, and all of the thoracic vertebrae were absent. The missing elements and the preservation of the bones indicate that this was a secondary burial (Burial Type 3).

This woman had a small depressed cranial fracture on the left anterior parietal. She suffered joint disease (enthesopathies) on the right and left patellae as well as spinal joint disease. Her left fibula shaft demonstrated periostitis (a mark of non-specific infection), and she had a button osteoma on the left parietal (new bone growth probably resulting from previous trauma or a tumor).

The contents of Ritual Canal 1

I removed a slab from the top of Ritual Canal 1 in order to determine whether it was a canal or wall foundation (see Figure 5.15). Under the slab, I found an open space that contained 4 distinct strata. The top layer was very loose soil. Below that, three more levels of very compact soil easily "popped out" with the trowel. Each of these consisted of multiple thin laminar deposits of soil, full of small bits of charcoal and air pockets (see Figure 5.16). At the bottom, the channel had been cut into the limestone bedrock. Because laminar sediments are characteristic of soil deposited by flowing water, I concluded that this was a canal that carried water or another liquid from the interior of Structure 1 to the exterior.

Figure 5.15: When I removed a slab from the top of Ritual Canal 1, I found laminar deposits of soil typical of those deposited by water.

The presence of 3 compact sections of laminar deposits demonstrated that the canal was used in 3 distinct phases. Each phase consisted of dozens of instances in which the channel carried water (or other liquid) from inside the structure to the slope of Cerro Yuthu. Unfortunately, I cannot determine whether each phase lasted for a season, a year, or multiple years, though this information would be crucial for understanding the rhythm and timing of rituals including water in Structure 1. It is clear, however, that the canal was not used for the entire life of the structure. In fact, it was replaced with Ritual Canal 2 (described below).

We took a soil sample of clay mortar between the stones of the canal near the intake.

Botanical remains from flotation of 0.75 liters of soil (S-67)

1 *Chenopodium quinoa* carbonized seed

The deposits from the interior of the canal are described below starting with the lowest layer. Each layer was taken as a flotation sample.

Canal 1 Level 1

Level 1 was at the base of the channel carved into bedrock. It a 5 cm-thick layer of compact soil comprised of very thin laminar deposits, charcoal bits, and air pockets.

Munsell color: 7.5 YR 4/3 brown

Botanical remains from flotation of 1 liter of soil (S-51)

4 *Chenopodium quinoa* carbonized seeds
2 *Poaceae* carbonized seeds

Animal bone (NISP)

Mammals

Unidentified	12 (all from flotation)

Canal 1 Level 2

Level 2 was a compact layer 6 cm thick. It was also made up of very thin laminar deposits of soil, charcoal bits, and air pockets (see Figure 5.16).

Munsell color: 7.5 YR 4/3 brown

Botanical remains from flotation of 2.25 liters of soil (S-50)

15 *Chenopodium quinoa* carbonized seeds

Animal bone (NISP)
    Mammals
        Field mouse (*Muridae*)   57 (all from flotation)

Figure 5.16: A section of Level 2 from the interior of Ritual Canal 1. Note the very fine laminar deposits, air pockets, and bits of charcoal indicating that burned organic matter mixed with water was carried through this channel.

Canal 1 Level 3

Level 3 was the last layer of compact soil with thin laminar deposits, charcoal bits, and air bubbles. It was 4 cm thick.

Munsell color: 7.5 YR 4/3 brown

Botanical remains from flotation of 0.7 liters of soil (S-49)
    1 *Chenopodium quinoa* carbonized seed

Animal bone (NISP)
    Mammals
        Field mouse (*Muridae*)   1 (from flotation)
        Unidentified   35 (all from flotation)

Canal 1Level 4

Level 4 was very loose dirt that was slightly darker in color. It was 9 cm thick. Unlike Levels 1-3, this layer was not deposited in laminar sheets; the soil probably accumulated after the canal was no longer used to carry water.

Munsell color: 7.5 YR 4/4 brown

Botanical remains from flotation of 3.4 liters of soil (S-48)

10 *Chenopodium quinoa* carbonized seeds
1 *Trifolium sp.* carbonized seed
1 *Poaceae* carbonized seed

Animal bone (NISP)

Mammals

Unidentified	75 (all from flotation)

<u>Strata that accumulated inside Structure 1</u>

Several strata accumulated inside Structure 1, on top of the sunken floor. Those deposits are described below, starting with the lowest level that sat directly on top of the floor.

Stratum 18

Stratum 18 was compact brown soil located inside Structure 1 on top of the floor. The surface sloped up at the southwestern bench so that, while most of the stratum was 8 cm thick, it was 25 cm thick along the bench.

Munsell color: 7.5 YR 4/6 strong brown

Ceramic vessels

Total sherds	886
Restricted vessels with a neck	4 Chanapata redware, 28 plainware
Open vessels	2 Chanapata redware, 7 plainware
Open vessels with a diameter greater than 30 cm	2 Chanapata redware, 1 Chanapata blackware, 1 plainware
Body sherds with diagnostic style	26 Chanapata redware, 3 Chanapata blackware, 1 Chanapata incised, 3 pattern burnished

Reworked ceramic sherds

Discs	1 plainware, 1 with plastic application

Chipped stone

Locally available stone (84.7% by count, 52.38% by weight)

Coarse grain quartzitic sandstone

Debitage: 5 proximal flakes (38.5 g), 1 fragment of flake shatter (4.9 g)

Fine grain quartzitic sandstone

Tool: 1 unimarginal flake tool (28.3 g)

Debitage: 1 proximal flake (3.1 g)

Quartzite

Debitage: 1 fragment of angular shatter (2.0 g)

Organic limestone

Tool: 1 unimarginal flake tool (6.6 g)

Debitage: 1 proximal flake (1.3 g)

Regionally available stone (14.29% by count, 15.41% by weight)

Slate

Debitage: 1proximal flake (< 0.1 g)

Rhyolite

Tool: 1 unimarginal flake tool (14.7 g)

Debitage: 1 proximal flake (1.7 g)

Exotic stone (33.33% by count, 4.98% by weight)

Obsidian

Tools: 1 unimarginal flake tool (0.4 g), 1 bimarginal flake tool projectile point (2.7 g), 1 combination flake tool broken projectile point (0.8 g) (see Figure 5.17)

Debitage: 1 proximal flake (0.7 g), 1 fragment of flake shatter (0.2 g), 2 fragments of angular shatter (0.5 g)

Figure 5.17: (a) An obsidian bimarginal flake tool projectile point and (b) a combination flake tool broken projectile point found in Stratum 18.

Worked bone

1 thin object with round cross section and pointed end (see Figure 5.18)

Figure 5.18: An end fragment of a bone pin found in Stratum 18.

Groundstone

Stone that could be pinched between the fingers with a flattened surface created by back and forth or circular strokes (Small Group 3, Type P). The length was unknown; it was 2.27 cm wide and 1.79 cm tall. The fragment weighed 10 g.

Nondescript fragment of a grinding stone that weighed 60g.

Botanical remains from flotation of 5.75 liters of soil (S-74)
3 *Chenopodium quinoa* carbonized seeds

Animal bone (NISP)

Mammals	
Llama or alpaca (*Lama sp.*)	26 (6 from flotation)
Field mouse (*Muridae*)	9 (all from flotation)
Unidentified	27 (15 from flotation)
Birds	
Unidentified	1 (from flotation)

Contents of the open channel between the two sections of the bench

A linear deposit of soil ran from the interior of Structure 1, through the open channel between the two sections of the bench, to the exterior of the structure. It intruded into Stratum 18 inside the structure, geologic soil between the bench sections, and Stratum 10 and bedrock outside the structure. The soil was probably deposited by water, but in contrast with Ritual Canal 1, the open channel did not contain laminar deposits. Therefore, it is possible that, unlike the covered canal, this feature was occasionally cleaned out, so that water could drain from the sunken floor of Structure 1 during the rainy season.

There were two layers of soil deposited in this channel. In addition, at the discharge end of the carved channel, just outside Structure 1, there was an accumulation of ashy soil.

Drain Level 1

The lowest level of soil in the drain was fine silt 14 cm thick.

Munsell color: 7.5 YR 4/3 brown

Ceramic vessels

Total sherds	113
Restricted vessels without a neck	4 plainware
Open vessels	3 Chanapata redware, 2 plainware
Body sherds with diagnostic style	5 Chanapata redware

Animal bone (NISP)

Mammals	
Llama or alpaca (*Lama sp.*)	8
Field mouse (*Muridae*)	4 (all from flotation)
Birds	
Unidentified	4 (all from flotation)

Drain Level 2

A layer of compact dark brown soil mixed with lumps of very hard dirt rested on top of Level 1.

Munsell color: 7.5 YR 4/4 brown

Ceramic vessels

Total sherds	239
Restricted vessels with a neck	3 Chanapata redware, 9 plainware
Restricted vessels without a neck	2 plainware
Body sherds with diagnostic style	18 Chanapata redware, 2 Chanapata blackware

Chipped stone
- *Locally available stone* (42.86% by count, 81.62% by weight)
  - Fine grain quartzitic sandstone
    - Tool: 1 multidirectional core (8.8 g)
    - Debitage: 1 proximal flake (1.3 g)
  - Organic limestone
    - Debitage: 1 unmodified manuport (20.1 g)
- *Regionally available stone* (28.57% by count, 15.41% by weight)
  - Diorite
    - Debitage: 1 fragment of flake shatter (3.4 g)
  - Rhyolite
    - Tool: 1 unimarginal flake tool (2.3 g)
- *Exotic stone* (28.57% by count, 2.97% by weight)
  - Obsidian
    - Tool: 1 unimarginal flake tool (0.7 g)
    - Debitage: 1 proximal flake (0.4 g)

Groundstone

Small oval stone with no flat surface that may have been in an early phase of use (Small Group 2, Type N). The stone measured 3.9 x 2.78 x 2.35 cm; it weighed 30 g.

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	15
White-tailed deer (*Odocoileus virginianus*)	1
Unidentified	5

Stratum 17

Stratum 17 was a compact, dark-brown layer of soil resting on bedrock in front of the intake of Ritual Canals 1 and 2. The stratum was 8 cm thick and was located partially outside the area enclosed by the bench of Structure 1, suggesting that this structure was open toward the northeast.

Munsell color: 7.5 YR 4/4 brown

Ceramic vessels

Total sherds	372
Restricted vessels with a neck	3 Chanapata redware, 17 plainware
Restricted vessel without a neck	1 plainware
Open vessels	1 Chanapata redware, 6 plainware, 1 undetermined style
Body sherds with diagnostic style	9 Chanapata redware, 1 Chanapata incised, 3 pattern burnished
Figurine	1 plainware

Reworked ceramic sherd

Non-disc	1 plainware

Chipped stone

Exotic stone (100% by count and weight)

Obsidian

Debitage: 1 proximal flake (0.4 g)

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	30
Unidentified	6

Stratum 16

Stratum 16 covered a small area; it was dirt mixed with ash resting on geologic soil along the northern edge of Unit A. It was 10 cm thick, but because the area it covered was very small, this stratum was excavated along with Stratum 13.

Munsell color: 7.5 YR 5/3 brown

Stratum 15

Stratum 15 was semi-compact soil, 13 cm thick. It was located north of the white clay floor, resting partly on geologic soil and partly on Stratum 36 (described above).

Munsell color: 7.5 YR 4/6 strong brown

Ceramic vessels

Total sherds	166
Restricted vessels with a neck	1 Chanapata redware, 1 pattern burnished, 7 plainware
Open vessels	2 Chanapata redware, 1 plainware
Body sherds with diagnostic style	4 Chanapata redware, 1 Chanapata incised, 3 pattern burnished

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	3
Unidentified	3

Stratum 14

Stratum 14 was a compact reddish layer mixed with chunks of very compact soil. It was 12 cm thick. The stratum did not extend beyond Ritual Canal 1 to the west.

Munsell color: 7.5 YR 4/3 brown

Ceramic vessels

Total sherds	302
Restricted vessels with a neck	1 Chanapata redware, 12 plainware
Restricted vessels without a neck	2 plainware
Open vessels	3 Chanapata redware, 7 plainware
Open vessel with a diameter greater than 30 cm	1 plainware
Body sherds with diagnostic style	7 Chanapata redware, 1 Chanapata incised, 2 pattern burnished

Reworked ceramic sherds

Disc	1 plainware
Non-discs	1 Chanapata redware, 3 plainware

Chipped stone

Locally available stone (66.67% by count, 72.33% by weight)

Fine grain quartzitic sandstone

Debitage: 2 fragments of angular shatter (15.5 g)

Quartzite

Debitage: 2 proximal flakes (7.5 g)

Regionally available stone (16.67% by count, 21.70% by weight)

Rhyolite

Tool: 1 unimarginal flake tool (6.9 g)

Unidentified (16.67% by count, 5.97% by weight)

Tool: 1 bimarginal flake tool (1.9 g)

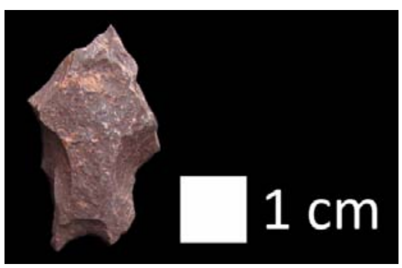


Figure 5.19: A unimarginal flake tool made of Rhyolite. The tool has a flat based and a right-triangle shaped profile so that the notched end at the bottom could have been used as a scraping tool.

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	1
Unidentified	4

Feature of Stratum 14

Intrusion in the northeast corner (Intrusion D)

There was a large intrusion in front of the intake of Ritual Canals 1 and 2 in the northeast corner (see Figure 5.20). It cut through Stratum 14 and Stratum 15 into geologic soil. The intrusion was 55 cm deep and it had sloped walls and a flat base. The size of the intrusion is not known because it extended beyond the northern and eastern limits of Unit A, but the excavated portion measured 2.2 m from east to west and 1.23 m from north to south.

Many of the strata that filled this intrusion were deposited after Structure 1 was abandoned (see Levels A-1, A-2, and A-3). Therefore, those strata are described later in this chapter. In contrast, the lowest stratum (Level D-1) did not extend beyond the limits of the intrusion. Therefore, it was probably deposited before Structure 1 was abandoned.

Figure 5.20: There was a large semi-circular intrusion in front of the intake of Ritual Canals 1 and 2 (Intrusion D).

Level D-1

Semi-loose soil 30 cm thick accumulated in the base of the intrusion in the northeast corner at some point during the use of Structure 1.

Munsell color: 7.5 YR 4/3 brown

Chipped stone (see Figure 5.21)
Locally available stone (69.23% by count, 95% by weight)
Fine grain quartzitic sandstone
Tool: 1 unimarginal flake tool (14.7 g)
Debitage: 1 proximal flake (5.7 g)
Quartzite
Tools: 2 unimarginal flake tools (10.0 g), 1 multidirectional core (22.6 g)
Debitage: 1 proximal flake (3.3 g), 2 fragments of flake shatter (5.7 g), 7 fragments of angular shatter (51.6 g)
Organic limestone
Tool: 1 unimarginal flake tool (0.8 g)
Debitage: 1 proximal flake (139.0 g), 1 fragment of angular shatter (2.4 g)
Regionally available stone (19.23% by count, 4.34% by weight)
Slate
Debitage: 1 fragment of angular shatter (0.2 g)
Andesite
Debitage: 3 proximal flakes (11.5 g)
Rhyolite
Tool: 1 unimarginal flake tool (0.8 g)
Exotic stone (11.54% by count, 0.66% by weight)
Obsidian
Tools: 2 unimarginal flake tools (1.4 g), 1 multidirectional core (0.5 g)

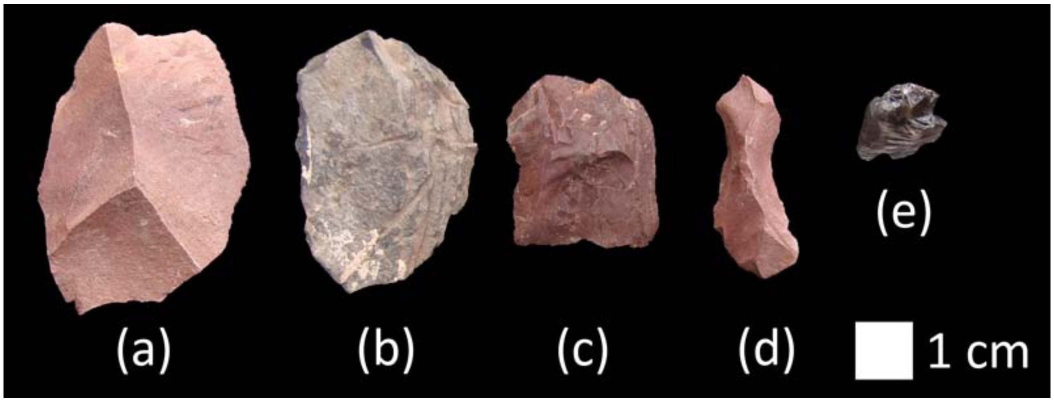


Figure 5.21: Stone tools from Level D-1 in the base of the intrusion in the northwest corner: (a) fine grain quartzitic sandstone unimarginal flake tool, (b) organic limestone unimarginal flake tool, (c and d) quartzite unimarginal flake tools, and (e) obsidian unimarginal flake tool.

Groundstone

Fragment of a small oval stone with no flat surface that may have been in an early phase of use (Small Group 2, Type N). About 60% of the object was present. The length was unknown; it was 4.06 cm wide and 3.58 cm tall. The fragment weighed 70 g.

Botanical remains from flotation of 5.75 liters of soil (S-79)
12 *Chenopodium quinoa* carbonized seeds

Animal bone (NISP)
Mammals

Llama or alpaca (*Lama sp.*)	21 (3 from flotation)
Guinea pig (*Cavia porcellus*)	4
Field mouse (*Muridae*)	7 (all from flotation)
Unidentified	34 (18 from flotation)

Stratum 13

Stratum 13 was loose, dark soil mixed with a high proportion of ash located north of the bench and west of Ritual Canal 1. Stratigraphically, it was roughly contemporary with the intrusion in the northeast corner. The stratum was 10 cm thick.

Munsell color: 7.5 YR 5/3 brown

Ceramic vessels

Total sherds	593
Restricted vessels with a neck	3 Chanapata redware, 16 plainware
Restricted vessels without a neck	8 pattern burnished, 7 plainware
Open vessels	8 pattern burnished, 7 plainware
Open vessel with a diameter greater than 30 cm	1 plainware
Body sherds with diagnostic style	14 Chanapata redware, 1 Chanapata incised, 9 pattern burnished, 1 undetermined style

Reworked ceramic sherds

Disc	1 plainware
Non-discs	1 Chanapata redware, 1 plainware

Chipped stone
Exotic stone (100% by count and weight)
Obsidian
Tools: 1 bimarginal flake tool projectile point (1.7 g, see Figure 5.22), 1 multidirectional core (1.4 g)

Figure 5.22: Obsidian projectile point found in Stratum 13.

Worked bone

1 long bone shaft fragment with pointed tip

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	1
Guinea pig (*Cavia porcellus*)	21 (all from flotation)
Field mouse (*Muridae*)	1 (from flotation)
Unidentified	4

White clay floor

Two sections of floor made of white clay were built on either side of the intake of Ritual Canal 1. Each section measured 1.65 m from southwest to northeast. The eastern section was 1.4 m from southeast to northwest and rested on top of Stratum 14. The western part was 90 cm from southeast to northwest and rested on top of Stratum 13. It met the western edge of Ritual Canal 1, and to the west, it was associated with a stone-lined circular cist (see Intrusion C below). This floor was not excavated and no artifacts were recovered.

Munsell color: 7.5 YR 7/2 pinkish gray

Stone-lined circular cist (Intrusion C)

A circular intrusion was associated with the white floor described above (see Figure 5.25). It was 110 cm in diameter and 45 cm deep, cutting through Strata 13 and 16 and into geologic soil. The walls of the intrusion were made of field stones set into hard red clay mortar. When we excavated the intrusion, we found that some of these stones had collapsed into the middle of the intrusion that was filled with loose dirt. The number and size of the rocks that we found inside the intrusion indicate that part of the walls may have originally extended above the surface of the floor.

Munsell color: 7.5 YR 4/4 brown

Ceramic vessels

Total sherds	139
Restricted vessels with a neck	1 Chanapata blackware, 5 plainware
Restricted vessel without a neck	1 plainware
Open vessels	1 Chanapata redware, 1 plainware
Body sherds with diagnostic style	2 Chanapata redware, 1 pattern burnished

Chipped stone (see Figure 5.23)
- *Locally available stone* (80% by count, 95.78% by weight)
  - Coarse grain quartzitic sandstone
    - Tool: 1 bimarginal flake tool (1.0 g)
  - Fine grain quartzitic sandstone
    - Tool: 1 bimarginal flake tool (1.1 g)
  - Quartzite
    - Tools: 1 bimarginal flake tool (4.9 g), 1 multidirectional core (3.0 g)
    - Debitage: 1 proximal flake (< 0.1 g), 2 fragments of angular shatter (4.3 g)
  - Chert
    - Tool: 1 multidirectional core (1.6 g)
- *Exotic stone* (10% by count, 1.81% by weight)
  - Obsidian
    - Debitage: 1 fragment of angular shatter (0.3 g)
- *Unidentified* (10% by count, 2.41% by weight)
    - Debitage: 1 fragment of angular shatter (0.4 g)

Figure 5.23: Chipped stone found in the circular cist (Intrusion C).


Figure 5.24: A fragment of a polished bone bead found in the circular cist (Intrusion C).

Worked bone

1 fragment of a tube-shaped, polished bone bead (see Figure Figure 5.24)

Botanical remains from flotation of 6.0 liters of soil (S-73)

2 *Chenopodium quinoa* carbonized seeds

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	4 (2 from flotation)
Guinea pig (*Cavia porcellus*)	1 (from flotation)
Field mouse (*Muridae*)	1 (from flotation)
Unidentified	9 (all from flotation)

Figure 5.25: A stone-lined cist associated with a white clay floor was added to Structure 1 (Intrusion C). The walls of the intrusion were made of field stones set in red clay mortar.

The area south of Structure 1

<u>*An ovoid intrusion into geological soil (Intrusion B)*</u>

An ovoid intrusion 75 cm deep with a diameter of 1 to 1.5 m intruded into geologic soil. It was filled with semi-compact soil mixed with gravel and many bits of charcoal. It also contained some loose stones at the base that showed evidence of having been burned. The fact that the intrusion was filled with a single stratum of soil indicates that it was filled quickly in a single action, not little by little over time. A radiocarbon date indicates that this pit was filled after Structure 1 was built and stratigraphy shows that it was filled before Ritual Canal 2 was built.

Munsell color: 7.5 YR 4/6 strong brown

Radiocarbon date:	AA84431 / Yuthu RC-104, 2257 ± 36 uncalibrated radiocarbon years BP, 384 – 205 BC calibrated with sequential model (95.4% confidence)

Ceramic vessels

Total sherds	1,344
Restricted vessels with a neck	11 Chanapata redware, 1 Chanapata blackware, 20 plainware
Restricted vessels without a neck	10 plainware
Open vessels	5 Chanapata redware, 2 Chanapata blackware, 9 plainware
Open vessels with a diameter greater than 30 cm	2 Chanapata redware, 1 plainware
Lids	3 Chanapata redware
Body sherds with diagnostic style	38 Chanapata redware, 3 Chanapata blackware, 4 Chanapata incised, 10 pattern burnished, 2 undetermined style

Reworked ceramic sherds

Discs	5 plainware
Non-discs	2 plainware

Chipped stone

Locally available stone (60.87% by count, 95.51% by weight)

Coarse grain quartzitic sandstone

Tool: 1 unimarginal flake tool (19.8 g)

Debitage: 4 proximal flakes (95.1 g), 2 fragments of angular shatter (27.6 g)

Fine grain quartzitic sandstone

Debitage: 2 proximal flakes (5.6 g)

Quartzite

Debitage: 3 proximal flakes (14.7 g), 1 fragment of angular shatter (0.2 g)

Organic limestone

Debitage: 1 fragment of angular shatter (19.8 g)

Regionally available stone (4.35% by count, 3.71% by weight)

Andesite
Debitage: 1 fragment of angular shatter (7.1 g)
Exotic stone (30.43% by count, 0.16% by weight)
Obsidian
Debitage: 6 proximal flakes (0.1 g), 1 fragment of flake shatter (0.2 g)
Unidentified (4.35% by count, 0.63% by weight)
Debitage: 1 proximal flake (1.2 g)

Groundstone

Fragment of a roughly spherical stone that fit into one hand with flattened surfaces created by grinding with back and forth or circular strokes (Group 1, Type A). About 40% of the object was present. The length was unknown; it was 6.56 cm wide and 3.13 cm tall. The fragment weighed 130 g.

Stone that could be pinched between the fingers with a flattened surface created by back and forth or circular strokes (Small Group 3, Type P). The stone had pecking marks. It measured 3.58 x 3.19 x 2.28 cm; it weighed 30 g.

Three nondescript fragments of groundstone that weighed 20 g, 20 g, and 79 g.

Special objects

A stone that had been carved and polished to resemble a potato with eyes was found inside this intrusion (see Figure 5.26). When we found this object, my workmen were quick to explain that it was an *illa*, a stone potato used in offerings to ensure a good harvest. In my excavation notebook, archaeologist Vicentina Galiano Blanco, who grew up in a rural farming community, recorded that, "las personas que producen papa utilizaban una *illa* o *rumin* para hacer sus pagos respectivos con la finalidad de buena cosecha de sus productos." Similarly, herders could use a stone *illa* or *iwayllu* in the shape of an animal as part of offerings made to request good productivity of herd or household domestic animals, such as sheep, llamas, and guinea pigs.

The workmen from Cruzpata, all committed potato enthusiasts and well-versed in sorting, planting, and eating a wide variety of tubers, were quick to offer speculations as to the variety of this "rock potato". Qompis was the most popular suggestion, but there was some disagreement. We decided to record all the varieties of potatoes cultivated today in Cruzpata for further consideration as candidates (though potatoes that are no longer planted are also good possibilities). They included: winiquta, imilla, qumpis, marida, yungay, wayk'uq qallun, qhachun waqachi, olomes, and sica.

It is important to note that although there was little ethnobotanical evidence of any tuber at Yuthu, this *illa* demonstrates that potato farming was an important part of agriculture there.

Figure 5.26: A potato *illa* is a stone version of a potato used in offerings requesting more potatoes in the next harvest. This *illa* was found in pit intruding into geologic soil (Intrusion B).

Botanical remains from flotation of 5.5 liters of soil from higher in the intrusion (S-76)
6 *Chenopodium quinoa* carbonized seeds
1 *Ambrosia sp.* carbonized seed

Botanical remains from flotation of 5.15 liters of soil from lower in the intrusion (S-77)
12 *Chenopodium quinoa* carbonized seeds
4 *Poaceae* carbonized seeds
1 unidentified carbonized seed

Animal bone (NISP)
Mammals

Llama or alpaca (*Lama sp.*)	46 (4 from flotation)
Field mouse (*Muridae*)	4 (all from flotation)
Unidentified	58(56 from flotation)

<u>Pinkish white compact soil</u>

A hard pinkish-white deposit 4 cm thick covered the northern part of the soil that filled the ovoid intrusion described above.

Munsell color: 7.5 YR 7/2 pinkish gray

No cultural material was recovered from this context.

Stratum 12

Stratum 12 was semi-compact brown earth 5 cm thick that contained loose stones.

Munsell color: 7.5 YR 4/6 strong brown

Ceramic vessels

Total sherds	392
Restricted vessels with a neck	2 Chanapata redware, 18 plainware
Open vessels	1 Chanapata redware, 4 plainware
Open vessels with a diameter greater than 30 cm	1 Chanapata redware, 1 plainware
Lids	1 Chanapata redware, 1 plainware
Body sherds with diagnostic style	5 Chanapata redware, 1 Chanapata blackware, 1 Chanapata incised, 6 pattern burnished, 1 undetermined style

Chipped stone

Locally available stone (100% by count and weight)

Coarse grain quartzitic sandstone

Debitage: 1 proximal flake (3.7 g)

Fine grain quartzitic sandstone

Debitage: 1 proximal flake (34.8 g)

Organic limestone

Debitage: 1 fragment of angular shatter (40.2 g)

(a) (b)

Figure 5.27: Two bone tools found in Stratum 12: (a) a bone awl made from the camelid metatarsal or metacarpal of a juvenile camelid, and (b) a spatula made from a camelid mandible, the teeth have been broken off and the edges have been ground smooth.

Worked bone (see Figure 5.27)

1 camelid mandible spatula
1 bone awl

Groundstone

Roughly spherical stone that fit into one hand with flattened surfaces created by grinding with back and forth or circular strokes (Group 1, Type A). The stone measured 8.48 x 6.82 x 4.45 cm; it weighed 370 g.

Fragment of a roughly spherical stone that fit into one hand with flattened surfaces created by grinding with back and forth or circular strokes (Group 1, Type A). About 40% of the object was present. It was 63.5 cm long; width and height were unknown. The fragment weighed 130 g.

Grinding stone that fit in one hand with plano-convex cross section and flattened surfaces created by grinding with back and forth and rocking motions (Group 1, Type B). The stone had pecking marks. It measured 10.49 x 8.23 x 4.91 cm; it weighed 640 g.

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	7

Stratum 11

Stratum 11 was an unusual deposit of loose, green soil that contained many bits of charcoal. It was 20 cm thick and located along the southern edge of Unit A. The color of this stratum was striking when we excavated it, but it is not clear what caused this green color.

Munsell color: 2.5 YR 4/2 light brownish gray

Ceramic vessels

Total sherds	1,402
Restricted vessels with a neck	9 Chanapata redware, 75 plainware, 2 undetermined style
Restricted vessels without a neck	4 plainware, 1 undetermined style
Open vessels	9 Chanapata redware, 1 plainware, 1 undetermined style

Open vessels with a diameter greater than 30 cm	9 Chanapata redware, 1 plainware
Lids	2 Chanapata redware, 1 plainware
Body sherds with diagnostic style	19 Chanapata redware, 4 Chanpata incised, 4 pattern burnished, 7 undetermined style

Reworked ceramic sherds

Discs	14 plainware
Non-disc	1 plainware

Chipped stone

Locally available stone (48.28% by count, 62.56% by weight)

Coarse grain quartzitic sandstone

Tool: 1 bimarginal flake tool (21.9 g)

Debitage: 1 fragment of angular shatter (9.8 g)

Fine grain quartzitic sandstone

Debitage: 1 proximal flake (0.6 g), 1 fragment of flake shatter (4.3 g), 1 fragment of angular shatter (6.1 g)

Quartzite

Tool: 1 multidirectional core (20.1 g)

Debitage: 1 fragment of flake shatter (8.4 g), 1 fragment of angular shatter (33.3 g)

Chert

Debitage: 1 proximal flake (0.3 g)

Organic limestone

Tool: 1 bimarginal flake tool (5.0 g)

Debitage: 1 proximal flake (26.8 g), 1 fragment of flake shatter (5.1 g), 2 fragments of angular shatter (33.4 g)

Regionally available stone (20.69% by count, 28.15% by weight)

Andesite

Tool: 1 unimarginal flake tool (32.1 g)

Debitage: 3 proximal flakes (29.7 g), 1 unmodified manuport (6.7 g)

Rhyolite

Tool: 1 unimarginal flake tool (10.3 g) (see Figure 5.28)

Exotic stone (27.59% by count, 0.54% by weight)

Obsidian

Tools: 1 unimarginal flake tool (0.2 g), 1 multidirectional core (0.7 g)

Debitage: 5 proximal flakes (0.4 g), 1 fragment of angular shatter (0.2 g)

Unidentified (3.45% by count, 8.75% by weight)

Debitage: 1 unmodified manuport (24.5 g)

Figure 5.28: Rhyolite unimarginal flake tool found in Stratum 31.

Groundstone

Fragment of a grinding stone that fit in one hand with plano-convex cross section and flattened surfaces created by grinding with back and forth and rocking motions (Group 1, Type B). About 20% of the object was present. Length was unknown; it was 9.46 cm wide and 4.6 cm tall. The fragment weighed 300 g.

Fragment of an oval stone with rectangular cross section created by rocking the stone side to side along its edge (Group 2, Type D). About 50% of the object was present. The length was unknown; it was 8.85 cm wide and 4.12 cm tall. The fragment weighed 540 g.

Nondescript fragment of a grinding stone that weighed 20 g.

Special objects

An odd white rock was found in this stratum (see Figure 5.29). Although it does not appear to be carved, its unusual shape and color make it a likely candidate for having been brought to the site by humans.

Figure 5.29: An unusual white rock found in a stratum of green soil in the southern part of Unit A.

Botanical remains from flotation of 6.51 liters of soil from higher in the intrusion (S-71)

5 *Chenopodium quinoa* carbonized seeds

Botanical remains from flotation of 5.11 liters of soil from lower in the intrusion (S-72)
6 *Chenopodium quinoa* carbonized seeds

Animal bone (NISP)
Mammals

Llama or alpaca (*Lama sp.*)	23 (1 from flotation)
White-tailed deer (*Odocoileus virginianus*)	1 (from flotation)
Unidentified	32 (30 from flotation)

Stratum 10

Stratum 10 was semi-compact brown soil, 11 cm thick, resting on top of geologic soil in the southwest corner of the excavation unit. In this area, the surface of the geologic soil was uneven. The drain between the two sections of the bench cut through this stratum outside Structure 1.

Munsell color 7.5 YR 4/3 brown

Ceramic vessels

Total sherds	317
Restricted vessels with a neck	13 plainware
Open vessels	1 Chanapata redware, 5 plainware
Open vessel with a diameter greater than 30 cm	1 plainware
Body sherd with diagnostic style	3 Chanapata redware, 2 Chanapata blackware, 1 Chanapata incised, 2 pattern burnished

Chipped stone
Locally available stone (57.14% by count, 87.79% by weight)
Fine grain quartzitic sandstone
Tools: 2 unimarginal flake tools (7.3 g), 1 multidirectional core (38.4 g)
Debitage: 1 fragment of flake shatter (7.5 g)
Regionally available stone (14.29% by count, 9.57% by weight)
Andesite
Debitage: 1 fragment of angular shatter (5.8 g)
Exotic stone (28.57% by count, 2.64% by weight)
Obsidian
Tools: 1 unimarginal flake tool (0.5 g), 1 unimarginal flake tool reutilized projectile point (1.1 g)

Bead

A greenstone bead was found in Stratum 10 (see Figure 5.30).

Figure 5.30: A greenstone bead found in Stratum 10.

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	16
Guinea pig (*Cavia porcellus*)	1

Birds

Unidentified	1

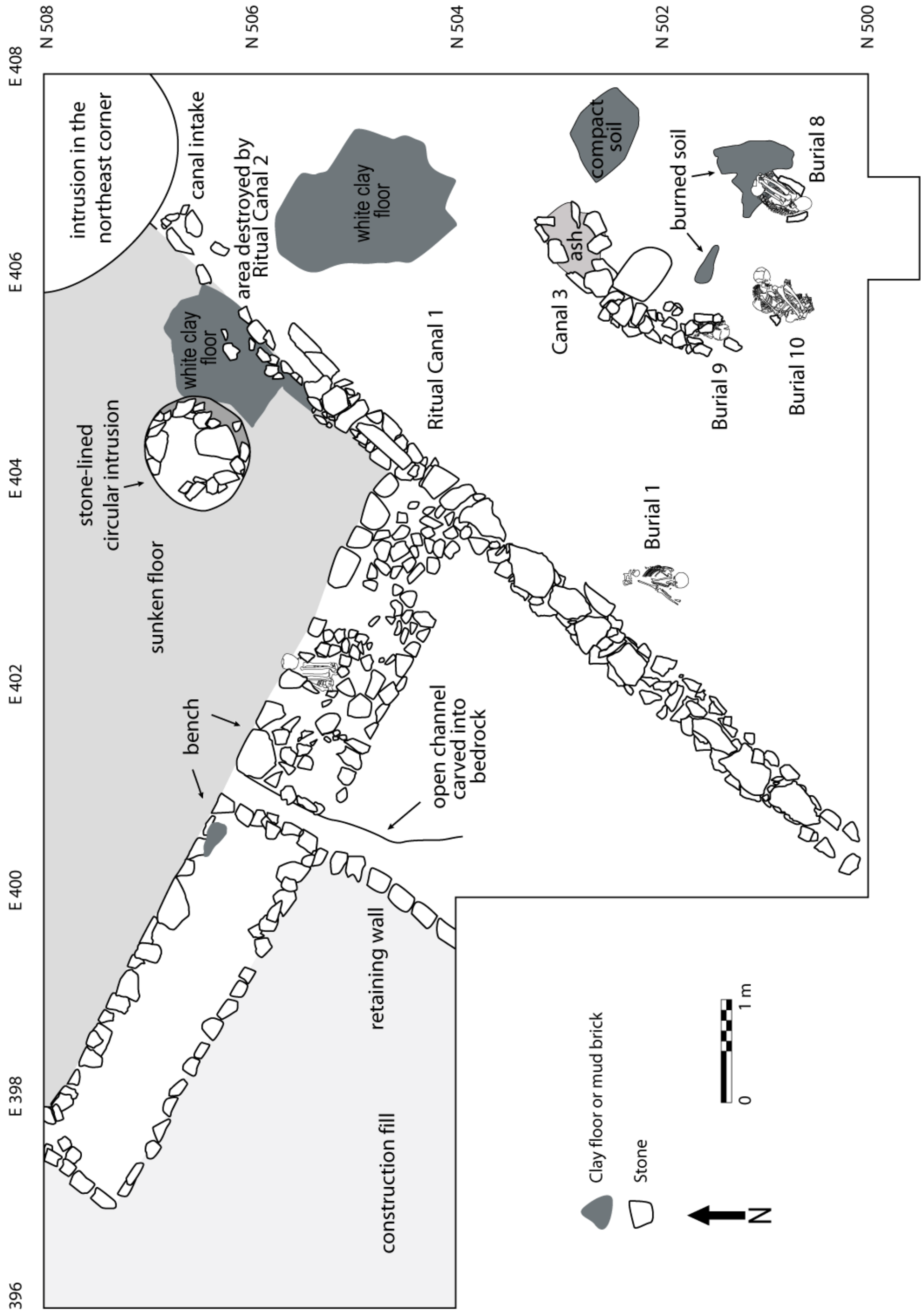


Figure 5.31: Canal 3 was a stone-lined channel very similar in construction to Ritual Canals 1 and 2. Canal 3 was built after Structure 1, but before Ritual Canal 2 replaced Ritual Canal 1. Because the canal was damaged by later construction, it was not possible to determine its relationship to Structure 1. At the south end, the canal was cut off by Burial 9 (a 1-2 year old child). This burial together with Burials 1 (a 12-13 year old child), 8 (an 18-25 year old woman), and 10 (a 36-45 year old woman) were deposited in the matrix of Stratum 9, a 15-50 cm thick layer of soil covering the entire area south of the bench.

Canal 3

Southeast of Structure 1, I found the remains of a stone-lined canal that curved around a large boulder and was similar in construction to Ritual Canals 1 and 2. Unfortunately, the canal had been damaged by later construction. Therefore, it was not possible to determine its relationship to Structure 1. The canal rested on top of geologic soil and Stratum 12 and was fully buried by Stratum 9. From what little remained, it was possible to use stratigraphy to determine that the canal had been built after Structure 1, but destroyed before Ritual Canal 2 replaced Ritual Canal 1 (see below).

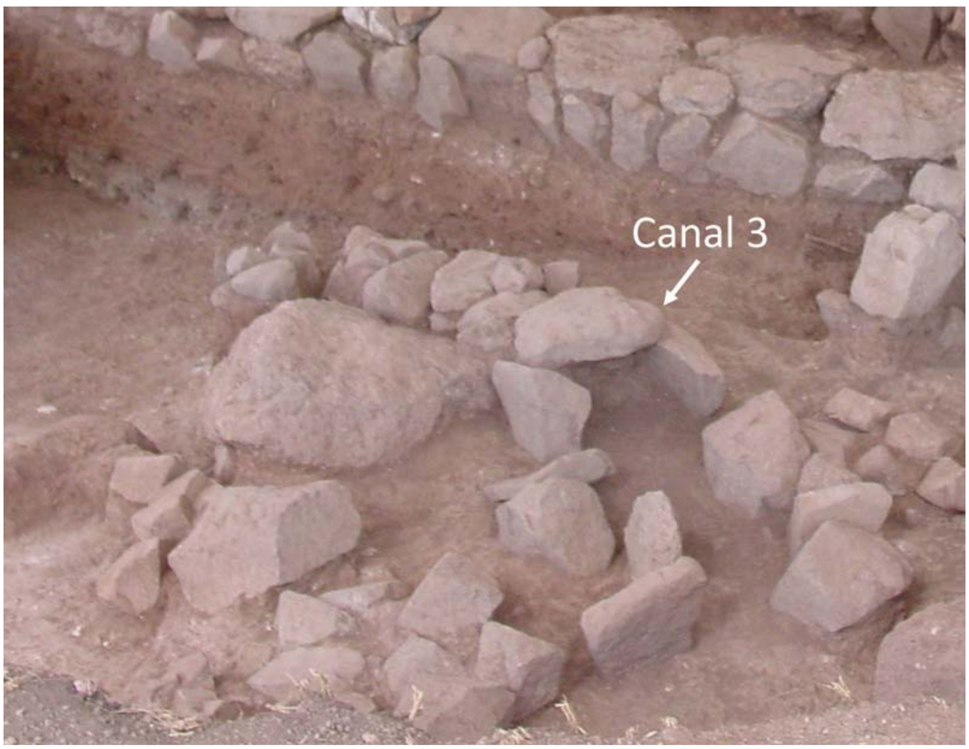


Figure 5.32: Canal 3 was a stone-lined channel very similar to Ritual Canals 1 and 2. Because the canal was mostly destroyed, it is unclear how it related to Structure 1.

The ritual closing of Canals 1 and 3

At some point, Ritual Canals 1 and 3 were no longer used. Several human burials were placed on the ground surface and offerings were burned before the canals and the burials were and covered with a thick stratum of soil (Stratum 9) which effectively and symbolically "closed" these canals. In the case of Canal 3, Burial 9 "cut off" the southern end of Canal 3. The capstones of the northern end were removed, and the interior was filled with ash.

<u>Ash in the northern end of Canal 3</u>

The ash was 30 cm deep and nearly pure, but it did not contain a high density of botanical remains or other artifacts. Therefore, it was probably not a cooking hearth. It is more likely that this ash is from a ritual associated with closing the canal.

Munsell color: 5 YR 4/1 dark gray

Ceramic vessels

Total sherds	243
Restricted vessels with a neck	2 Chanapata redware, 1 Chanapata incised, 13 plainware
Restricted vessel without a neck	1 Chanapata redware
Open vessels	2 Chanapata redware, 1 plainware
Open vessel with a diameter greater than 30 cm	1 plainware
Body sherds with diagnostic style	6 Chanapata redware

Reworked ceramic sherd

Non-disc	1 plainware

Botanical remains from flotation of 5.15 liters of soil (S-47)

2 *Chenopodium quinoa* carbonized seeds

<u>Burial 9</u>

Burial 9, a 1-2 year old child with tabular erect cranial modification, was placed at the south end of Canal 3. The skeleton was in a flexed position with the head to the south, or away from the canal. The child was surrounded by several small field stones which were probably taken from Canal 3. In addition, a large fragment of an *olla* (a restricted vessel with a rim) was placed over the face and knees. This burial seems to have "cut off" Canal 3, symbolically and practically ending its use life. The skeleton was 100% complete and in good condition (Burial Type 1).

The child had deciduous carious lesions in 7 teeth. He or she also had non-specific stress indicators including unhealed cribra orbitalia and active periostitis on the internal surface of the occipital.

Figure 5.33: Burial 9, a 1-2 year old child, cut off Canal 3, symbolically and ritually ending its use life.

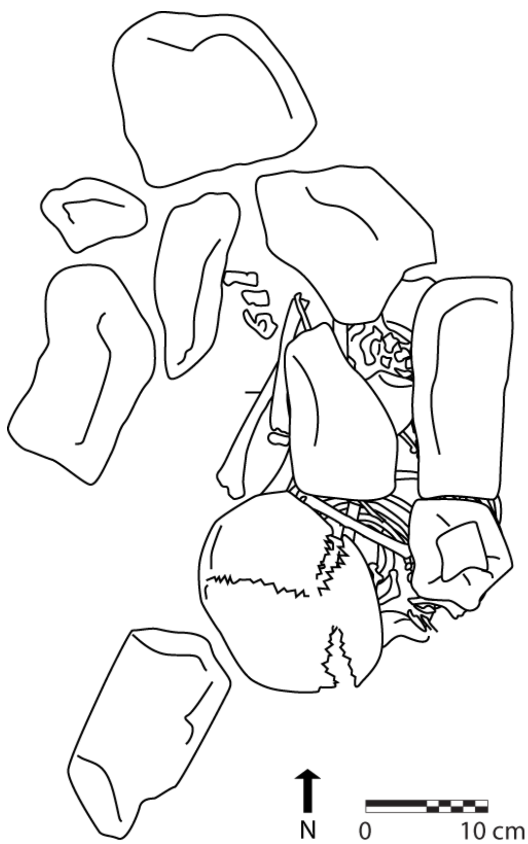


Figure 5.34: Burial 9 was a 1-2 year old child included in Stratum 9 at the end of Canal 3.

Burial 1

Burial 1, a 12-13 year old child with slight tabular erect cranial modification, was located at the base of Stratum 9 east of Ritual Canal 1. The skeleton was on its left side, bent at the waist with legs extended and arms folded over the chest, with the head facing south. The skeleton was 86% complete and in good condition (Burial Type 1).

The child had carious lesions on 4 teeth, enamel hypoplasias on 4 teeth, and slight to moderate calculus. He or she had non-specific stress indicators including delayed long bone growth and porosity on the internal surface of the right and left greater wings of the sphenoid.

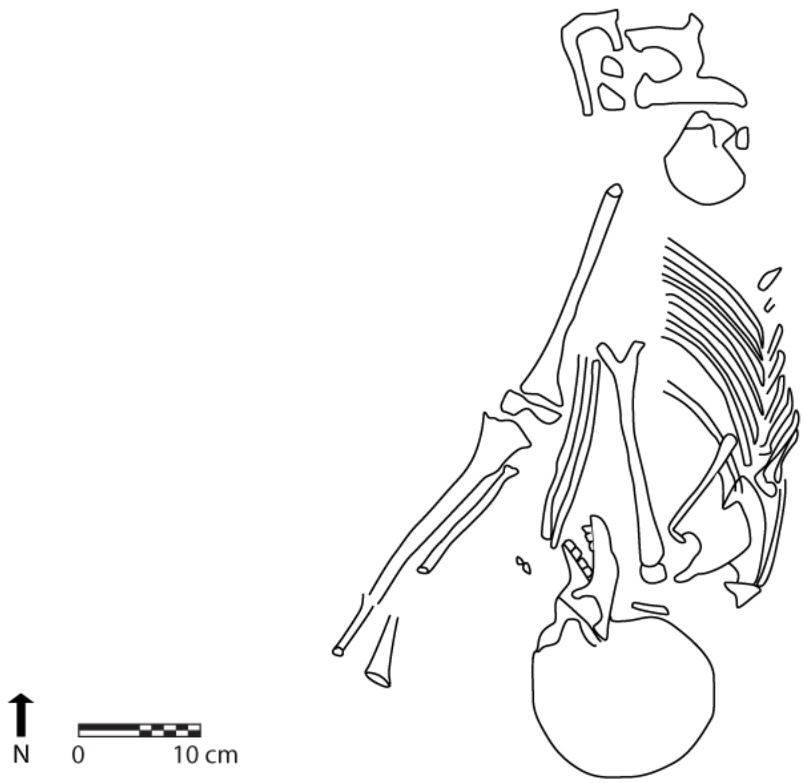


Figure 5.35: Burial 1 was a 12-13 year old child with tabular erect cranial modification included in the matrix of Stratum 9. The body was in an unusual position, bent at the waist with straight legs and arms folded over the chest.

Burial 8

Burial 8, a 36-45 year old woman with tabular erect cranial modification, was located in the southeast corner of Unit A. Her skeleton was in a tightly flexed position lying on her right side with head toward the southwest. One large flat stone was placed behind her head and one in front of her knees and face. The skeleton was 100% complete and in good condition (Burial Type 1).

The woman had antemortem loss of 9 teeth, carious lesions on 2 teeth, pulp exposure due to caries on 2 teeth, pulp exposure due to attrition on 1 tooth, four periapical abscesses, severe alveolar resorption, and heavy calculus. She had artificial abrasion with lingual attrition on the upper incisors, and distal attrition of the root of the lower right first molar. She also suffered from appendicular joint disease in the right and left hip joints. She had a small healed depressed cranial fracture and a healed fracture to one left middle rib from trauma experienced during her life. She exhibited osteitis in the right sphenoid with expansion of the lateral surface of the cranium, a marker of non-specific infection.

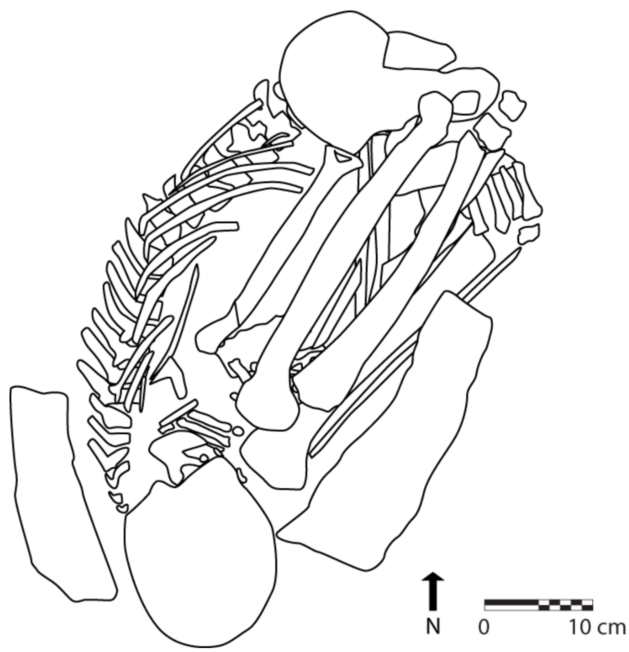


Figure 5.36: Burial 8 was a 36-45 year old woman included in the matrix of Stratum 9.

Burial 10

Burial 10 was a young woman 18-25 years old with tabular erect cranial modification. Her skeleton was in a flexed position on the left side with the head to the northeast. There was a small rock placed at her right elbow and some white soil, probably from the bedrock, on her chest. Evidence of scorching or burning on several elements (including the left leg and pelvic bones) indicate burning of an unknown material under the body as part of the burial ritual. The skeleton was 100% complete and in good condition (Burial Type 1).

The woman had one periapical abscess, one periodontal abscess, calculus flecks, moderate alveolar resorption, and congenital absence of all third molars. She had a healed depressed cranial fracture, a healed fracture to the left nasal, and a healed greenstick fracture to the right middle rib.

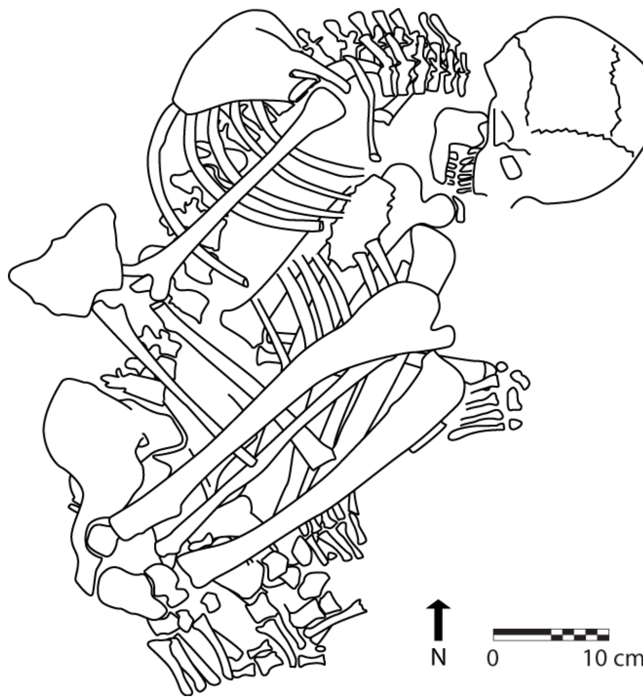


Figure 5.37: Burial 10 was an 18-25 year old woman included in the matrix of Stratum 9. Scorching of parts of the left side of the skeleton indicate that burning of an unknown material under the body was part of the burial ritual.

Stratum 9

Stratum 9 was a thick deposit of compact, light-brown soil between 15 and 50 cm deep. It was deposited on top of Strata 10, 11, 12, and geologic soil, burying Ritual Canal 1 and Canal 3. Burials 1, 8, 9, and 10 were contained within the matrix of this stratum, not in cavities that intruded into it. Therefore, it is most likely that Formative villagers placed the burials on the existing ground surface and then covered them with the soil of Stratum 9.   Therefore, it seems likely that Stratum 9 was intentionally laid down in order to bury and symbolically “close” some architectural features of Structure 1.

Most of the part of this stratum that was west of Ritual Canal 2 was excavated in arbitrary levels during 2005. Artifacts from that preliminary season are not included below because they were recovered and recorded in proveniences that mixed multiple cultural strata within an arbitrary 10 cm level.

Munsell color: 7.5 YR 4/4 brown

Ceramic vessels

Total sherds	5,726
Restricted vessels with a neck	53 Chanapata redware, 3 Chanapata blackware, 3 pattern burnished, 170 plainware
Restricted vessels without a neck	16 Chanapata redware, 59 plainware
Open vessels	35 Chanapata redware, 1 Chanapata incised, 1 pattern burnished, 19 plainware
Open vessels with a diameter greater than 30 cm	8 Chanapata redware, 1 Chanapata blackware, 3 plainware
Lids	4 Chanapata redware, 8 plainware
Body sherds with diagnostic style	163 Chanapata redware, 15 Chanapata blackware, 6 Chanapata incised, 19 pattern burnished, 5 undetermined style

Reworked ceramic sherds

Discs	16 plainware

Chipped stone (see Figure 5.38)

Locally available stone (64.15% by count, 84.43% by weight)

Coarse grain quartzitic sandstone

Tool: 1 unimarginal flake tool (18.8 g)

Debitage: 25 proximal flakes (578.8 g), 1 fragment of angular shatter (7.3 g)

Fine grain quartzitic sandstone

Tools: 6 unimarginal flake tools (73.5 g), 1 bimarginal flake tool (7.7 g)

Debitage: 8 proximal flakes (60.9 g), 7 fragments of angular shatter (23.6 g)

Quartzite

Tools: 3 unimarginal flake tools (24.9 g), 1 bimarginal flake tool (3.3 g), 1 multidirectional core (58.9 g)

Debitage: 4 proximal flakes (21.1 g), 6 fragments of angular shatter (39.6 g)
Chert
Tool: 1 bimarginal flake tool (2.6 g)
Debitage: 1 fragment of angular shatter (10.5 g)
Organic limestone
Debitage: 2 proximal flakes (26.7 g)

Regionally available stone (16.98% by count, 14.89% by weight)
Slate
Debitage: 2 proximal flakes (1.4 g)
Andesite
Tools: 1 unimarginal flake tool (47.7 g), 1 bimarginal flake tool (3.9 g), 1 multidirectional core (18.6 g)
Debitage: 2 proximal flakes (13.1 g), 1 fragment of angular shatter (17.8 g)
Diorite
Debitage: 1 fragment of angular shatter (0.5 g)
Rhyolite
Tools: 1 unimarginal flake tool (12.1 g), 1 bimarginal flake tool (3.9 g), 1 multidirectional core (18.6 g)
Debitage: 3 proximal flakes (27.0 g), 2 fragments of angular shatter (15.5 g)
Basalt
Debitage: 1 fragment of angular shatter (8.8 g)

Exotic stone (18.87% by count, 0.68% by weight)
Obsidian
Tools: 6 unimarginal flake tool (2.5 g), 1 unimarginal flake tool reutilized projectile point (1.2 g), 1 bimarginal flake tool (1.0 g)
Debitage: 4 proximal flakes (0.1 g), 2 fragments of flake shatter (< 0.1 g), 6 fragments of angular shatter (2.9 g)

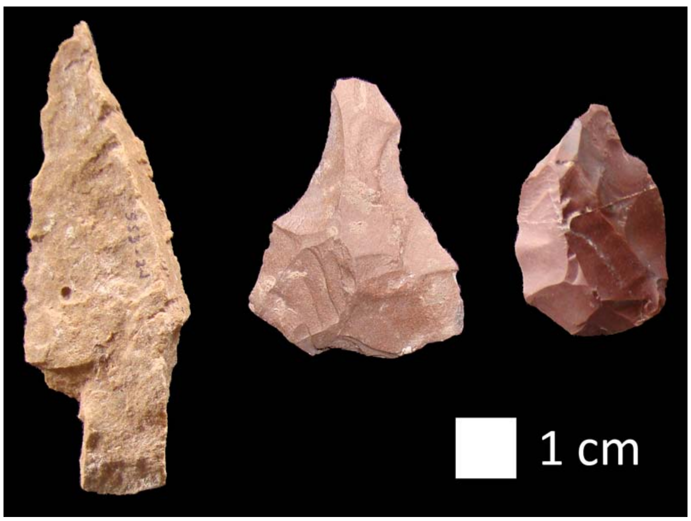


Figure 5.38: Stone tools found in Stratum 9: (from left to right) 1 coarse grain quartzitic sandstone unimarginal flake tool, 2 quartzite unimarginal flake tools.

Worked bone
1 fragment of a tubular bone bead

1 thin object with round cross section and pointed end
1 clothing pin (seeFigure 5.39)

Figure 5.39: A bone clothing pin found in Stratum 9.

Groundstone

Roughly spherical stone that fit into one hand with flattened surfaces created by grinding with back and forth or circular strokes (Group 1, Type A). The stone had pecking marks. It measured 8.37 x 8.37 x 8.40 cm; it weighed 700 g.

Two fragments of roughly spherical stones that fit into one hand with flattened surfaces created by grinding with back and forth or circular strokes with pecking marks (Group 1, Type A). About 75% of the first stone was present. The length was unknown; it was 7.27 cm wide and 5.68 cm tall. The fragment weighed 300 g. About 30% of the second stone was present. It was 8.91 cm long and 5.91 cm wide; the height was unknown. The fragment weighed 190 g.

Fragment of a grinding stone that fit in two hands with plano-convex cross section and flattened surfaces created by grinding with back and forth and rocking motions (Group 1, Type C). The stone had pecking marks. About 60% of the object was present. The length was unknown; it was 6.42 cm wide and 5.13 cm tall. The fragment weighed 320 g.

Oval stone with rectangular cross section created by rocking the stone side to side along its edge (Group 2, Type D). The stone measured 13.4 x 11.02 x 4.36 cm; it weighed 940 g.

Fragment of an oval stone with rectangular cross section created by rocking the stone side to side along its edge (Group 2, Type D). The stone had evidence of pecking.

About 50% of the object was present. The length was unknown; it was 7.56 cm wide and 3.62 cm tall. The fragment weighed 300 g.

Small oval stone with plano-convex cross section that could be held between the fingers (Small Group 2, Type O). The stone measured 6.28 x 4.17 x 4.01 cm; it weighed 150 g.

Groundstone axe fragment. It measured 4.88 x 4.27 x 1.11 cm; it weighed 33 g.

Unmodified flat stone that might have been used as a base for small-scale grinding or pulverizing (Type S). The stone measured 4.33 x 3.56 x 1.09 cm.

Three nondescript fragments of groundstone that weighed 20g, 20 g, and 250 g.

Textiles

One fragment of a vegetable fiber textile was found in Stratum 9.

Special objects

A piece of gypsum shaped like the base of a cone with a rounded bottom was found in Stratum 9. The base of this object is similar to that of the gypsum cone found in the second pit house in Unit D.

Figure 5.40: Gypsum in the shape of the base of a cone.

Botanical remains from flotation of approximately 6 liters of soil (S-70)

6 *Chenopodium quinoa* carbonized seeds

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	94

White-tailed deer (*Odocoileus virginianus*)	2
Guinea pig (*Cavia porcellus*)	4 (all from flotation)
Field mouse (*Muridae*)	65 (all from flotation)
Unidentified	175 (103 from flotation)
Birds	
Unidentified	7 (3 from flotation)
Human bone	4 (3 from flotation)

Features that intruded into Stratum 9

<u>*Small deposit of ash*</u>

A thin layer of ash was found along the southern edge of Unit D intruding into Stratum 9. Because it extended beyond the southern limit of Unit D, the full size of this deposit is unknown. The excavated portion was 90 cm east to west, 30 cm north to south, and 7 cm deep.

Munsell color: 7.5 YR 4/2 brown

Ceramic vessels

Total sherds	22
Open vessel	1 plainware
Body sherds with diagnostic style	1 Chanapata blackware, 2 pattern burnished, 1 undetermined style

Botanical remains from flotation of 5.0 liters of soil (S-59)

No identifiable plant remains were recovered from this sample.

Animal bone (NISP)

Mammals	
Unidentified	4 (all from flotation)

<u>*Lump of very compact soil*</u>

A lump of very hard soil with a rounded top (85 cm east to west, 80 cm north to south and 23 cm tall) was sitting on top of Stratum 9 along the eastern edge of Unit A.

Munsell color: 7.5 YR 4/6 strong brown

Ceramic vessels

Total sherds	44
Restricted vessels with a neck	1 Chanapata redware, 4

	plainware
Open vessels	1 Chanapata incised
Body sherd with diagnostic style	1 Chanapata redware

Chipped stone
Exotic stone (100% by count and weight)
Obsidian
Debitage: 1 proximal flake (< 0.1 g)

Botanical remains from flotation of 6.5 liters of soil (S-62)
4 *Chenopodium quinoa* carbonized seeds

Animal bone (NISP)
Mammals

Llama or alpaca (*Lama sp.*)	3 (all from flotation)
Unidentified	19 (all from flotation)

The construction of Ritual Canal 2

Ritual Canal 2 was built on top of Stratum 9, replacing Ritual Canal 1. The intake of the new canal was in same location as Ritual Canal 1, but whereas Ritual Canal 1 was straight, Ritual Canal 2 was curved so that its discharge was located about 3 m further east.

Before the canal was built, Burial 11 (a secondary burial of a 2-3 year old child) was placed in a cavity that intruded into Stratum 9. The cavity was located about 1.2 meters southeast of the location where Ritual Canal 1 met the bench of Structure 1. Ritual Canal 2 was built over the top of this burial. Therefore, Burial 11 was probably an offering that guided the placement of the new canal as it was being built.

It is most likely that this construction took place as a single event that included the closing of Ritual Canal 1 and Canal 3, the interment of two women and two children, and the deposit of up to 50 cm of earth outside Structure 1 (Stratum 9). It is not possible, however, to determine with certainty that Ritual Canal 2 was not built later. A radiocarbon date from the matrix of Burial 11 indicates that this significant remodeling took place between 40 and 270 years after the original construction of Structure 1, with the median difference being about 150 years.

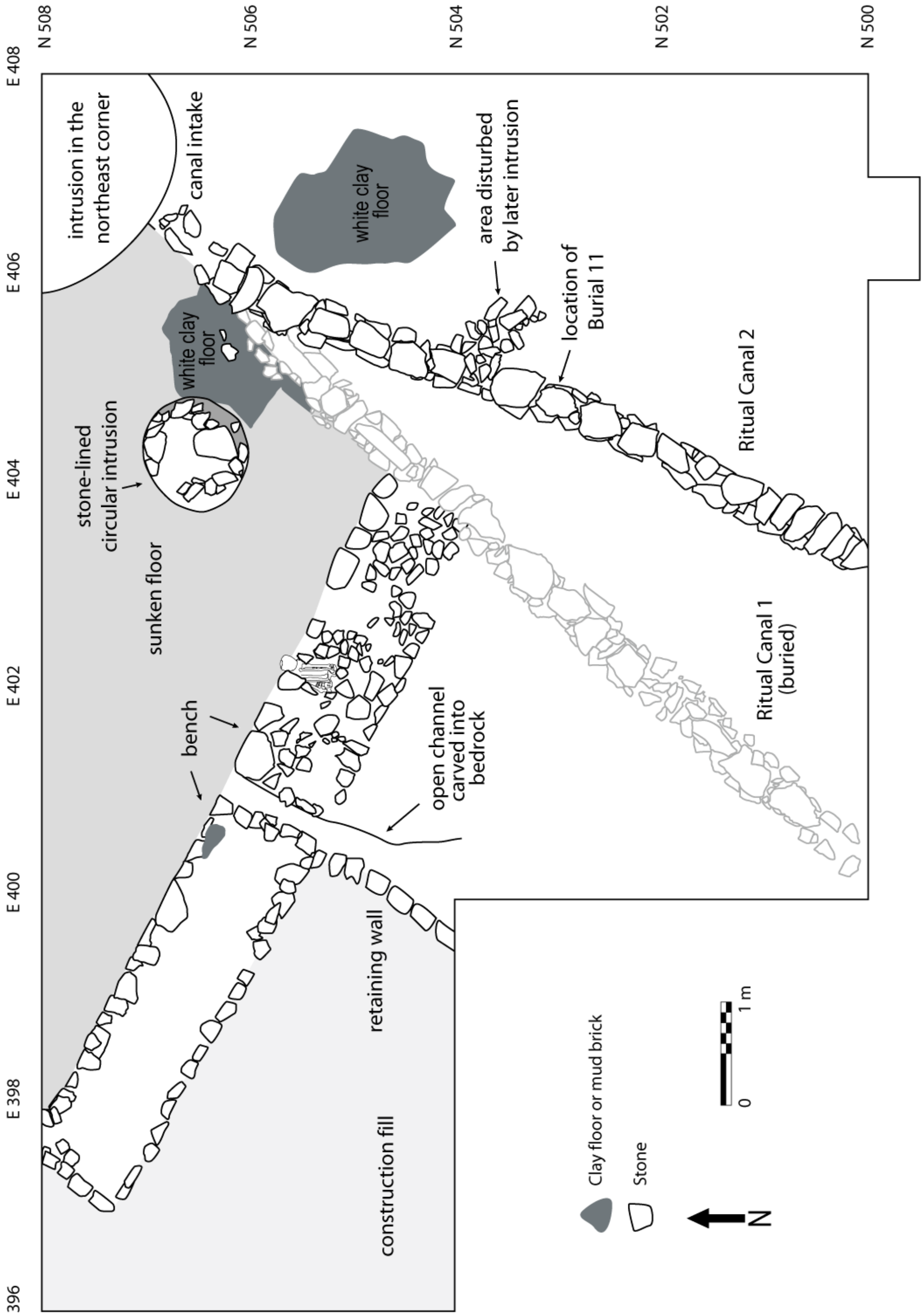


Figure 5.41: Stratum 9 buried Ritual Canal 1 and the villagers of Yuthu built Ritual Canal 2 to replace it. The new canal used the same intake as the old one, but it was curved so that it passed over Burial 11 and had a discharge about 3 meters further east.

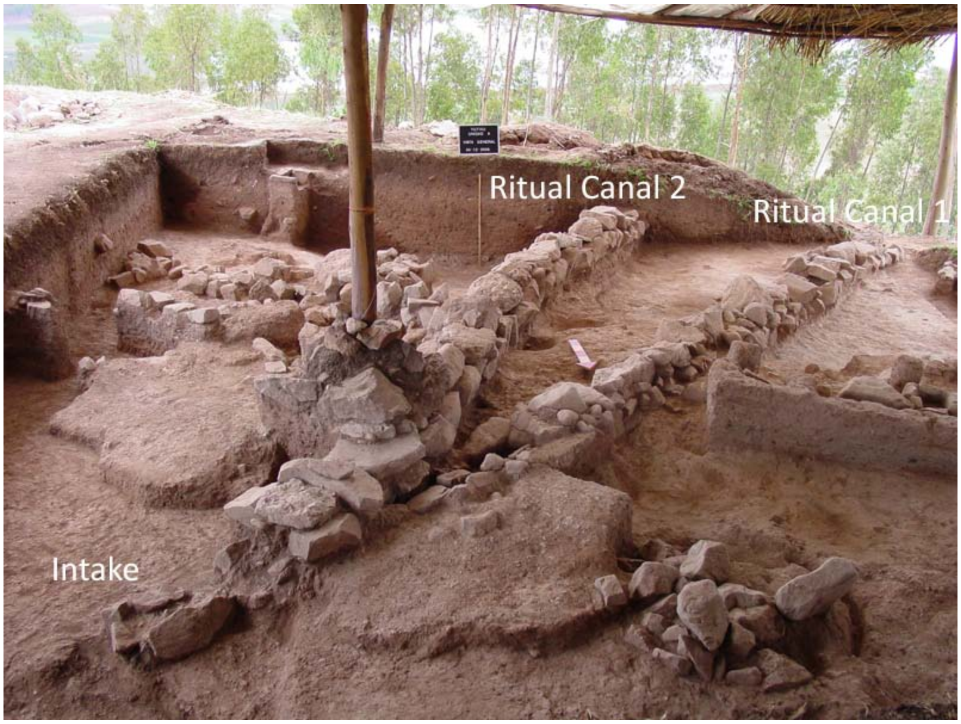


Figure 5.42: Ritual Canal 2 cut off Ritual Canal 1. Both canals shared the same intake inside Structure 1.

Figure 5.43: Burial 11 was a 2-3 year old child buried in a cavity below Ritual Canal 2.

Burial 11

Burial 11, a 2-3 year old child, was under Ritual Canal 2 in a cavity that intruded into Stratum 9. The ashy remains of a burned offering were found at the eastern edge of the depression, and burned soil covered part of the cavity on the western side of the canal. The child's skeleton was only 57% complete and consisted primarily of the long bones of the legs and lower arms along with a rib fragment and a few fragments of lumbar vertebrae (Burial Type 3). The bones were oriented as if the body had been in a flexed position with the head to the northwest. No pathologies were noted. Because the hole that was dug to make the burial included burned offerings and only a few human bones, it is likely that this feature was not simply an individual's grave, but was an offering made during the construction of Ritual Canal 2.

The matrix of the burial

The matrix of the burial was semi-compact, dark brown soil mixed with some ash. The intrusion was 20 cm deep with gently sloping sides. It measured 1 m from east to west and 1.6 m from north to south.

Munsell color: 7.5 YR 4/3 brown

Radiocarbon date: AA84432 \ Yuthu RC-109, 2,226 ± 76 uncalibrated radiocarbon years BP, 376 – 144 BC calibrated with sequential model (95.4% confidence)

Ceramic vessels

Total sherds	111
Restricted vessels with a neck	3 Chanapata redware, 3 plainware
Restricted vessels without a neck	1 Chanapata redware, 3 plainware
Open vessels	1 plainware
Body sherds with diagnostic style	1 Chanapata redware, 1 Chanapata incised

Chipped stone

Regionally available stone (25% by count, 92.38% by weight)

Andesite

Debitage: 1 proximal flake (9.7 g)

Exotic stone (75% by count, 7.62% by weight)

Obsidian
Tool: 1 combination flake tool projectile point (0.8 g) (see Figure 5.44)
Debitage: 2 proximal flakes (< 0.1 g)

Figure 5.44: Obsidian combination flake tool projectile point from the matrix of Burial 11. This projectile point was hafted and retouched.

Botanical remains from flotation of 4.6 liters of soil west of Ritual Canal 2 (S-68)
6 *Chenopodium quinoa* carbonized seeds

Botanical remains from flotation of approximately 6 liters of soil east of Ritual Canal 2 (S-69)
10 *Chenopodium quinoa* carbonized seeds

Animal bone (NISP)
Mammals

Llama or alpaca (*Lama sp.*)	8 (6 from flotation)
Field mouse (*Muridae*)	59 (55 from flotation)
Unidentified	8

Combustion area

At the eastern edge of Burial 11, there was a small concentration of ash with a high density of carbonized botanical remains. Although there was no formal cooking hearth, the burial ritual probably included a burned offering of quinoa, corn, and other plants.

Munsell color: 7.5 YR 3/2 dark brown

Ceramic vessels

Total sherds	98
Restricted vessels with a neck	1 Chanapata redware, 2 plainware
Restricted vessels without a neck	3 pattern burnished, 1 plainware
Lids	1 plainware
Body sherds with diagnostic style	2 Chanapata redware, 9 pattern burnished

Botanical remains from flotation of 4.6 liters of soil (S-66)
50 *Chenopodium quinoa* carbonized seeds

1 *Galium sp.* carbonized seed
1 *Zea mays* carbonized inflorescence

<u>Burned soil covering part of the burial cavity</u>

A small area of burned soil located along the western edge of Ritual Canal 2 covered part of the burial cavity. It was 60 cm from northeast to southwest and 20 cm wide.

Munsell color: 2.5 YR 5/4 reddish brown

Ceramic vessels
No pottery was found.

Animal bone (NISP)
Mammals
Llama or alpaca (*Lama sp.*) 2

Figure 5.45: Unlike Ritual Canal 1, the interior of Ritual Canal 2 did not contain laminar deposits of soil. Therefore this canal was used less frequently or for shorter period of time.

<u>Exploring the interior of Ritual Canal 2</u>

I removed one stone covering Ritual Canal 2 (see Figure 5.45). Unlike Ritual Canal 1, this canal did not contain laminar deposits of soil that are typical of having been laid down by water. Rather, the interior was filled with loose soil. Therefore, the use of this canal was less intense (either in frequency or duration) than that of the canal it replaced.

Munsell color: 5 YR 4/4 reddish brown

Ceramic vessels

No pottery was recovered from this context.

<u>Light brown soil along the top of Ritual Canal 2</u>

Very light brown soil 6 cm thick surrounded the capstones of Ritual Canal 2 near the southern end. The deposit was 90 cm east to west and 1.2 m north to south.

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Munsell color: 7.5 YR 6/3 light brown

Ceramic vessels

Total sherds	71
Restricted vessel with a neck	1 plainware
Restricted vessels without a neck	2 plainware
Body sherds with diagnostic style	2 Chanapata redware, 1 Chanapata incised, 1 pattern burnished

Chipped stone

Locally available stone (50% by count, 98.73% by weight)

Fine grain quartzitic sandstone

Tool: 1 unimarginal flake tool (23.3 g)

Exotic stone (50% by count, 1.27% by weight)

Obsidian

Tool: 1 multidirectional core (0.3 g)

Animal bone (NISP)

Mammals

Field mouse (*Muridae*)	4 (all from flotation)
Unidentified	1 (from flotation)

The final use and burial of Structure 1

Even after Structure 1 was significantly remodeled, the villagers of Yuthu eventually abandoned and buried it. The last event inside the structure included three areas of burning, at least two of which were used to cook food. These hearths, the sunken floor, and the bench were then covered with a thick layer of dirt mixed with ash (Stratum 8). After burial, a depressed surface remained so that the location of the Structure 1 would have been evident, but the stone-faced walls and flat sunken floor were hidden.

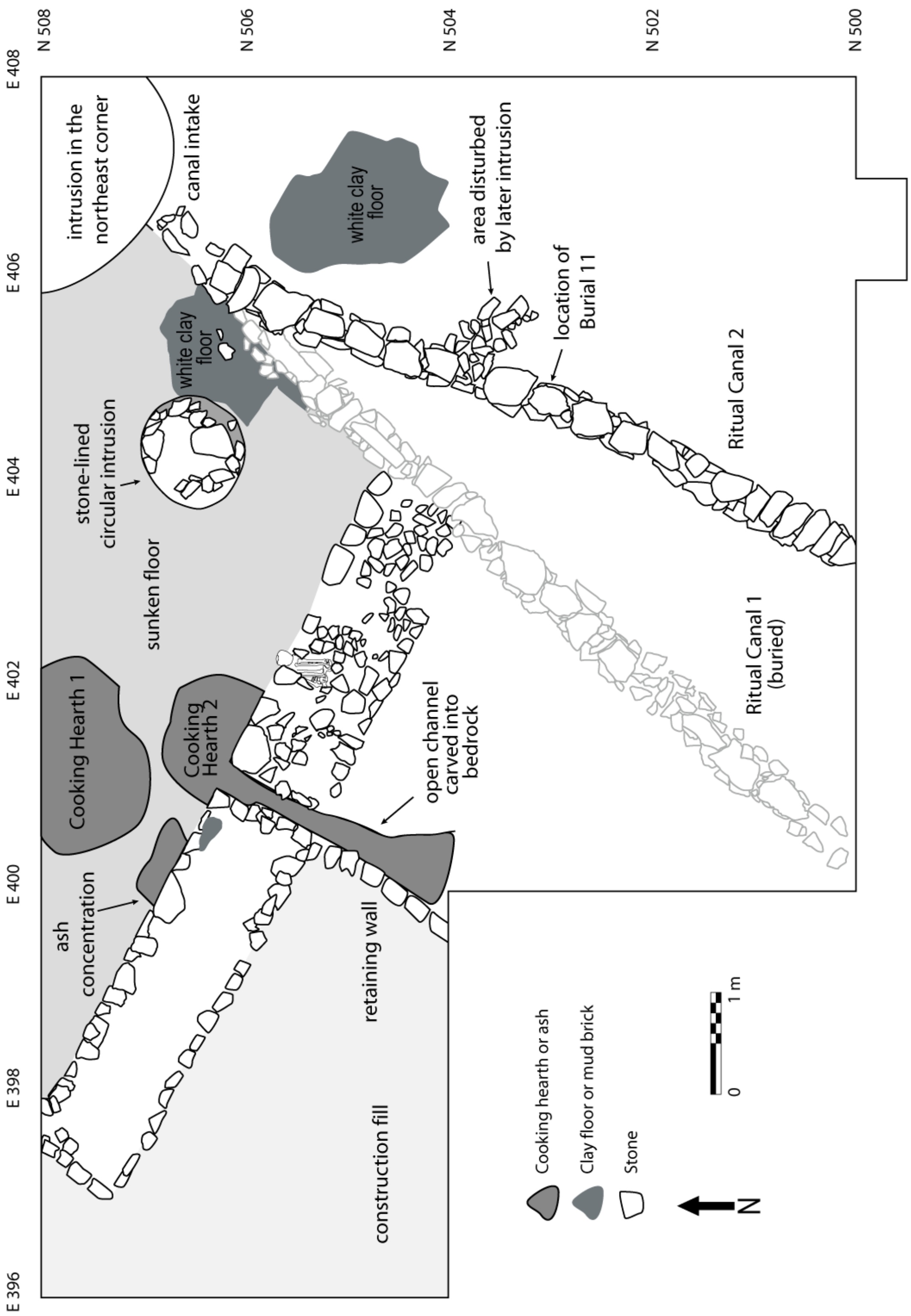


Figure 5.46: The last use of Structure 1 before it was abandoned and buried included two cooking hearths and an ash concentration on the sunken floor.

Cooking Hearth 1

There was an ash deposit on the sunken floor of Structure 1 about two meters north of the bench. The full size of the deposit is unknown because it extended beyond the northern limit of Unit A, but the excavated portion measured 1.7 m east to west, 1.5 m north to south, and 15 cm deep. At the center, several stones smudged with soot were arranged to support a cooking pot, and flotation samples of soil from among these stones contained a very high density of plant remains, compared with other ashy deposits in the Southern Sector. Therefore, it seems likely that this feature was a cooking hearth.

Munsell color: 7.5 YR 5/3 brown.

Ceramic vessels	
Total sherds	232
Restricted vessels with a neck	1 Chanapata redware, 1 pattern burnished, 11 plainware
Restricted vessels without a neck	1 pattern burnished, 11 plainware
Lid	1 plainware
Body sherds with diagnostic style	1 Chanapata redware, 4 pattern burnished
Reworked ceramic sherds	
Discs	3 plainware

Botanical remains from flotation of 6.0 liters of soil (S-60)

35 *Chenopodium quinoa* carbonized seeds
1 *Trifolium sp.* carbonized seed
1 *Zea mays* carbonized cob fragment

Animal bone (NISP)	
Mammals	
Llama or alpaca (*Lama sp.*)	7
Unidentified	8 (all from flotation)

Cooking Hearth 2

A second concentration of ash (16 cm deep) was on the sunken floor alongside the northern face of the bench, just to the east of the drain between the eastern and western sections. The densest concentration of ash was 1.4 m from east to west and 1 m from north to south, but ash from this area also extended through the drain. Although no soil sample was taken from the densest ash, we did find a large number of land snails. We found high densities of these snails in many other cooking hearths, probably because these creatures fed on organic matter. It is possible that this feature may also have been a cooking hearth.

Munsell color: 7.5 YR 4/3 brown

Ceramic vessels

Total sherds	894
Restricted vessels with a neck	1 Chanapata incised, 1 pattern burnished, 35 plainware, 1 undetermined style
Restricted vessels without a neck	1 pattern burnished, 13 plainware, 1 undetermined style
Open vessels	2 Chanapata redware, 2 plainware, 1 undetermined style
Open vessels with a diameter greater than 30 cm	2 Chanapata redware
Lid	1 plainware
Body sherds with diagnostic style	13 Chanapata redware, 2 Chanapata blackware, 1 Chanapata incised, 4 pattern burnished, 8 undetermined style

Reworked ceramic sherds

Discs	2 Chanapata plainware

Chipped stone

Locally available stone (10% by count, 8.42% by weight)

Quartzite

Debitage: 1 proximal flake (0.8 g)

Regionally available stone (20% by count, 24.21% by weight)

Andesite

Debitage: 1 proximal flake (< 2.3 g)

Rhyolite

Debitage: 1 proximal flake (< 0.1 g)

Exotic stone (70% by count, 67.37% by weight)

Obsidian

Tools: 1 unimarginal flake tool (4.2 g), 1 bimarginal flake tool (0.5 g), 1 bimarginal flake tool reutilized projectile point (0.4 g)

Debitage: 3 proximal flakes (0.8 g), 1 fragment of flake shatter (0.5 g)

Groundstone

Roughly spherical stone that fit into one hand with flattened surfaces created by grinding with back and forth or circular strokes (Group 1, Type A). The stone had pecking marks. It measured 7.48 x 5.46 x 4.01 cm; it weighed 270 g.

Small oval stone with plano-convex cross section that could be held between the fingers (Small Group 2, Type O). The stone had pecking marks. It measured 7.58 x 3.45 x 4.17 cm; it weighed 100 g.

Stone that could be pinched between the fingers with a flattened surface created by back and forth or circular strokes (Small Group 3, Type P). The stone measured 3.35 x 2.79 x 2.50 cm; it weighed 20 g.

Palm-sized mortar (Type R) with evidence of pecking. About 70% of the object was present. It measured 12.55 x 10.35 x 3.65 cm; the fragment weighed 610 g.

A stone disc. About 50% of the object was present. The diameter was 4.88 cm; it was 1.21 cm tall. The fragment weighed 20 g.

Two nondescript fragments of grinding stones that weighed 280 g and 20 g.

Botanical remains from flotation of 5.75 liters of soil (S-45)

No identifiable plant remains were recovered from this sample.

Botanical remains from flotation of 5.6 liters of soil (S-57)

7 *Chenopodium quinoa* carbonized seeds

Botanical remains from flotation of 5.6 liters of soil (S-75)

1 *Ambrosia sp.* carbonized seed

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	2
Field mouse (*Muridae*)	17 (all from flotation)
Unidentified	24 (19 from flotation)

<u>*Ash concentration*</u>

A smaller concentration of ash was found along the northern edge of the western section of the bench. It was 7 cm deep and 60 cm wide along 70 cm of the bench.

Munsell color: 7.5 YR 4/2 brown

Ceramic vessels

Total sherds	47
Restricted vessels with a neck	2 Chanapata redware, 2 plainware
Body sherd with diagnostic style	1 pattern burnished

Animal bone (NISP)

Mammals

Unidentified	1

Stratum 8

The burning and cooking areas on the sunken floor were covered by semi-compact, dark brown soil mixed with ash. This stratum was very thick (between 20 and 35 cm) and it was the first that we found both inside and outside of Structure 1. Although it did not completely fill the sunken area, it did slope up to cover most of the stone bench (see profile drawing, Figure 1.2). Therefore, it seems likely that villagers intentionally brought this soil to bury Structure 1.

Munsell color: 7.5 YR 4/3 brown

Ceramic vessels

Total sherds	3,185
Restricted vessels with a neck	12 Chanapata redware, 3 pattern burnished, 75 plainware, 1 undetermined style
Restricted vessels without a neck	8 Chanapata redware, 1 Chanapata incised, 8 pattern burnished, 28 plainware
Open vessels	9 Chanapata redware, 1 Chanapata blackware, 1 pattern burnished, 17 plainware
Open vessels with a diameter greater than 30 cm	4 Chanapata redware, 1 Chanapata blackware, 1 plainware
Lids	2 Chanapata redware, 4 plainware
Body sherds with diagnostic style	71 Chanapata redware, 6 Chanapata blackware, 10 Chanapata incised, 34 pattern burnished, 1 undetermined style

Reworked ceramic sherds

Discs	17 plainware
Non-discs	2 plainware

Chipped stone

Locally available stone (30.77% by count, 54.79% by weight)

Coarse grain quartzitic sandstone

Debitage: 2 proximal flakes (13.1 g)

Fine grain quartzitic sandstone

Tool: 1 combination flake tool (16.6 g)

Debitage: 1 proximal flake (2.3 g), 2 fragments of angular shatter (13.2 g)

Quartzite

Debitage: 1 proximal flake (0.1 g), 1 fragment of angular shatter (8.2 g), 1 unmodified manuport (11.0 g)

Chert

Tool: 1 unimarginal flake tool (10.5 g)

Schist

Debitage: 2 unmodified manuports (7.3 g)

Regionally available stone (33.33% by count, 39.48% by weight)

Slate

Debitage: 5 proximal flakes (0.4 g), 1 unmodified manuport (1.1 g)

Andesite

Tools: 1 hafted biface (20.1 g), 1 unimarginal flake tool (16.3 g), 1 bimarginal flake tool (2.0 g)

Debitage: 1 proximal flake (< 0.1 g), 1 fragment of angular shatter (4.4 g)

Rhyolite

Tool: 1 unimarginal flake tool (7.5 g)

Debitage: 1 proximal flake (7.5 g)

Exotic stone (35.90% by count, 5.73% by weight)

Obsidian

Tools: 1 unhafted biface (0.5 g), 4 unimarginal flake tools (2.6 g), 2 unimarginal flake tool reutilized projectile points (0.8 g), 2 bimarginal flake tools (1.1 g), 2 multidirectional cores (2.6 g)

Debitage: 3 fragments of angular shatter (1.0 g)

Groundstone

Roughly spherical stone that fit into one hand with flattened surfaces created by grinding with back and forth or circular strokes (Group 1, Type A). The stone had pecking marks. It measured 6.88 x 6.77 x 5.37 cm; it weighed 320 g.

Fragment of a roughly spherical stone that fit into one hand with flattened surfaces created by grinding with back and forth or circular strokes (Group 1, Type A).

About 30% of the object was present. The length and height were unknown; it was 4.81 cm wide. The fragment weighed 80 g.

Two very thin, irregularly shaped stones with ground and polished edges. The first measured 51.3 x 37.5 x 0.45 cm; it weighed 20 g. About 50% of the second stone was present. The length was unknown; it was 4.03 cm wide and 0.53 cm tall. The fragment weighed 10 g.

Three nondescript fragments of groundstone weighing 30 g, 40 g, and 70 g.

Special objects

A smooth, white rock painted with red pigment was found near Ritual Canal 1(see Figure 5.47). Unfortunately, the surface was worn and it was not possible to determine what the painted figure had been, but it resembled a standing human figure with his or her right arm outstretched.

A carved greenstone pendant was found west of Cooking Hearth 1 and north of the ash concentration against the bench. The form of the pendant resembles the head of a llama when oriented horizontally and a human figure when oriented vertically (see Figure 5.48).

One clear quartz crystal that weighed 3.5 g (see Figure 5.49).

Figure 5.47: A white rock painted with red pigment found near Ritual Canal 1 in Stratum 8.

Figure 5.48: A carved greenstone pendant found in the western corner of Structure 1 in Stratum 8. It resembles a llama head when oriented horizontally (as it is in the photo) or a human body when oriented vertically.

Figure 5.49: A quartz crystal was found in Stratum 8.

Botanical remains from flotation of 5.5 liters of soil (S-65)
2 *Chenopodium quinoa* carbonized seeds

Botanical remains from flotation of 5.55 liters of soil (S-53)
12 *Chenopodium quinoa* carbonized seeds

Botanical remains from flotation of 3.5 liters of soil (S-43)
4 *Chenopodium quinoa* carbonized seeds

Botanical remains from flotation of 2.4 liters of soil (S-42)
3 *Chenopodium quinoa* carbonized seeds
1 *Poaceae* carbonized seed

Animal bone (NISP)

Mammals	
Llama or alpaca (*Lama sp.*)	75
Guinea pig (*Cavia porcellus*)	1 (from flotation)
Field mouse (*Muridae*)	1
Unidentified	75 (58 from flotation)
Birds	
Duck (*Anas sp.*)	1
Unidentified	1 (from flotation)

Features intruding into Stratum 8

Compact red soil

Compact red soil intruded into the ashy soil of Stratum 8 north of the eastern section of the bench of Structure 1. It was 33 cm from east to west, 56 cm from north to south, and 3 cm deep.

Munsell color: 5 YR 4/6 yellowish red

Ceramic vessels

Total sherds	14

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	3

<u>*Compact brown soil*</u>

A second area of compact soil (15 cm deep) intruded into Stratum 8 in the western corner of Structure 1. It was 1.25 m from east to west and extended beyond the northern limit of Unit A.

Munsell color: 7.5 YR 5/3 brown

Ceramic vessels

Total sherds	471
Restricted vessels with a neck	17 plainware, 1 undetermined style
Open vessels	4 Chanapata redware, 4 plainware
Open vessel with a diameter greater than 30 cm	1 Chanapata redware
Body sherds with diagnostic style	11 Chanapata redware, 3 pattern burnished

Chipped stone

Locally available stone (83.33% by count, 98.49% by weight)

Quartzite

Debitage: 2 proximal flakes (12.6 g), 1 fragment of angular shatter (6.6 g)

Organic limestone

Debitage: 1 proximal flake (2.0 g)

Exotic stone (16.67% by count, 1.51% by weight)

Obsidian

Tool: 1 multidirectional core (0.5 g)

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	1

<u>*Cooking Hearth 3*</u>

Another cooking hearth was built on the lowest part of the surface of Stratum 8—in nearly the same place as Cooking Hearth 1. It was pure ash 20 cm thick with a stones arranged to support a cooking pot at the deepest part. Like Cooking Hearth 1, the soil surrounding these stones had a high density of carbonized plant remains. The excavated part of the feature measured 2 m (east to west) by 1.6 m (north to south), but the entire extent is not known because it extended beyond the northern limit of Unit A.

Munsell color: 7.5 YR 5/1 gray

Ceramic vessels

Total sherds	709
Restricted vessels with a neck	1 Chanapata redware, 1 Chanapata blackware, 1 pattern burnished, 23 plainware, 1 undetermined style
Restricted vessels without a neck	1 Chanapata incised, 1 pattern burnished, 16 plainware
Open vessels	2 Chanapata redware, 5 plainware
Open vessels with a diameter greater than 30 cm	2 Chanapata redware
Lids	2 Chanapata redware
Body sherds with diagnostic style	7 Chanapata redware, 3 Chanapata blackware, 1 Chanapata incised, 6 pattern burnished

Chipped stone

Locally available stone (66.67% by count, 98.19% by weight)

Fine grain quartzitic sandstone

Tools: 1 unhafted biface (23.6 g) (see Figure 5.50), 1 bimarginal flake tool (3.0 g)

Debitage: 1 proximal flake (2.5 g)

Quartzite

Debitage: 1 proximal flake (41.3 g)

Exotic stone (33.33% by count, 1.81% by weight)

Obsidian

Tools: 1 bimarginal flake tool (< 0.1 g), 1 combination flake tool (1.3 g)

Worked bone

1 thin object with round cross section and pointed end (see Figure 5.51)

Groundstone

Fragment of a groundstone axe. About 50% of the object was present. The length was unknown; it was 3.25 cm wide and 2.22 cm tall. The fragment weighed 80 g.

Nondescript fragment of a grinding stone that weighed 10 g.

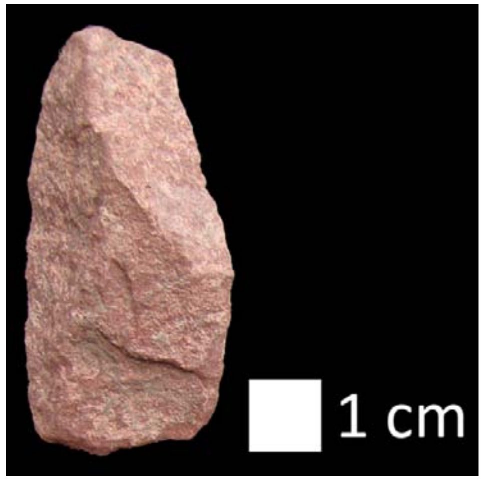


Figure 5.50: Fine grain quartzitic sandstone
unhafted biface found in Cooking Hearth 3.

Figure 5.51: A small bone tool found in Cooking Hearth 3.

Figure 5.52: A metal pin found in Cooking Hearth 3.

Metal

Part of a metal pin broken into 6 fragments was found near the stones arranged to hold a cooking pot in Cooking Hearth 3. It had a round cross section about 3 mm in diameter and it weighed 1.0 g (see Figure 5.52).

Botanical remains from flotation of 5.5 liters of soil surrounding the hearth stones(S-19)

18 *Chenopodium quinoa* carbonized seeds
1 *Trifolium sp.* carbonized seed
4 *Zea mays* carbonized cupule fragments

Botanical remains from flotation of 5.5 liters of soil stratigraphically higher than the hearth stones(S-17)

4 *Chenopodium quinoa* carbonized seeds
1 *Ambrosia sp.* carbonized seed

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	50 (29 from flotation)
Guinea pig (*Cavia porcellus*)	1
Field mouse (*Muridae*)	3 (all from flotation)
Unidentified	9 (5 from flotation)

Reuse of the intrusion in the northeast corner (Intrusion A)

After the ashy layers covered the sunken floor and bench of Structure 1, the intrusion in the northeast corner was filled with three more strata of soil. This may have happened within hours of the burial of Structure 1 or much later; it is not possible to determine the timing based on stratigraphy alone.

Level A-1

Level A-1 filled the base of the intrusion and spread outside of it to cover part of Stratum 8. The layer was semi-compact dark brown earth mixed with ash 20 cm deep.

Munsell color: 7.5 YR 4/6 brown

Ceramic vessels

Total sherds	1,203
Restricted vessels with a neck	3 Chanapata redware, 1 Chanapata incised, 38 plainware
Restricted vessels without a neck	1 Chanapata incised, 1 pattern burnished, 18 plainware
Open vessels	4 Chanapata redware, 13 plainware
Lids	2 Chanapata redware, 1 plainware
Body sherds with diagnostic style	6 Chanapata redware, 1 Chanapata blackware, 2 Chanapata incised, 4 pattern burnished, 1 undetermined style

Reworked ceramic sherds

Discs	2 plainware
Non-discs	4 plainware

Chipped stone

Locally available stone (57.14% by count, 93.49% by weight)

Quartzite

Debitage: 1 proximal flake (3.1 g)

Chert

Debitage: 1 proximal flake (0.4 g)

Organic limestone

Debitage: 1 unmodified manuport (33.8 g)

Regionally available stone (14.29% by count, 5.33% by weight)

Andesite

Tool: 1 unimarginal flake tool (2.7 g)

Exotic stone (28.57% by count, 1.18% by weight)

Obsidian

Tool: 1 unimarginal flake tool (0.3 g)

Debitage: 1 proximal flake (0.3 g)

Groundstone

Fragment of a grinding stone that fit in one hand with plano-convex cross section and flattened surfaces created by grinding with back and forth and rocking motions (Group 1, Type B). About 15% of the object was present. The length and width were unknown; it was 2.68 cm tall. The fragment weighed 100 g.

Stone that could be pinched between the fingers with a flattened surface created by back and forth or circular strokes (Small Group 3, Type P). The stone measured 3.86 x 2.35 x 2.01 cm; it weighed 20 g.

Figure 5.53: Two unusual stones that do not appear to have been modified by humans.

Special objects

Two rocks with unusual shapes and colors were found in Level A-1, just west of the intrusion. They had not been modified by humans (see Figure 5.53).

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	14
Guinea pig (*Cavia porcellus*)	2

Level A-2

Level A-2 was loose, light-brown soil that intruded into Level A-1. It was 20 cm deep and included many loose rocks and chunks of gypsum, the bedrock material in this area. The soil in the northeast corner was particularly hard and filled with a high concentration of pottery.

Munsell color: 7.5 YR 4/3 brown

Ceramic vessels

Total sherds	934
Restricted vessels with a neck	7 pattern burnished, 38 plainware
Restricted vessels without a neck	2 pattern burnished, 13 plainware
Open vessels	2 Chanapata redware, 7 pattern burnished, 7 plainware
Body sherds with diagnostic style	4 Chanapata redware, 3 Chanapata blackware, 2 Chanapata incised, 5 pattern burnished

Reworked ceramic sherds

Discs	2 plainware
Non-disc	1 plainware

Chipped stone

Locally available stone (56.25% by count, 74.35% by weight)

Coarse grain quartzitic sandstone

Debitage: 1 proximal flake (18.6 g)

Fine grain quartzitic sandstone

Tool: 1 multidirectional core (9.6 g)

Debitage: 2 proximal flakes (3.9 g), 1 fragment of angular shatter (10.1 g)

Chert
Tool: 1 multidirectional core (6.9 g)
Organic limestone
Debitage: 2 proximal flakes (15.7 g),
Schist
Debitage: 1 fragment of angular shatter (1.0 g)
Regionally available stone (37.50% by count, 24.86% by weight)
Slate
Debitage: 1 fragment of angular shatter (0.7 g)
Andesite
Debitage: 1 proximal flake (0.5 g), 3 fragments of angular shatter (10.5 g)
Rhyolite
Tool: 1 unimarginal flake tool (10.3 g)
Exotic stone (6.25% by count, 0.79% by weight)
Obsidian
Tool: 1 bimarginal flake tool (0.7 g)

Groundstone

Roughly spherical stone that fit into one hand with flattened surfaces created by grinding with back and forth or circular strokes (Group 1, Type A). The stone had pecking marks. It measured 8.48 x 7.97 x 4.88 cm; it weighed 460 g.

Animal bone (NISP)	
Mammals	
Llama or alpaca (*Lama sp.*)	13
White-tailed deer (*Odocoileus virginianus*)	2
Amphibians	
Toad (*Bufo sp.*)	11

Level A-3

Level A-3 was a thin layer of compact earth between 5 and 10 cm thick located along the northern limit of Unit A. Because the layer was so thin, it was excavated together with Levels A-1 and A-2, the layers right below it. No artifacts were recovered.

Munsell color: 7.5 YR 4/3 brown

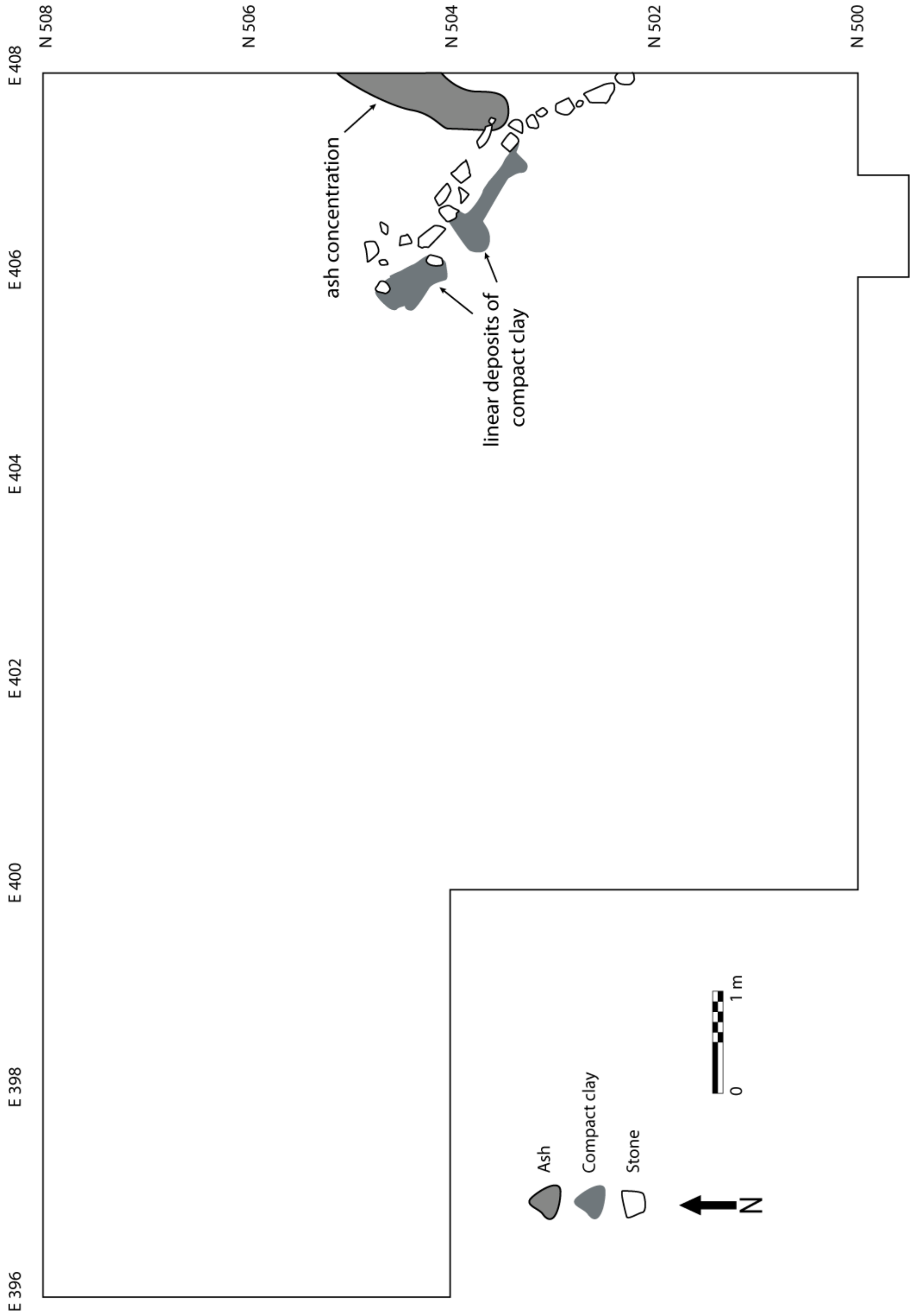


Figure 5.54: Linear deposits of compact, reddish clay and roughly aligned loose stones were deposited after Structure 1 was filled in.

Stratum 7

Stratum 7, 18 cm thick, was a layer of loose, brown soil mixed with ash and burned earth. This stratum was associated with several cultural features including: linear deposits of compact clay that were similar to the wall foundations of the mud structure (see below), a concentration of ash, and many loose or roughly aligned stones. Because I found these features in a very disturbed state, it was not possible to determine what kind of structure or activity they represented. Based on stratigraphy, these features were built after Structure 1 had been buried (Stratum 7 was on top of Stratum 9 and Level A-3 of the intrusion in the northeast corner).

Munsell color: 7.5 YR 4/6 brown

Ceramic vessels

Total sherds	4,966
Restricted vessels with a neck	24 Chanapata redware, 2 Chanapata blackware, 1 Chanapata incised, 5 pattern burnished, 137 plainware
Restricted vessels without a neck	2 Chanapata redware, 1 Chanapata blackware, 2 Chanapata incised, 12 pattern burnished, 55 plainware
Open vessels	17 Chanapata redware, 2 Chanapata blackware, 1 Chanapata incised, 15 pattern burnished, 37 plainware
Open vessels with a diameter greater than 30 cm	6 Chanapata redware, 3 plainware
Lids	1 Chanapata redware, 9 plainware
Body sherds with diagnostic style	67 Chanapata redware, 1 Chanapata blackware, 7 Chanapata incised, 53 pattern burnished, 2 undetermined style

Reworked ceramic sherds

Discs	13 plainware
Non-disc	1 plainware

Chipped stone

Locally available stone (56.76% by count, 62.05% by weight)

Coarse grain quartzitic sandstone
Tools: 2 bimarginal flake tools (68.3 g) (see Figure 5.55)
Debitage: 1 proximal flake (12.2 g)
Fine grain quartzitic sandstone
Tools: 4 unimarginal flake tools (42.2 g)
Debitage: 2 proximal flakes (7.2 g)
Quartzite
Tools: 3 unimarginal flake tools (6.9 g), 2 bimarginal flake tools (10.5 g), 1 multidirectional core (13.8 g)
Debitage: 15 proximal flakes (51.2 g), 1 fragment of flake shatter (9.0 g), 5 fragments of angular shatter (26.8 g)
Chert
Tool: 1 multidirectional core (9.7 g)
Debitage: 1 proximal flake (12.7 g)
Organic limestone
Debitage: 3 proximal flakes (6.2 g), 1 fragment of angular shatter (7.1 g)

Regionally available stone (25.68% by count, 31.09% by weight)
Slate
Tool: 1 bimarginal flake tool (5.4 g)
Debitage: 9 proximal flakes (8.4 g)
Andesite
Tools: 1 unimarginal flake tool (12.1 g)
Debitage: 2 proximal flakes (11.6 g), 2 fragments of angular shatter (26.4 g)
Diorite
Debitage: 1 proximal flake (0.5 g)
Microdiorite
Tool: 1 multidirectional core (61.6 g)
Rhyolite
Debitage: 1 proximal flake (0.8 g), 1 fragment of angular shatter (15.4 g)

Exotic stone (16.22% by count, 1.88% by weight)
Obsidian
Tools: 5 unimarginal flake tools (3.1 g), 3 bimarginal flake tools (1.7 g), 3 combination flake tools (3.3 g)
Debitage: 1 fragment of angular shatter (0.5 g)

Unidentified (1.35% by count, 4.98% by weight)
Debitage: 1 fragment of angular shatter (22.8 g)

Worked bone

1 deer antler, probably used as a tool to plant and harvest tubers (see Figure 5.56)
1 broad, flat tool made from a rib

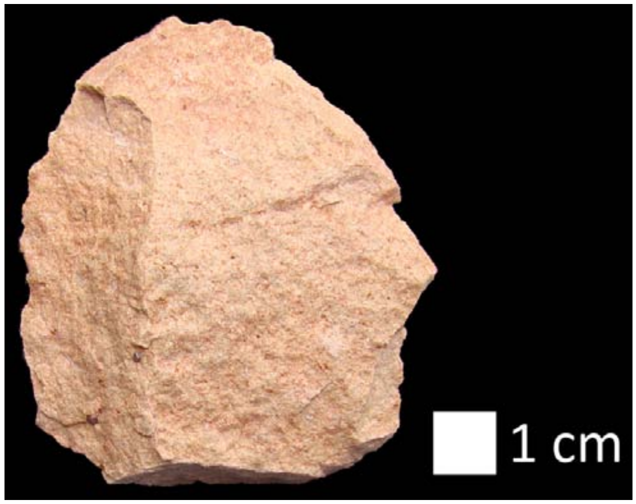


Figure 5.55: Coarse grain quartzitic sandstone bimarginal flake tool.


Figure 5.56: A deer antler found in Stratum 7; it was probably used as a tool for planting and harvesting tubers.

Groundstone

Three roughly spherical stones that fit into one hand with flattened surfaces created by grinding with back and forth or circular strokes (Group 1, Type A). The stones had pecking marks. The first measured 5.77 x 5.09 x 4.49 cm; it weighed 200 g. The second measured 7.69 x 6.52 x 5.89 cm; it weighed 430 g. The third measured 7.98 x 5.41 x 5.04 cm; it weighed 290 g. The fourth measured 5.82 x 5.40 x 4.72 cm; it weighed 240 g.

Small oval stone with no flat surface that may have been in an early phase of use (Small Group 2, Type N). The stone measured 4.90 x 4.83 x 2.13 cm; it weighed 70 g.

Small oval stone with plano-convex cross section that could be held between the fingers (Small Group 2, Type O). The stone measured 6.30 x 4.91 x 3.26 cm; it weighed 140 g.

Stone that could be pinched between the fingers with a flattened surface created by back and forth or circular strokes (Small Group 3, Type P). The stone measured 2.78 x 1.63 x 1.44 cm; it weighed 10 g.

Nondescript fragment of grinding stone that weighed 10 g.

Unmodified flat stone that may have been used as a base for small scale grinding (Type S). It was 0.88 cm thick.

Groundstone axe fragment. About 30% of the object was present. The length was unknown; it was 2.48 cm wide and 2.11 cm tall.

Special objects

A polished rock with eyes and a mouth carved into it to resemble a human or animal face was found in Stratum 7 (see Figure 5.57).

Two quartz crystals were found in Stratum 7. One was cloudy gray and weighed 4.4 g (see Figure 5.58). The other was translucent green and weighed 1.0 g.

Figure 5.57: A polished rock with eyes and a mouth carved into it.

Figure 5.58: A cloudy gray quartz crystal was found in Stratum 7.

Botanical remains from flotation of 5.0 liters of soil (S-41)

No identifiable plant remains were recovered from this sample

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	83 (9 from flotation)
White-tailed deer (*Odocoileus virginianus*)	1
Guinea pig (*Cavia porcellus*)	8 (7 from flotation)
Field mouse (*Muridae*)	6 (all from flotation)
Unidentified	42 (13 from flotation)

Features of Stratum 7

<u>*Linear deposits of compact clay*</u>

Two linear deposits of very compact clay 8 cm tall ran northwest to southeast, approximately parallel to the bench of Structure 1. The western section was 70 cm long by 35 cm wide, and the eastern section was 100 cm long by 50 cm wide. These features were not excavated.

Munsell color: 7.5 YR 4/6 strong brown

<u>*Ash concentration*</u>

An ash concentration 13 cm deep was located on the western edge of the excavation unit. Because it extended beyond the western limit, the total area is unknown. The excavated portion measured 60 cm from east to west and 1 m from north to south.

Munsell color: 5 YR 4/1 dark gray

Ceramic vessels

Total sherds	23
Body sherds with diagnostic style	3 Chanapata redware

Chipped stone

Locally available stone (50% by count, 94.94% by weight)

Quartzite

Tool: 1 unimarginal flake tool (7.5 g)

Exotic stone (50% by count, 5.06% by weight)

Obsidian

Tool: 1 unimarginal flake tool (0.4 g)

Worked bone (see Figure 5.59)

1 thin object with round cross section and pointed end

1 thin objects with square cross section and pointed end

(a) (b)

Figure 5.59: Two fragments of worked bone found in the ash concentration associated with Stratum 9: (a) then end of a polished, pointed tool, and (b) the head of a bone pin.

Groundstone

Stone that could be pinched between the fingers with a flattened surface created by back and forth or circular strokes (Small Group 3, Type P). The stone measured 4.43 x 2.92 x 2.58 cm; it weighed 40 g.

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	3

<u>*Linear feature deposited by water*</u>

Very soft soil with bits of gravel and small fragments of pottery was deposited by water that flowed over the ground surface between Ritual Canals 1 and 2. It was 40 cm wide, but only 8 cm deep.

Munsell color: 7.5 YR 5/3 brown

Ceramic vessels

Total sherds	156
Restricted vessels with a neck	2 Chanapata redware, 4 plainware
Restricted vessels without a neck	1 Chanapata blackware, 6 plainware
Open vessel	1 Chanapata redware
Open vessel with a diameter greater than 30 cm	1 plainware
Lid	1 plainware
Body sherds with diagnostic style	2 Chanapata redware, 3 pattern burnished

Chipped stone

Locally available stone (88.89% by count, 100% by weight)

Fine grain quartzitic sandstone
Tool: 1 bimarginal flake tool (6.9 g)
Quartzite
Tools: 2 unimarginal flake tools (3.3 g), 1 multidirectional core (6.4 g)
Debitage: 2 proximal flakes (6.2 g), 2 fragments of angular shatter (21.5 g)
Exotic stone (11.11% by count, < 1% by weight)
Obsidian
Debitage: 1 proximal flake (< 0.1 g)

Botanical remains from flotation of 5.3 liters of soil (S-40)
2 *Chenopodium quinoa* carbonized seeds

Animal bone (NISP)
Mammals

Llama or alpaca (*Lama sp.*)	34 (28 from flotation)
Unidentified	6

The mud structure

During excavation, we noticed a line of red soil about 15 cm wide running from northwest to southeast. We began to refer to this mysterious feature as the "*mancha roja*," or "red stain," but it was several days before we discovered what it was. Because the feature was only marked by its unusual color and slightly more compact texture, we proceeded with caution, and soon discovered a corner at the eastern edge of the line. I began to look for the limits of what seemed to be rectangular structure, made not of stone or adobe, but of hardened mud. Eventually, we traced out the form of a rectangular structure with wall foundations 10 cm high on three sides. The structure was open to the southwest (or toward the outside of the platform); a round deposit of hardened mud about 15 cm in diameter may have been a base for a post on that side. This foundation probably supported a perishable superstructure made of poles, cane, or thatch.

The east and west walls had interior niches whose purpose was not clear. Although the mud structure did not have a prepared floor, there were several features inside it. A small circular stone hearth was next to a smooth flat stone in the center of the structure. South of the hearth, there was a concentration of bones and pottery, and burned soil was found along the north wall.

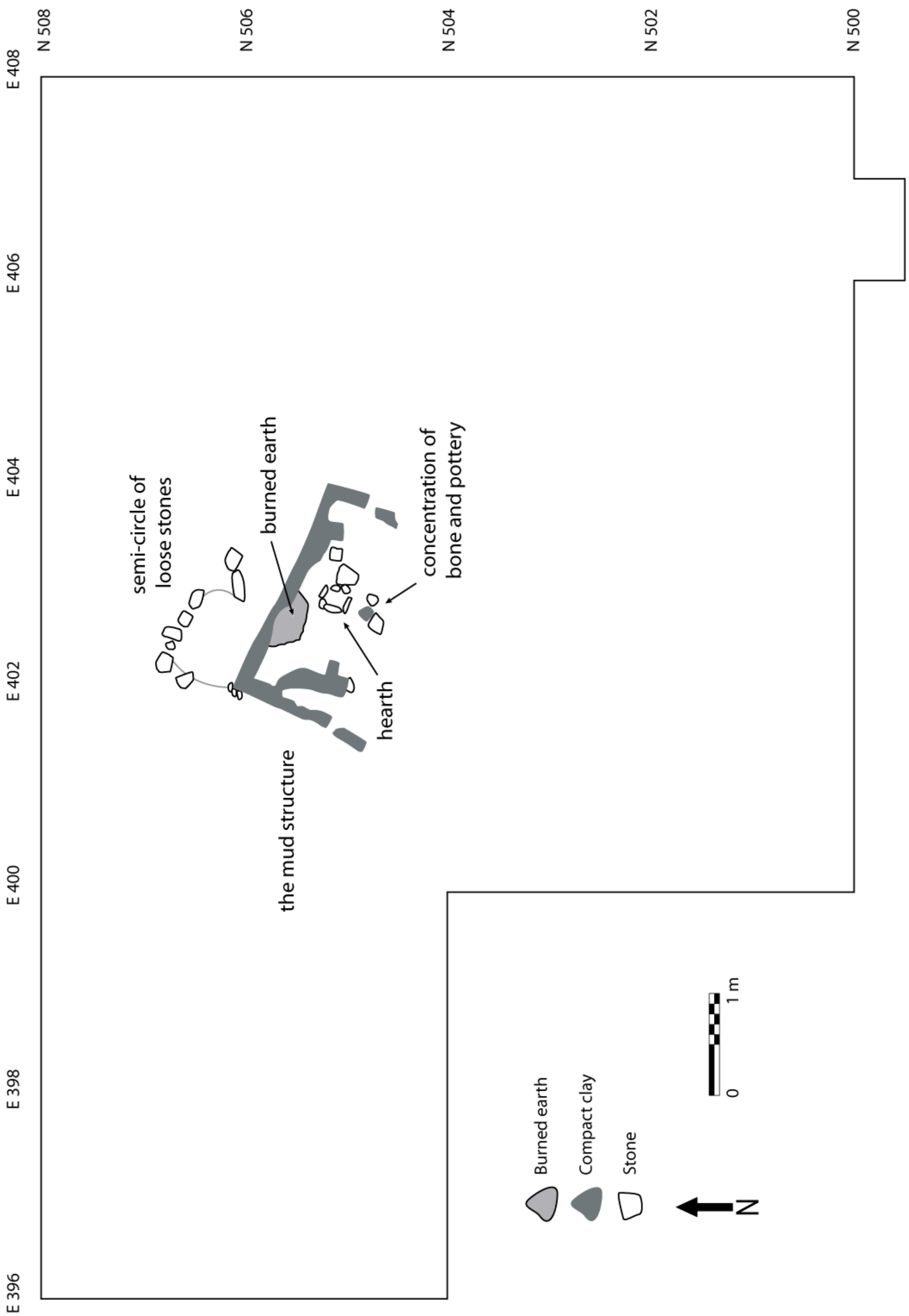


Figure 5.60: The mud structure had three walls and was open to the southwest. The 10 cm-high foundation was made of compact red clay. Inside the structure, there was a small circular stone hearth, a concentration of bone and pottery, and an area of burned earth. North of the structure, there was a semi-circle of loose stones.

Outside of the structure, there was a semi-circular formation of loose stones at the northwest corner. The soil inside and outside of these stones was the same and no artifacts were found *in situ* inside the ring. Therefore it is difficult to determine the purpose of these stones.

Although I did not realize it at the time, I soon learned that structure shared the same alignment as the still buried bench of Structure 1, the earliest ceremonial structure in this area. In addition, it was located in nearly the same place as the bench, though its northern wall was about 30 cm further north than the bench façade. It may be difficult to imagine how villagers could have achieved such a similar orientation and location, given that the mud structure was built on top of the ashy soil that buried Structure 1 (Cooking Hearth 3 and Stratum 8), but the interior of the mud structure provides one clue as to how this might have been accomplished. A single large stone that had been part of the bench façade was incorporated as a significant feature of the interior of the mud structure right next to the circular stone hearth (Figure 5.61).

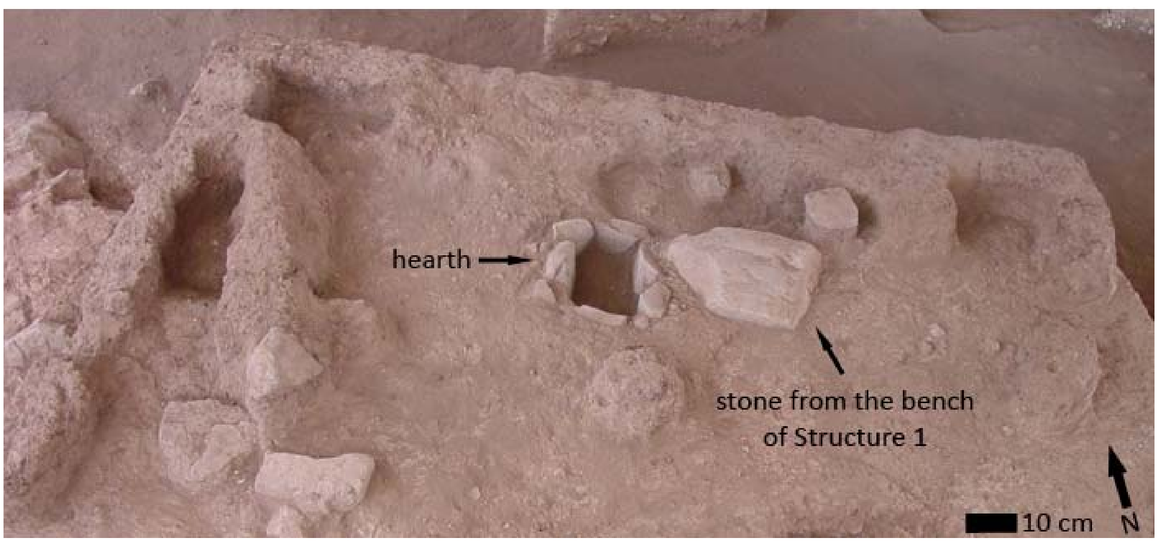


Figure 5.61: The mud structure. The large stone next to the circular hearth was part of the northern façade of the bench of Structure 1.

Although it is difficult to determine what the purpose of the mud structure might have been, the features and artifacts inside it do provide some clues. The structure did not resemble the simple houses that we found in Unit D. In addition, the small hearth was not like the large open cooking hearths that held high concentrations of carbonized botanical remains. Rather, it closely resembled the circular hearth associated with the burials from the final phase of Unit D. Also, it shared its location and alignment of with Structure 1, the earliest ceremonial structure in the Southern Sector. All of these characteristics suggest that the mud structure, though it was of simple construction, had a ritual purpose which was related to, but evolved from, the earlier ceremonial system.

Sample of the wall foundation

We took a soil sample of the wall foundation for flotation. No artifacts and few carbonized botanical remains were recovered.

Munsell color: 7.5 YR 4/6 strong brown

Botanical remains from flotation of 0.5 liters of soil (S-80)
6 *Chenopodium quinoa* carbonized seeds

The circular stone hearth

At the center of the structure, we found a small, circular stone hearth. It was about 25 cm in diameter and 7 cm deep. It was filled with two levels of ash. Each level was taken as a flotation sample. The low density of plant remains recovered indicates that this feature was probably not used to cook food. A radiocarbon date from the lowest level of this hearth dates the construction and use of the mud structure to 361 – 62 BC.

Circular stone hearth - Level A

The lowest level of the hearth was 4 cm thick. It was less ashy than Level B.

Munsell color: 7.5 YR 4/4 brown

Radiocarbon date: AA84430/Yuthu RC-61, 2,213 ± 61 uncalibrated radiocarbon years BP, 361 – 62 BC calibrated with sequential model (95.4% confidence)

Ceramic vessels
Two non-diagnostic body sherds with a diameter less than 2.5 cm

Botanical remains from flotation of 1.75 liters of soil (S-52)
No identifiable plant remains were recovered from this sample.

Circular stone hearth - Level B

The upper level in the hearth was ashy soil that contained burned animal bones. It was 3 cm thick.

Munsell color: 7.5 YR 5/2 brown

Ceramic vessels

No pottery was found in this soil

Botanical remains from flotation of 1.13 liters of soil (S-54)

1 *Chenopodium quinoa* carbonized seed

<u>*Concentration of animal bones and reworked pottery*</u>

There was a small concentration of burned llama bone and pottery fragments just south of the circular stone hearth.

Munsell color: 7.5 YR 4/3 brown

Reworked ceramic sherds

Non-discs	3 plainware

Botanical remains from flotation of 5.75 liters of soil (S-36)

2 *Oxalis sp.* carbonized seeds

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	11
Unidentified	11 (7 from flotation)

The soil stratum that accumulated inside the mud structure (Stratum 6)

A 6 cm-thick layer of semi-compact, light brown earth accumulated inside the mud structure.

Munsell color: 7.5 YR 4/3 brown

Ceramic vessels

Total sherds	109
Restricted vessels with a neck	5 plainware
Lid	1 plainware
Body sherds with diagnostic style	2 Chanapata redware, 1 Chanapata blackware, 1 pattern burnished

Reworked ceramic sherds

Disc	1 plainware
Non-discs	3 plainware

Chipped stone

Locally available stone (50% by count, 70.59% by weight)

Quartzite

Debitage: 2 proximal flakes (10.8 g)

Regionally available stone (25% by count, 22.88% by weight)

Andesite

Debitage: 1 proximal flake (3.5 g)

Exotic stone (25% by count, 6.54% by weight)

Obsidian

Debitage: 1 fragment of flake shatter (1.0 g)

Groundstone

Nondescript fragment of grinding stone that weighed 150 g.

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	7
Unidentified	10

Figure 5.62: Stratum 5 contained a concentration of loose rocks, grinding stones, pottery fragments, animal bone, and metal.

Stratum 5

Stratum 5 was very compact soil mixed with ash along the western edge of Unit A. It was 35 cm deep and contained a dense concentration of artifacts including loose rocks, animal bone, pottery, and metal (see Figure 5.62). Though the deposit extended beyond the limits of the Unit D, the excavated portion was 105 cm from north to south and 55 cm from east to west.

Munsell color: 7.5 YR 4/6 brown

Ceramic vessels

Total sherds	3 Chanapata redware, 10 plainware
Restricted vessels with a neck	3 plainware
Restricted vessels without a neck	3 Chanapata redware, 1 Chanapata incised, 1 plainware
Open vessels	3 Chanapata redware, 1 Chanapata incised, 1 plainware
Lids	5 plainware
Body sherds with diagnostic style	2 Chanapata redware, 1 Chanapata blackware, 1 Chanapata incised, 5 pattern burnished

Metal

One fragment of a metal pin was found in Stratum 5 in the concentration of artifacts (Figure 5.61). It had a round cross-section and a flattened end (Figure 5.63).

Figure 5.63: A fragment of a metal pin with a flattened end found in Stratum 5.

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	30

Stratum 4

Stratum 4 was a layer of loose soil mixed with ash and small rocks (6-10 cm deep) located in the western corner of Structure 1.

Munsell color: 7.5 YR 5/3 brown

Ceramic vessels

Total sherds	146
Restricted vessels with a neck	5 plainware
Open vessel	1 plainware
Body sherds with diagnostic style	6 Chanapata redware, 3 pattern burnished, 1 undetermined style

Chipped stone
Locally available stone (100% by count and weight)
Coarse grain quartzitic sandstone
Tool: 1 unimarginal flake tool (12.7 g)
Debitage: 2 proximal flakes (6.2 g)
Fine grain quartzitic sandstone
Debitage: 2 proximal flakes (3.7 g), 1 fragment of angular shatter (2.8 g)

Animal bone (NISP)
Mammals

Llama or alpaca (*Lama sp.*)	5

Stratum 3

Stratum 3 was a layer of semi-compact dark brown soil between 16 and 46 cm deep. This stratum buried the mud structure and was found throughout Unit A. It was the first intact cultural deposit we found in Unit A and represents the latest use of the Southern Sector during the Formative period.

Stratum 3 was associated with many burials that were either incorporated into the matrix or intruded into it (described in detail below). A cluster of 5 burials was found in the southeast corner that included one young man who had been stored as a mummy after his death (but before being buried at Yuthu), a group burial of three children, and an older woman. Separate from this cluster, I found the only formal capped tomb at Yuthu and it held a unique individual. The man in this tomb was the only person at Yuthu without cranial deformation and he had the most numerous and severe healed traumas to his face, chest, and extremities that are typical of violent interactions during raiding or warfare.

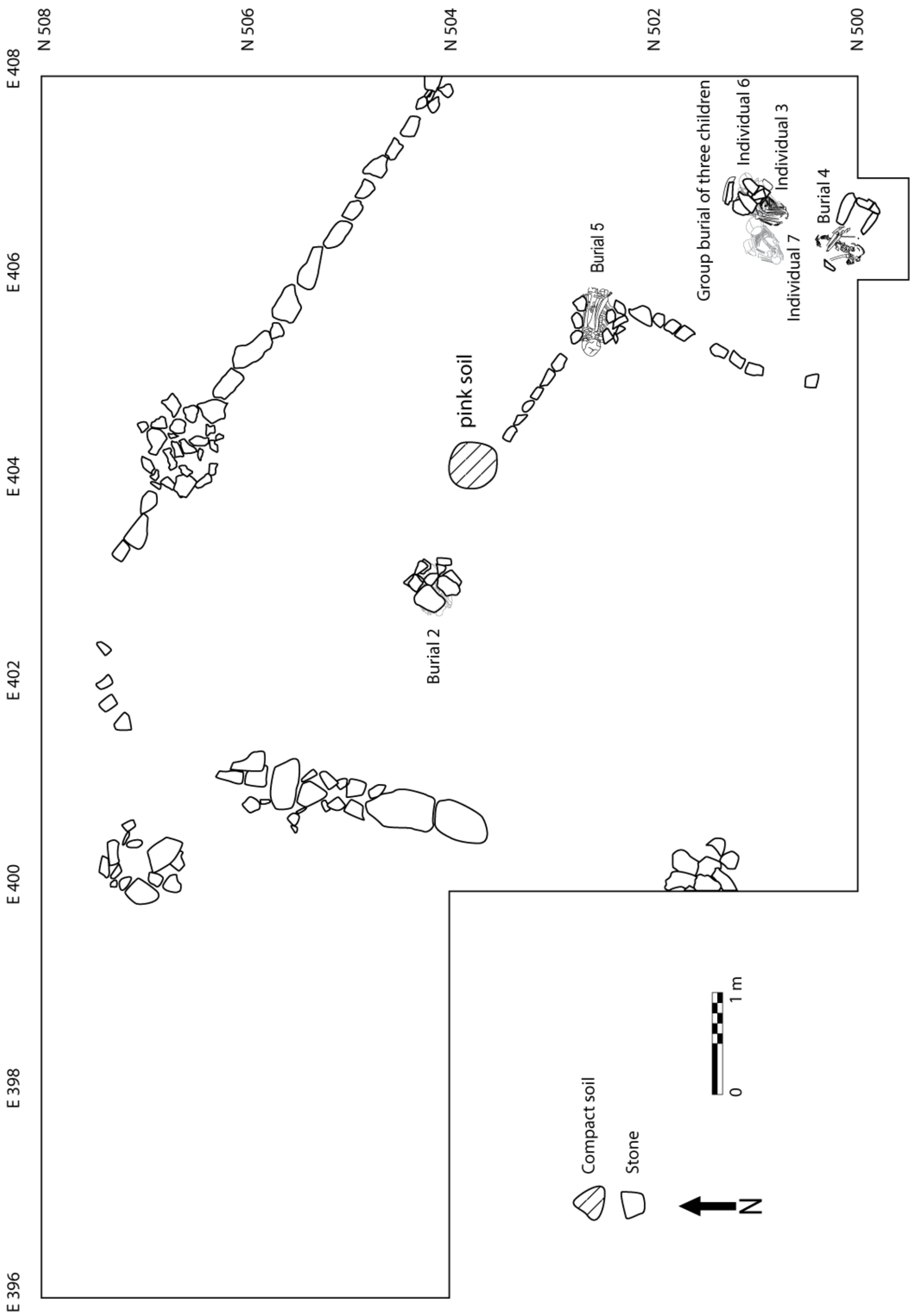


Figure 5.64: The final use of Unit A included human burials and several alignments and circular piles of stones that were one course high. A cluster of burials in the southeast corner included an 18-25 year old man that had been stored as a mummy before being buried at Yuthu (Burial 4), a group burial of three children (Individual 3 [7-8 years old], Individual 6 [11-12 years old], and Individual 7 [1-2 years old]), and possibly Burial 5, an older woman (46+ years). Burial 2 was a 26-35 year old man that was buried in a tomb capped with clay and stone.

In addition, four stone alignments one course high and three circular piles of stone were seated on top of Stratum 3. The lines of rocks shared the orientation of Structure 1 and the mud structure; that is, they were oriented according to the long and short axes of the platform. Although it is possible that these stones served as foundations for superstructures of adobe, cane, or another perishable material, I found no evidence of adobes and no seeds from plants that may be used for thatch in this area. Furthermore, only two of the alignments formed a corner (as you might expect of a structure foundation). The rest of the alignments were isolated features. The lines that formed a corner did so at the location of Burial 5.

Though we took many flotation samples from this stratum, carbonized plant remains were either completely absent or present in very low numbers, indicating that no cooking took place. It seems most likely that these lines of stones were related to the mortuary function of the space and that no significant human activities other than burial rites took place at this time.

Munsell color: 7.5 YR 4/3 brown

Ceramic vessels

Total sherds	17,008
Restricted vessels with a neck	57 Chanapata redware, 1 Chanapata blackware, 2 Chanapata incised, 22 pattern burnished, 2 undetermined style, 526 plainware
Restricted vessels without a neck	10 Chanapata redware, 2 Chanapata incised, 18 pattern burnished, 162 plainware
Open vessels	56 Chanapata redware, 2 Chanapata blackware, 6 Chanapata incised, 15 pattern burnished, 159 plainware
Open vessels with a diameter greater than 30 cm	22 Chanapata redware, 2 Chanapata blackware, 7 pattern burnished, 23 plainware
Lids	5 Chanapata redware, 2 Chanapata blackware, 1 pattern burnished, 47 plainware

Body sherds with diagnostic style	190 Chanapata redware, 5 Chanapata blackware, 52 Chanapata incised, 337 pattern burnished, 4 undetermined style
Reworked ceramic sherds	
Discs	2 pattern burnished, 50 plainware
Non-discs	1 Chanapata redware, 20 plainware

Chipped stone

Locally available stone (65.50% by count, 86.85% by weight)

Coarse grain quartzitic sandstone

Tools: 2 unimarginal flake tools (22.8 g), 3 bimarginal flake tools (25.3 g)

Debitage: 5 proximal flakes (80.9 g)

Fine grain quartzitic sandstone

Tools: 1 hafted biface (28.9 g), 6 unimarginal flake tools (59.1 g)

Debitage: 13 proximal flakes (50.4 g), 3 fragments of angular shatter (39.8 g)

Quartzite

Tools: 19 unimarginal flake tools (153.7 g), 7 bimarginal flake tools (58.8 g), 2 unidirectional cores (11.2 g), 4 multidirectional cores (117.4 g)

Debitage: 31 proximal flakes (117.3 g), 16 fragments of angular shatter (122.7 g)

Chert

Tools: 2 unimarginal flake tools (4.6 g)

Debitage: 1 proximal flake (0.6 g), 2 fragments of angular shatter (2.6 g)

Organic limestone

Tool: 1 unimarginal flake tool (5.9 g)

Travertine

Debitage: 12 unmodified manuports (167.1 g)

Regionally available stone (11.50% by count, 9.60% by weight)

Slate

Debitage: 5 proximal flakes (10.4 g)

Andesite

Tools: 3 unimarginal flake tools (28.8 g), 2 bimarginal flake tools (23.2 g)

Debitage: 1 proximal flake (2.2 g)

Diorite

Tool: 1 multidirectional core (9.6 g)

Debitage: 2 proximal flakes (18.8 g)

Rhyolite

Tools: 1 unimarginal flake tool (3.4 g), 1 bimarginal flake tool (4.9 g)

Debitage: 4 proximal flakes (10.1 g), 1 fragment of flake shatter (3.1 g)

Exotic stone (22.00% by count, 2.37% by weight)

Obsidian

Tools: 3 hafted biface projectile points (4.7 g), 1 hafted biface reutilized projectile point (1.0 g), 14 unimarginal flake tools (8.3 g), 9 bimarginal flake tools (5.4 g), 2 bimarginal flake tool reutilized projectile points (2.2 g), 2 combination flake tools (2.0 g), 1 combination flake tool projectile point (0.8 g), 1 multidirectional core (1.8 g)

Debitage: 7 proximal flakes (1.3 g), 4 fragments of angular shatter (1.7 g)

Unidentified (1.00% by count, 1.18% by weight)

Tool: 1 unimarginal flake tool (14.1 g)

Debitage: 1 fragment of flake shatter (0.5 g)

Worked bone

1 broad, flat long bone shaft fragment with pointed tip
2 broad, flat long bone shaft fragments with rounded tip
1 clothing pin (see Figure 5.65.a)
1 whistle-like hollow bone with two holes drilled in one end (see Figure 5.65.b)

(a) (b)

Figure 5.65: Notable worked bone from Stratum 3: (a) a clothing pin found in near the anthropomorphic stone figurine described below, and (b) a whistle-like object that is hollow and has two holes drilled into the top. When I blew into the hole, however, it did not produce a noise. It is possible that the drilled holes are for hanging the bone as a pendant by a cord.

Groundstone

Roughly spherical stone that fit into one hand with flattened surfaces created by grinding with back and forth or circular strokes (Group 1, Type A). The stone measured 9.18 x 8.74 x 5.06 cm; it weighed 570 g.

Fragment of a roughly spherical stone that fit into one hand with flattened surfaces created by grinding with back and forth or circular strokes (Group 1, Type A). The stone had pecking marks. About 50% of the object was present. It measured 5.34 x 5.34 x 4.31 cm; it weighed 90 g.

Grinding stone that fit in one hand with plano-convex cross section and flattened surfaces created by grinding with back and forth and rocking motions (Group 1, Type B). The stone measured 10.37 x 7.55 x 3.04 cm; it weighed 400 g.

Fragment of a grinding stone that fit in one hand with plano-convex cross section and flattened surfaces created by grinding with back and forth and rocking motions (Group 1, Type B). The stone had pecking marks. About 50% of the object was present. It measured 8.42 x 7.82 x 3.04 cm; the fragment weighed 400 g.

Fragment of a grinding stone that fit in one hand with plano-convex cross section and flattened surfaces created by grinding with back and forth and rocking motions (Group 1, Type B). About 60% of the object was present. The length and height were unknown; it was 8.10 cm wide. The fragment weighed 540 g.

Fragment of a grinding stone that fit in two hands with plano-convex cross section and flattened surfaces created by grinding with back and forth and rocking motions (Group 1, Type C). About 30% of the object was present. The length was unknown; it was 9.07 cm wide and 5.82 cm tall. The fragment weighed 650 g.

Fragment of an oval stone with rectangular cross section created by rocking the stone side to side along its edge (Group 2, Type D). The stone had pecking marks. About 15% of the object was present. The length and width were unknown; it was 4.24 cm tall. The fragment weighed 370 g.

Small oval stone with no flat surface that may have been in an early phase of use (Small Group 2, Type N). The stone had pecking marks. It measured 4.63 x 3.21 x 3.49 cm; it weighed 60 g.

Fragment of a small oval stone with no flat surface that may have been in an early phase of use (Small Group 2, Type N). About 50% of the object was present. It was 5.96 cm long and 4.47 cm wide; height was unknown. The fragment weighed 60 g.

Stone that could be pinched between the fingers with a flattened surface created by back and forth or circular strokes (Small Group 3, Type P). The stone measured 3.25 x 2.51 x 2.28 cm; it weighed 20 g.

Fragment of a groundstone axe. About 20% of the object was present. The length was unknown; it was 3.25 cm wide and 1.21 cm tall. The fragment weighed 20 g.

Fragment of a greenstone plate. Very little of the object was present. Length and width were unknown; it was 2.34 cm thick. The fragment weighed 190 g.

Metal

One thin metal object 2.1 cm long and 1.2 cm wide was found in Stratum 3.

Botanical remains from flotation of 5.75 liters of soil (S-8)
No identifiable plant remains were recovered from this sample.

Botanical remains from flotation of 4.75 liters of soil (S-30)
No identifiable plant remains were recovered from this sample.

Botanical remains from flotation of 6.3 liters of soil (S-31)
No identifiable plant remains were recovered from this sample.

Botanical remains from flotation of 6.0 liters of soil (S-34)
4 *Oxalis sp.* carbonized seeds

Botanical remains from flotation of 5.6 liters of soil (S-35)
2 *Chenopodium quinoa* carbonized seeds

Botanical remains from flotation of 5.6 liters of soil (S-37)
4 *Chenopodium quinoa* carbonized seeds

Botanical remains from flotation of 5.25 liters of soil (S-38)
No identifiable plant remains were recovered from this sample.

Botanical remains from flotation of 5.75 liters of soil (S-44)
8 *Chenopodium quinoa* carbonized seeds
4 *Poaceae* carbonized seeds

Animal bone (NISP)

Mammals	
Llama or alpaca (*Lama sp.*)	257 (2 from flotation)
White-tailed deer (*Odocoileus virginianus*)	1
Guinea pig (*Cavia porcellus*)	25 (19 from flotation)
Andean fox (*Dusycion culpaeus*)	2
Unidentified	283 (176 from flotation)
Birds	
Duck (*Anas sp.*)	1
Hawk (*Buteo sp.*)	1
Macaw (*Ara sp.*)	1
Unidentified	3
Human bone	7

Special objects

One cloudy gray quartz crystal that weighed 6.6 g (see Figure 5.66)

Two objects found in this stratum merit description, though they were not found in meaningful cultural contexts, such as a house or an activity area. First, I found a block of sandstone shaped like a pyramid with a flat top that may have been an *illa*, or stone representation of a mountain (Figure 5.67).

Second, I found a stone carved into the shape of a human in a seated and flexed position (see Figure 5.68). The pose of the body was very similar to that of nearly all of the individuals buried at Yuthu. The figure's hat, eyes, nose, and part of the body were painted red. When we found the figurine, it was near the top of Stratum 3 and had been snapped in two at the neck.

Figure 5.66: A cloudy grey quartz crystal was found in Stratum 3.

Figure 5.67: A pyramid shaped block of sandstone. Though the form of this stone may be primarily natural, it may have been an *illa*, or stone representation, of a mountain.

Figure 5.68: A small statue of a human figure in a seated and flexed position. The hat, nose, eyes, and parts of the body were painted red. The figurine was broken in two at the neck.

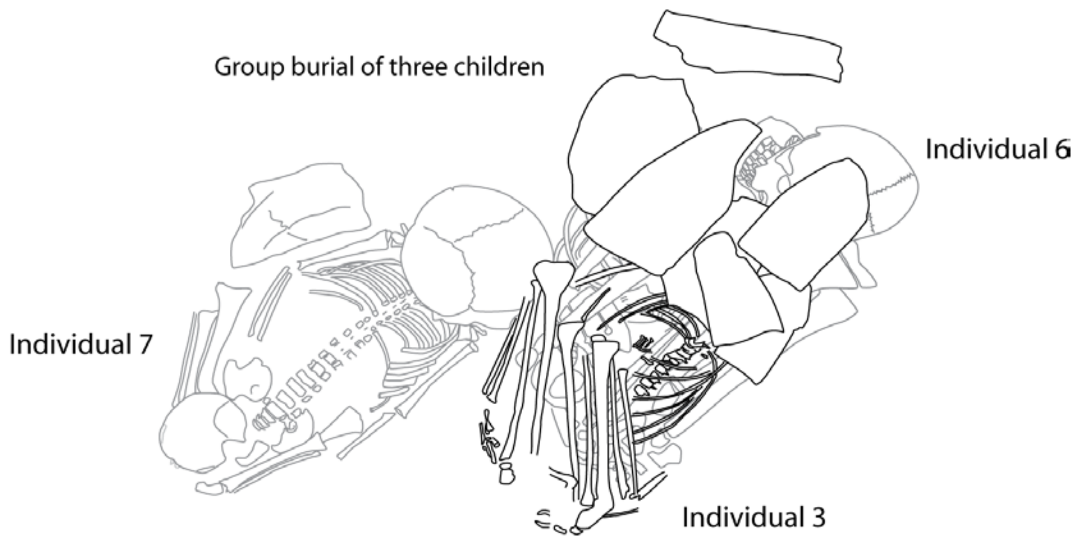
A cluster of burials in the southeast corner

A cluster of burials in the southeast corner of Unit A included: (1) the burial of an 18-25 year old man that had been stored above ground as a mummy before being buried and (2) a group burial of three children (11-12 years old, 7-8 years old, and 1-2 years old). The oldest child had been killed by a blunt head trauma, the middle child was buried without its head or neck, and an adult pelvis fragment was placed over the feet of the youngest child. I found no evidence of burial depressions or graves for any of these four individuals. It is likely that they were buried together, not in a pit, but by being laid on the existing ground surface and then covered with soil.

Nearby, an older woman (over 46 years old) was buried where two rock alignments met to form a corner (Figure 5.64). It is not clear whether she was interred at the same time as the other individuals in the southeast corner, but when she was buried, mourners burned an offering on top of her body. Each of these individuals is described in detail below.

Burial 4

Burial 4 was an 18-25 year-old man buried in a flexed seated position with a red stone in his lap (Figure 5.69). At shoulder height, a three-sided stone box was located on his right side and a single rock on his left. We recovered Chenopodium, Galium, and Oxalis seeds from the flotation sample of the contents of that box. Because this burial was located close to the modern ground surface, modern plowing had broken the knees. The skeleton was only 29% complete and in fair condition.



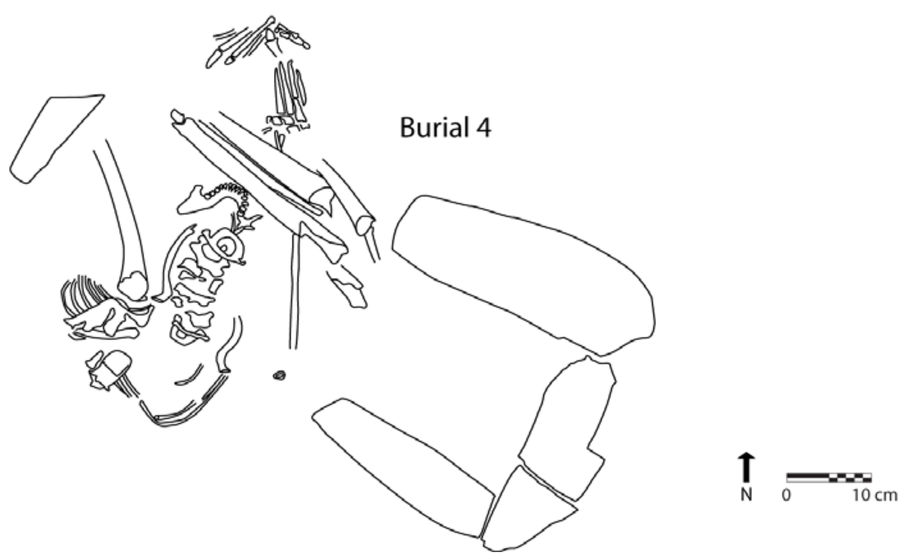


Figure 5.69: A cluster of burials in the southeast corner included: (1) a seated burial of an 18-25 year old man who previously had been stored above ground as a mummy (Burial 4); (2) a group burial of children including a 7-8 year old (Individual 3); a 1-2 year old child (Individual 7); and an 11-12 year old child who had been killed by a blow to the head (Individual 6).

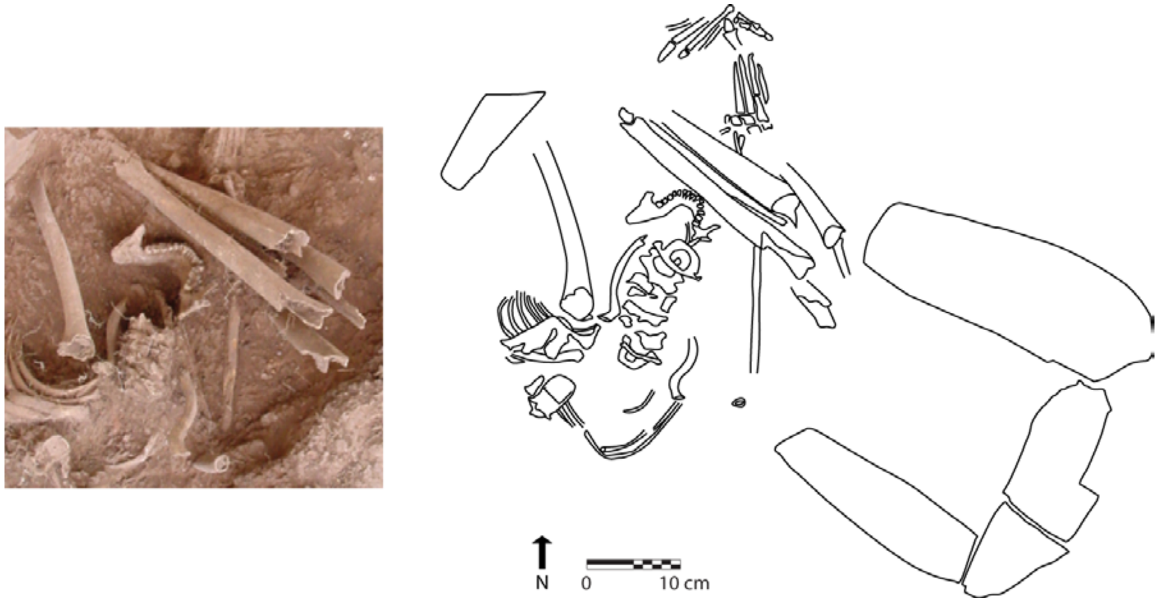


Figure 5.70: Burial 4 was an 18-25 year old man. The cranium was missing from the grave. Note that the vertebrae of the neck and the mandible were found in correct anatomical position and did not have cut marks. This man was probably stored above ground as a mummy before being buried at Yuthu.

Like Burial 19, the cranium was absent from this burial, and the vertebrae of the neck and the mandible were present, yet there was no evidence of cut marks on the mandible or vertebrae. Unlike Burial 19, however, this grave had been disturbed by modern plowing, raising the possibility that the cranium might have been removed by the modern villagers of Cruzpata. If, like the knees, the cranium had been removed by a tractor or plow, fragments of cranial bones would have remained in or around the grave. No such bones were present. Therefore, like Burials 19 and 16, this man was stored in an above ground location until the soft tissue had decayed enough to remove the cranium before burying the rest of the mummy bundle in the Southern Sector (Burial Type 4). No evidence of how or where the cranium might have been used was recovered.

The man had carious lesions on 3 teeth, slight to moderate calculus, and rotation of the lower canines due to crowding.

Botanical remains from flotation of 6.0 liters of soil in the stone box of Burial 4 (S-33)

2 *Chenopodium quinoa* carbonized seeds
1 *Galium sp.* carbonized seed
1 *Oxalis sp.* carbonized seed

Chipped stone

Locally available stone (100% by count and weight)

Fine grain quartzitic sandstone

Tool: 1 multidirectional core (63.4 g) (see Figure 5.71)

Chert

Tool: 1 unimarginal flake tool (0.5 g)

Figure 5.71: A multidirectional core of fine grain quartzitic sandstone was in the lap of Burial 4.

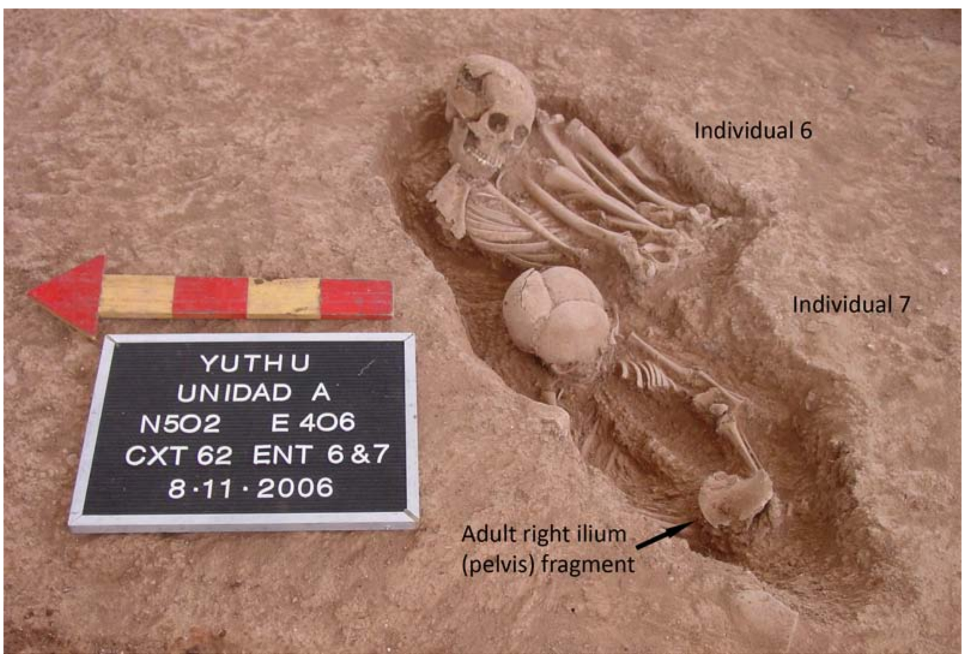


Figure 5.72: An 11-12 year-old child (Individual 6) and a 1-2 year-old child (Individual 7) were stratigraphically lowest in the group burial of children. Note the adult right ilium fragment placed over the feet of the youngest child.

Group burial of three children

North of Burial 4, three children were buried together in a single grave shortly after death (Burial Type 1). The principal individual at the center of the grave was an 11-

12 year old child that had been killed by a blow to the skull (Individual 6). Relative to this individual, a 1-2 year old child was buried at the feet (Individual 7), and a 7-8 year old child above the head (Individual 3). The 7-8 year-old was buried without his or her head and neck, and a fragment of an adult pelvis was placed over the feet of the 1-2 year-old. A textile fragment made of plant fiber was found under Individual 7 (Figure 5.72), indicating that the children were originally wrapped in a textile or were wearing clothing. Each individual is described in detail below, in stratigraphic order from lowest to highest.

Figure 5.73: A fragment of textile made from plant fiber found below the skeleton of Individual 7.

Individual 7

Individual 7 was a 1-2 year old child of indeterminate sex with tabular erect cranial modification. The child was buried in a flexed position on his or her back. The skeleton was in good condition and 100% complete. He or she had an unhealed periostitis on the 11th right rib shaft (external surface), a marker of non-specific infection. An adult right ilium fragment (part of the pelvis) was placed over the feet. The inclusion of an adult pelvis is significant because the right pelvis was taken from Burial 16, a 26-35 year old man who had been stored above ground as a mummy before the bone was removed and he was buried in the Northern Sector during the last phase of use in that area (see Chapter 4). There is no way to know if this pelvis fragment belonged to that man, but the important thing to note is that at least in one case, a bone that had been saved from an adult mummy was eventually buried with other individuals.

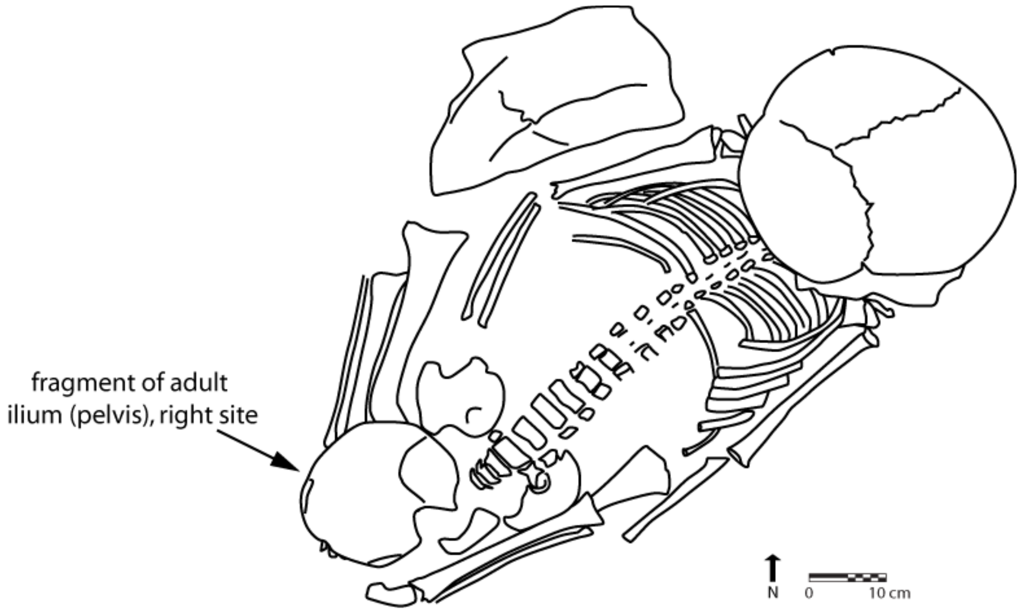


Figure 5.74: Individual 7 was a 1-2 year old child.
A fragment of an adult pelvis was placed over this child's feet.

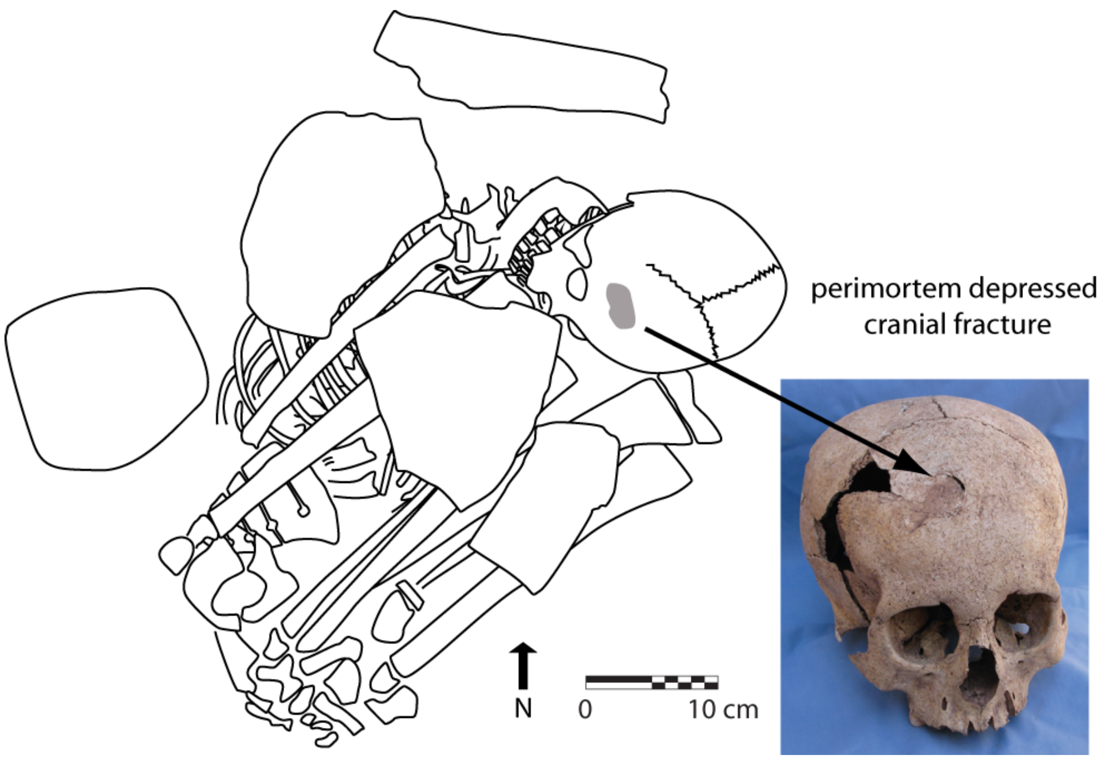


Figure 5.75: Individual 6 (an 11-12 year old child) was probably killed by the blow that left the perimortem depressed cranial fracture with open fracture lines above the right eye. Photo courtesy of Valerie Andrushko.

Individual 6

Individual 6 was an 11-12 year old child of indeterminate sex with tabular erect cranial modification. The body was in a flexed position on the left side. The child had unhealed cribra orbitalia, a non-specific stress indicator. In addition, there was a perimortem depressed skull fracture with open fracture lines above the right eye. This wound almost certainly caused the child's death. The skeleton was 100% complete and in good condition.

Figure 5.76: Individual 3 (a 7-8 year old child) was stratigraphically highest in the group burial. The entire head and neck of this child was removed before it was buried, and four rocks were placed where the head should have been.

Individual 3

Individual 3 was a 7-8 year old child of indeterminate sex buried in a flexed position on the right side directly above Individual 6. The skeleton was in good condition, but only 86% complete. The entire head and neck of the child was missing– including the cranium, mandible, and vertebrae of the neck (except for a very small fragment of the left mandibular condyle). No cut marks were noted on the vertebrae. Four rocks were arranged where this child's head would have been located and above the head of Individual 6.

It is not clear when or how the head was removed, but it seems likely that it was removed intentionally during the Formative period. Though the burial was relatively close to the modern ground surface, if the bones had been removed by a tractor or plow, shattered fragments would have been left in or around the grave.

Burial 5

Burial 5 was an older woman (over 46 years old) with tabular erect cranial modification. She was buried in a flexed position on her back and encircled by stones. In addition, her burial was located where two stone alignments met to form a corner (see Figure 5.64). Evidence of burning was found on her face and lower legs, indicating that an offering was burned on top of the body during the burial ritual. The skeleton was in fair condition and 79% complete (Burial Type 3).

The woman had appendicular joint disease in the right and left hip and knee joints. She also had antemortem loss of one tooth, one periapical abscess, one periodontal abscess, pulp exposure due to attrition (3 teeth), moderate to severe calculus, and congenital absence of the lower left third molar.

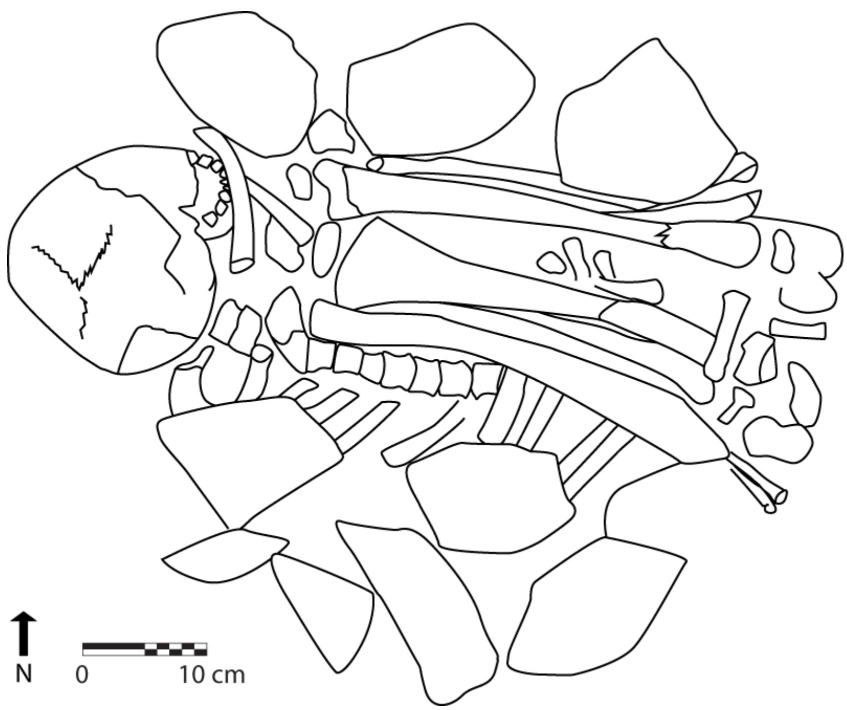


Figure 5.77: Burial 5 was an older woman (over 46 years of age). An offering was burned on top of her face and lower legs as part of the burial ritual.

Other features of Stratum 3

<u>*Burial 2*</u>

Burial 2 was a 26-35 year old man with unique burial treatment and unusual physical characteristics. He was the only person buried in a circular pit with straight walls and a flat bottom that was covered with a clay and stone cap. The pit was 120 cm in diameter 30 cm deep. His body was in a seated, flexed position, and he had slick red clay under his ribs and a bird bone in his mouth. The skeleton was 100% complete and in good condition (Burial Type 1).

This man was the only individual buried at Yuthu without cranial modification. In addition, he had many healed traumas that reflect involvement in interpersonal fighting; including healed facial fractures to the right frontal along the supraorbital ridge, the right zygomatic and maxilla on the lower orbital rim, the right and left nasal bones, and the left maxilla. He also had a massive right tibia fracture with healed infection, a healed fracture to the left 4th metacarpal, and at least eight healed rib fractures. Artificial abrasion on the lower left central incisor resulted in lingual wear down to the tooth root.

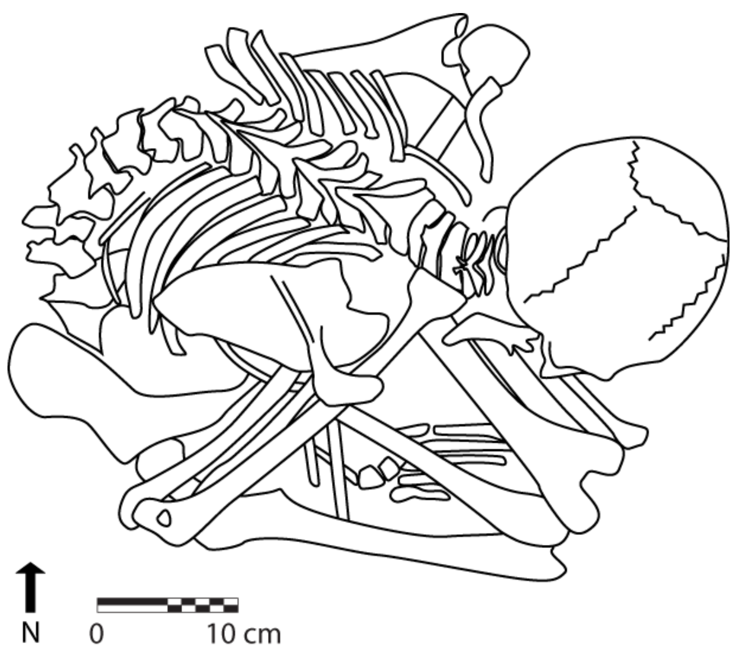


Figure 5.78: Burial 2 was a 26-35 year old man who had unique burial treatment and physical characteristics. He was the only individual at Yuthu without cranial modification. In addition, he had many healed traumas and stress markers indicative of being involved in raiding or warfare. He was buried in a circular pit with a clay and stone cap. A bird bone was placed in his mouth.

He also bore several marks of stress. He had active and healed periostitis on the left tibia (a mark of non-specific infection), spinal joint disease, appendicular joint disease in the right and left hip joints, and a small button osteoma on the left parietal. He had carious lesions on 2 teeth, two periapical abscesses, one periodontal abscess, pulp exposure due to caries on one tooth, pulp exposure due to attrition on 3 teeth, calculus flecks, and moderate alveolar resorption.

<u>Contents of the burial matrix</u>

The tomb was filled with semi-compact light brown soil.

Munsell color: 7.5 YR 4/4 brown

Ceramic vessels

Total sherds	46
Restricted vessels with a neck	2 Chanapata redware, 1 plainware
Body sherds with diagnostic style	3 Chanapata redware, 1 Chanapata blackware

Chipped stone
- *Regionally available stone* (50% by count, 92.86% by weight)
  - Debitage: 1 proximal flake (3.9 g)
- *Exotic stone* (50% by count, 7.14% by weight)
  - Obsidian
    - Tool: 1 unimarginal flake tool (0.3 g)

<u>Tomb cap</u>

The cap of the tomb was comprised of hard clay covering five stones and the cranium of the man.

Munsell color: 7.5 YR 4/4 brown

Ceramic vessels

Total sherds	1 (non-diagnostic)

Botanical remains from flotation of 5.25 liters of soil (S-39)

No identifiable plant remains were recovered from this sample.

Animal bone (NISP)

Mammals

Unidentified	12 (all from flotation)

<u>*Lump of pink clay*</u>

There was a circular deposit of pink, compact clay mixed with bits of bedrock (gypsum).

Munsell color: 5 YR 5/3 reddish brown

Ceramic vessels

Total sherds	10
Body sherd with diagnostic style	1 pattern burnished

Botanical remains from flotation of 3.12 liters of soil (S-32)

3 *Chenopodium quinoa* carbonized seeds

Animal bone (NISP)

Mammals

Unidentified	54 (52 from flotation)

<u>*Intrusion breaking Ritual Canal 2*</u>

An intrusive pit cut into Stratum 3 and destroyed part of Ritual Canal 2. It was filled with loose stones and semi-compact light brown soil. It was 110 cm from east to west, 60 cm north to south, and 40 cm deep.

Munsell color: 7.5 YR 4/3 brown

Ceramic vessels

Total sherds	293
Restricted vessels with a neck	2 Chanapata redware, 11 plainware
Restricted vessel without a neck	1 plainware
Open vessels	1 Chanapata redware, 1 pattern burnished, 2 plainware
Lid	1 plainware
Body sherds with diagnostic style	2 Chanapata redware, 1 Chanapata blackware, 5 pattern burnished

Chipped stone

Locally available stone (100% by count and weight)

Quartzite

Debitage: 2 proximal flakes (6.3 g)

Animal bone (NISP)

Mammals	
Llama or alpaca (*Lama sp.*)	5
Field mouse (*Muridae*)	1 (from flotation)
Unidentified	3

Stratum 2

Stratum 2 was compacted topsoil (14 to 24 cm deep) that was disturbed by modern plowing. Therefore, this stratum contained not only Formative artifacts but also modern trash like plastic bags, bottle caps, and broken glass. No intact prehistoric features were encountered and the materials from this stratum were not analyzed.

Munsell color: 7.5 YR 4/4 brown

Stratum 1

Stratum 1 was dark brown, loose topsoil soil between 15 and 20 cm deep. It was very disturbed from modern plowing. Like Stratum 3, this soil contained both Formative artifacts and modern trash. Therefore, the materials from this stratum were not analyzed.

Munsell color: 7.5 YR 5/4 brown

Excavations in Unit B

During the exploratory season in 2005, I chose to place a small test unit in the interior of the platform in order to determine whether any structures were built in the center of the flattened area. Unit B was a small 2 x 2 m test pit that was excavated in arbitrary levels. Therefore, the assignment of artifacts to strata below is approximate. I found 1.54 meters of Formative deposits, and although we excavated to bedrock (white gypsum), no structures or archaeological features were found (see Figure 5.79). Because this was a test pit, no chipped stone tools from Unit B were analyzed. No Munsell colors were recorded for this unit.

Stratum 5

Stratum 5 was the lowest cultural stratum in Unit B. The base of the level was not flat, but rather sloped downward from the west, or toward the interior of the platform (see Figure 5.79). Therefore, it is possible that there was another intrusion like the one in the northwest corner of Unit A or that the interior floor of the sunken structure may have had multiple levels. The soil was very compact clay that was light grayish brown in color. It contained few artifacts and was between 20 and 70 cm deep. Fragments of a greenstone basin were found resting on bedrock at the base of this level (seeFigure 5.81).

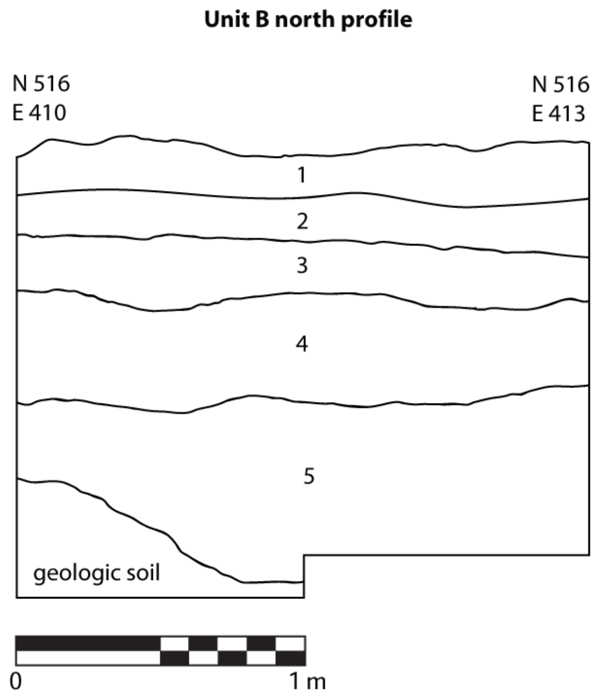


Figure 5.79: The north profile of Unit B in the Southern Sector

Ceramic vessels

Total sherds	1,335
Restricted vessels with a neck	1 Chanapata redware, 2 pattern burnished, 37 plainware
Restricted vessels without a neck	1 Chanapata incised, 13 pattern burnished, 21 plainware
Open vessels	1 Chanapata redware, 1 Chanapata blackware, 1 pattern burnished, 11 plainware
Open vessels with a diameter greater than 30 cm	2 plainware
Lids	1 Chanapata redware, 1 plainware

Body sherds with diagnostic style	4 Chanapata redware, 7 pattern burnished

Reworked ceramic sherd

Non-disc	1 plainware

Worked Bone

1 broad, flat long bone shaft fragment with pointed tip (see Figure 5.80)

Figure 5.80: Worked bone found in Stratum 5.

Groundstone

Fragment of a grinding stone that fit in one hand with plano-convex cross section and flattened surfaces created by grinding with back and forth and rocking motions with pecking marks (Group 1, Type B). About 50% of the object was present. The length was unknown; it was 8.74 cm wide and 4.50 cm tall. The fragment weighed 400 g.

Fragment of a grinding stone that fit in one hand with plano-convex cross section and flattened surfaces created by grinding with back and forth and rocking motions (Group 1, Type B). About 50% of the object was present. The length was unknown; it was 6.93 cm wide and 3.63 cm tall. The fragment weighed 160 g.

Fragment of a long and narrow stone with triangular cross section that could be held between the fingers (Small Group 1, Type L). About 70% of the object was present. The length was unknown; it was 1.91 cm wide and 1.66 cm tall. The fragment weighed 30 g.

Unmodified flat stone that might have been used as a base for small scale grinding or pulverizing (Type S). About 40% of the stone was present. The length and width were unknown; it was 1.15 cm tall. The fragment weighed 100g.

Nondescript fragment of grinding stone that weighed 100g.

Three fragments of a polished greenstone basin with a rectangular base with rounded corners. The length and height of the basin were unknown. It was 13.6 cm wide. The base was about 1.5 cm thick. The exterior of the basin had carved geometric designs (see Figure 5.81).

Figure 5.81: A greenstone basin found resting on bedrock at the base of Stratum 5.

Animal bone (NISP)	
Mammals	
Llama or alpaca (*Lama sp.*)	38
Guinea pig (*Cavia porcellus*)	1
Unidentified	21
Birds	
Coot (*Fulica sp.*)	1
Unidentified	1

Stratum 4

Stratum 4 was silty soil that contained a very high density of ceramic fragments and other artifacts. It was light grayish brown in color and between 25 and 40 cm deep.

Ceramic vessels	
Total sherds	323
Restricted vessels with a neck	9 plainware
Restricted vessels without a neck	10 plainware

Open vessels	9 plainware
Body sherds with diagnostic style	4 Chanapata redware, 1 Chanapata blackware, 1 pattern burnished

Groundstone

Stone that could be pinched between the fingers with a flattened surface created by back and forth or circular strokes (Small Group 3, Type P). The stone measured 3.98 x 3.15 x 2.39 cm; it weighed 40 g.

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	47
Guinea pig (*Cavia porcellus*)	1
Unidentified	6

Stratum 3

Stratum 3 was light brown soil between 12 and 24 cm deep. It was the stratigraphically highest intact Formative period deposit.

Ceramic vessels

Total sherds	351
Restricted vessels with a neck	21 plainware
Open vessels	4 plainware
Body sherds with diagnostic style	4 Chanapata redware, 1 Chanapata incised

Worked Bone

1 flat bone tool with pointed end (see Figure 5.82)

Figure 5.82: A pointed bone tool found in Stratum 3.

Animal bone (NISP)

Mammals

Llama or alpaca (*Lama sp.*)	40
Unidentified	18

Stratum 2

Stratum 2 was compacted topsoil that had been disturbed by modern plowing (20 cm deep). No artifacts from this stratum were analyzed.

Stratum 1

Stratum 1 was loose topsoil that had been disturbed by modern plowing (15 to 40 cm deep). No artifacts from this stratum were analyzed.

Discussion of the deposits and features in the Southern Sector

I was first drawn to the Southern Sector because of its unusually flat, rectangular shape and the high density of broken pottery on the surface. It was unlike the Northern Sector or any other contemporary settlement that I had visited. I wanted to know if Formative period villagers had modified the shape of the hill, and if so, for what purpose? Was the platform a terrace for an elite house? Did it support ceremonial architecture, such as a single temple or multiple ritual structures? Perhaps it held a large, open plaza for community events. Each of these possibilities excited me because any one of them would help me to understand the social organization of the village – whether politics were managed by a powerful chief, an exclusive council, multiple lineage heads, or inclusive community gatherings.

When I began excavating, I knew almost nothing about ceremonial or domestic architecture in Formative period Cusco. When I began to find thick stone benches and short, yet well-made canals, I knew that this architecture was special, but I was not sure exactly what purpose it served. When I compared the features of Unit A with the Northern Sector, however, it became clear that what I found was not simply an elaborate house (see Chapter 6 for a detailed comparison and discussion). Rather, Unit A held a sequence of ceremonial structures that have provided some information on the ceremonial life of the community that served as an integrative mechanism even as it provided a venue for political competition and change.

First, the hill was flattened and Structure 1 was built. Structure 1 had no walls and was not roofed, but was a sunken court or plaza open to the sky. In fact, it was the bench surrounding the sunken floor that gave the platform its rectangular shape in this area. The original construction included a ritual canal that carried water out from the interior of the structure and three burials were included as offerings. During the use of Structure 1, architectural elements were added including a stone-lined cist and clay floor. Eventually, the structure was significantly remodeled and Ritual Canal 1 was replaced with Ritual Canal 2. Several burials, mostly of children, were included during this renovation. This was the largest building with the most elaborate construction methods found at Yuthu, but despite significant overhaul, the structure was eventually abandoned and buried.

A comparable structure was never again built in this area. Instead, a simple three-sided structure with mud wall foundations was built in nearly the same place as the bench of Structure 1. It too was abandoned and buried. The last use of the Southern Sector included human burials associated with simple alignments of stones one course high. The alignments were oriented in the same way as the earlier structures in the area. They were not associated with floors or activity areas, and therefore, it seems likely this sector was used exclusively for mortuary rites after people no longer built or used substantial ritual structures there. Given that this pattern of rock alignments and burials characterized the final use of both the Northern and Southern Sectors, I propose that the entire site was used as a cemetery after people no longer lived there day-to-day.

Based on snail species recovered at Yuthu, there was a transition from a cooler and wetter climate to a drier climate during the use of the site. *Gastrocopta sp.*, gastropods that thrives in drier environments, were found only in Stratum 3 of Unit A. *Charopidae*, which live in cool and wet climates, were found in lower strata in both sectors (Stratum 7 and below in Unit A and Stratum 4 and below in Unit D) (Vásquez Sánchez and Rosales Tham 2009). This climatic shift coincides with the abandonment of the village and its conversion to a cemetery.

Unfortunately, I was not able to excavate a large enough portion of the platform to determine with certainty how many structures there were during each phase of use, or even the entire shape and size of Structure 1. It may have been one of many similar sunken courts located on the platform. Alternatively, it might have been the corner of a single large structure. And, there are many other possibilities. Despite limited excavations, I learned a great deal about Formative ceremonial architecture. Major features of the sacred system included water manipulation, multi-phase burial treatments, and rituals conducted in open plazas that occupied a special place on the landscape. Chapter 7 will discuss the ritual system of Yuthu in detail, incorporating anthropological data and theory, ethnography, and ethnohistory.

Chapter 6

Domestic and ceremonial spaces

The final use of Yuthu was as a cemetery. Excavations so far have not uncovered any structures or activity areas suggesting that people lived at the site at that time. Instead, it is most likely that people living in nearby villages (including the growing major site of Ak'awillay) brought their dead to be buried in this place because it continued to have special meaning to them. At that time, both the Northern and Southern Sectors were used for similar burials. Before that, however, there were significant differences between the constructions and activities in the two sectors. The most striking difference was in the type of architecture present in each area (see Figure 6.1, a final view of excavations).

In this chapter, I will contrast the structures in each sector and compare them with contemporary Formative domestic and ceremonial architecture from other parts of highland Peru. In addition, I will use the artifacts and features recovered from each sector to establish which kinds of activities were carried out in each area. This analysis will show that while the Northern Sector was used for daily domestic activities, the Southern Sector was used for ceremonial practices.

The two sectors cannot be linked by strata or features that occur in both areas because they are far apart and separated by a gully. Therefore, stratigraphy cannot be used to determine which constructions were relatively earlier or later. The chronology of the two areas can only be compared based on radiocarbon dates which are not sufficiently fine-grained to determine whether or not the architectural differences can be attributed to time. All dates from both sectors overlap within a 95.4% probability range (see Figure 6.2). Although radiocarbon dates are a crude measure, for this analysis I will consider the two sectors to be roughly contemporary. Future refinements in ceramic chronology may help to better define the sequence of building events in the village, but I doubt that temporal factors could ever explain the vast differences between the two sectors. It is more likely that the differences reflect distinct uses rather than changes over time in architectural style and building techniques.

Final view of Unit A, Southern Sector

Final view of Unit D, Northern Sector

Figure 6.1: The final view of excavations in Units A and D highlight the drastic differences in architecture between the Northern and Southern Sectors, respectively.

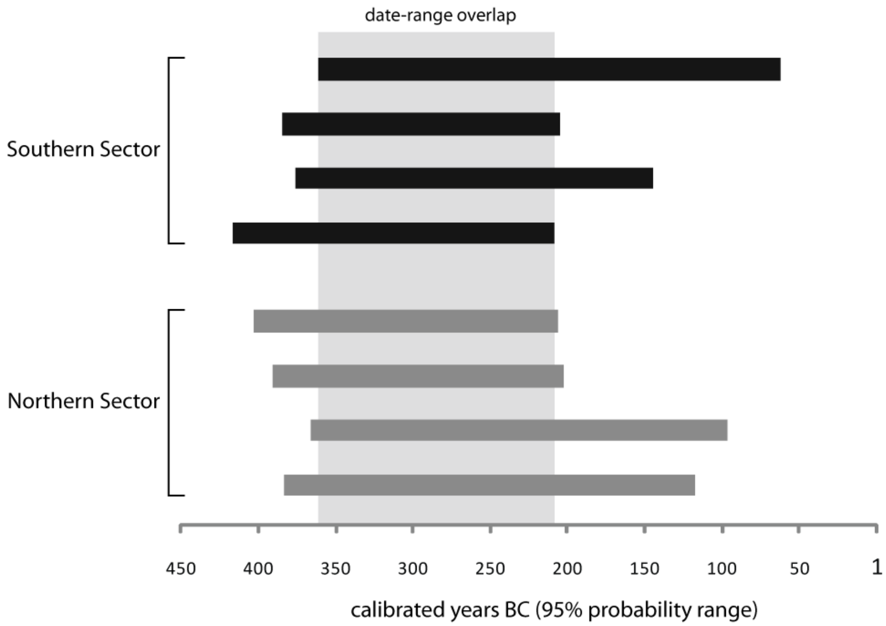


Figure 6.2: All radiocarbon dates from the Northern and Southern Sectors of Yuthu overlap within the 95.4% probability range. Therefore, the chronology cannot be refined sufficiently to assess to what extent those differences may be due to time.

Domestic architecture in the Northern Sector

Earlier structures

The first domestic structures were pit houses excavated into sterile soil. The shape of these houses remains unknown because they were only partially exposed, but based on the excavated portions, they were probably elongated ovals, possibly with a truncated end that served as an entryway. They were roofed with thatch and sometimes had interior hearths. Although these structures were simple and could be built quickly, it seems that they were used for fairly long periods. For example, one of the structures had superimposed floors and was remodeled in order to add a circular storage pit (which was separated from the main living space by a wall). The small structures had little interior space and were associated with exterior storage pits and a hearth. Therefore, most domestic activities took place outdoors. Two of these structures were found in the Northern Sector, one dating to 393-204 BC and the other to 366-396 BC (calibrated, 95.4% confidence).

Later structures

A later domestic structure was built on the surface of the ground. The northwest wall was a single course of stones covered by orange soil and an adobe was found nearby. Therefore, it is likely that this house had a stone foundation with adobe brick walls. Along the southeast edge of the wall, the presence of a series of superimposed trampled surfaces demonstrates that the structure was used for a fairly long period. Alongside these trampled surfaces, an indoor hearth was filled with ash. Unfortunately, the structure was disturbed by later agricultural activity and its total size and shape are unknown. The straight northwest wall and the shape of the interior floor indicate that it was probably rectangular or trapezoidal.

This structure was contemporary with a very large outdoor cooking hearth which also had many superimposed trampled surfaces indicating that it was used for a long time. This hearth area contained not only food remains, but also many tools for craft activities such as bone tool production debris, chipped stone tools, finished bone tools, and many obsidian projectile points. As was the case for the earlier pithouses, it seems that most domestic activities took place in outdoor areas. This house was stratigraphically above the pit houses and dated to 409-209 BC.

Domestic architecture at Yuthu in a regional perspective

Very few Formative period households have been excavated in the Andean highlands, so I will make broad temporal and spatial comparisons. Roughly contemporary structures from Cusco include four circular houses 2 to 2.8 m in diameter with post holes, red clay walls, and a stone foundation at Batan Urqu. These structures are distinct from those found at Yuthu and are slighly later; one dated to 151 BC – AD 68 (Zapata 1998).

North of Cusco, at Chavín de Huántar, houses were made of stone during the Janabarriu phase (400-200 BC). They were rectangular with two or more rooms and occasionally had niches in the walls (Burger 1998). In the Jauja-Huancayo Basin of Junín, there were circular and rectangular subterranean pithouses with perishable superstructures dating roughly to 1300-50 BC (Browman 1977). Near Huancavelica, houses consisted of one small and one large circular semi-subterranean structure, each with foundations made of uncoursed stones (Burger and Matos Mendieta 2002).

South of Cusco, in the Titicaca Basin, the earliest structure excavated at Lukurmata (200 BC – AD 50) consisted of a stone foundation and walls of adobe, cane, or brush. The house had no internal features; hearths and refuse pits were outside. Therefore, most activities took place outdoors (Bermann 1994). Further south in highland Bolivia, Wankarani houses varied (1800 BC – AD 300). In the early part of this period (2014-1525 calibrated years BC), domestic units were groups of multiple dwellings with smaller ancillary buildings. Each structure was circular with a sunken floor about 10 cm below a wall foundation made of stone (Rose 2001). Structures abandoned by the 12th century BC were oval with stone foundations and mud brick or cut sod walls and interior stone hearths (Bermann and Castillo 1995).

No previously excavated Formative house was exactly like the structures at Yuthu, but there were some common construction techniques such as subterranean floors and simple one or two-row stone foundations for perishable superstructures. Perhaps the most widespread characteristic is that structures were small and were associated with large outdoor activity areas. In many time periods, outdoor spaces were an important element of highland domestic areas (Nash 2009). Additional excavations may identify regional patterns in domestic architecture, but as of now, it seems that the ways that families organized their activities in domestic space varied greatly during the Formative period.

Ceremonial architecture in the Southern Sector

The sunken structure (Structure 1)

The earliest construction in the Southern Sector was very different from that of the Northern Sector. The natural hill was leveled to create a platform overlooking Lake Huaypo. Because only a small part of the platform was excavated, the total number and layout of structures remains unknown. Excavations did uncover part of an unroofed sunken structure on the southwestern edge of the platform. The southern wall was a stone-faced bench with a paved top and clean clay mortar divided into two sections. At the western end, the bench met a single-faced retaining wall at approximately a right angle. The eastern edge of the western section of the bench abutted another retaining wall that extended outside the structure. The section of the structure behind this retaining wall would have been surrounded by a ground surface higher than the interior floor. In contrast, the eastern section of the bench would have been visible from inside and outside of the structure (see Figure 6.3). The eastern part of the bench ended where it met a stone-lined canal that carried water from the interior of the structure to the edge of the platform. Beyond the canal, we found no additional walls or benches, so it is possible that this structure may have been open to the southeast (or toward the end of the platform facing Lake Huaypo and Cerro Huanacaure).

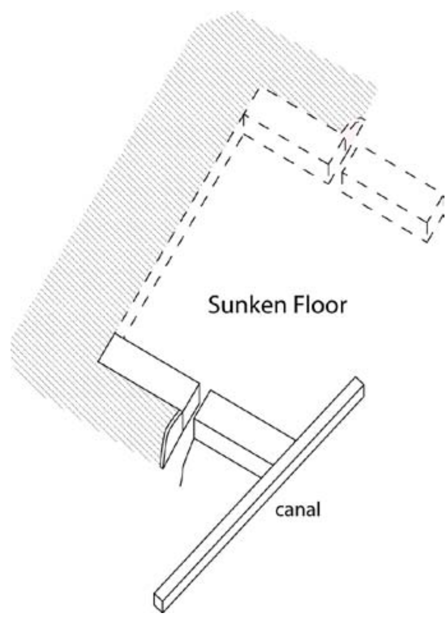


Figure 6.3: Simplified sketch of what the original construction of Structure 1 might have looked like based on the excavated section (indicated with solid black outline). The dotted lines are speculations of what the rest of the structure might have looked like if it were basically symmetrical and rectangular. Only additional excavation will be able to determine the true layout.

During the use of the structure, features were added or changed over time. A prepared white clay floor was placed on either side of the canal. The western end of this floor was associated with a stone-lined cist. An oval pit was dug outside the eastern section of the bench and a large pit was excavated in front of the canal intake. Over time, the canal filled with layers of soil mixed with flecks of charcoal that were deposited by water or another flowing liquid. Eventually, this canal was replaced by a new one that shared the same intake but was curved so that the discharge was offset to the east. This canal did not contain soil deposited by liquids. It seems that shortly after it was built, the whole structure was covered with soil and abandoned.

The mud structure

After the sunken structure was buried, some time passed and several strata of soil accumulated over the platform. Later, a three-sided structure with mud foundations was built in nearly the same place as the eastern section of the bench of Structure 1. It had a small circular stone hearth. It is difficult to determine what the function of this structure might have been, though the small size and lack of a fourth wall make it unlikely it was a permanent residence.

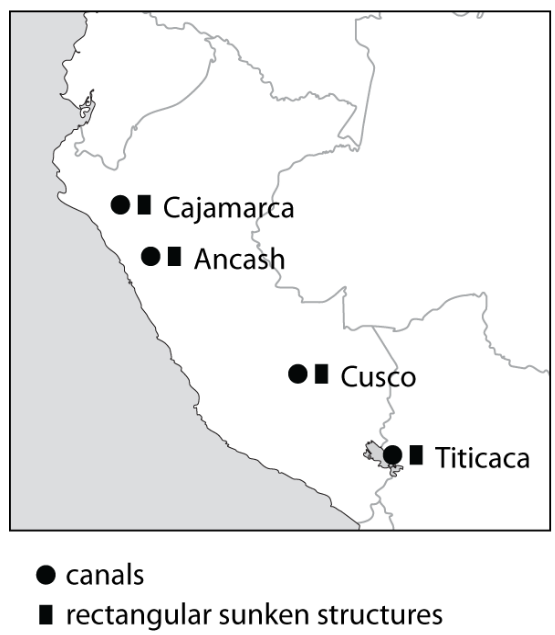


Figure 6.4: The distribution of sunken rectangular structures and canals in Formative period Andean highland ceremonial architecture.

Ceremonial architecture at Yuthu in a regional perspective

Two aspects of the architecture in the Southern Sector of Yuthu were similar to features found at contemporary sites throughout the highlands. Sunken rectangular structures are best known from the altiplano surrounding Lake Titicaca, though they have been found as far north as Cajamarca. In addition, canals were associated with a variety of ceremonial architecture traditions from the Titicaca Basin to Cajamarca.

Rectangular sunken structures with stone faced walls

The "cult of the sunken court" has been identified as part of a larger tradition of raising and lowering areas that was important in ceremonial architecture dating from the Preceramic period to the Middle Horizon on the Andean coast and in the highlands (Moseley 1985). The earliest sunken courts were circular and were most common on the coast (Williams 1985). This discussion will be limited to rectangular sunken structures that were built and used in the highlands at roughly the same time as Structure 1 at Yuthu.

Sunken rectangular structures were an important part of Titicaca Basin ceremonial architecture, especially at Middle Formative period sites that were roughly contemporary with Yuthu (800 – 250 BC) (Bandy 2006; Beck 2004a; Hastorf 2005; Hastorf 2008; Janusek 2004; Stanish 2003). These structures were usually made by cutting a depression into sterile soil or bedrock and lining it with unworked field stones. Less often, the interior walls were covered with plaster. On the Taraco Peninsula, where a great deal of research on this period has been carried out, sunken structures have a long history. The earliest and simplest was the Choquehuanca enclosure at Chiripa that dates to 1000-800 BC. However, most sunken rectangular structures at Chiripa and other sites were built and used in the Middle Formative period (800 – 100 BC) (Bandy and Hastorf 2007; Chávez 1988; Chávez and Chávez 1997). At Kala Uyuni, a pair of sunken courts was built on a raised area. The lower court near the front of the platform was not completely subterranean, but had one wall that was visible on both sides (Cohen and Roddick 2007).

In Cusco, much less research has been carried out, but it seems that sunken rectangular structures may have been equally important. During the first excavations at a Formative period site, Rowe found the retaining wall of a subterranean structure. Unfortunately, excavations were too limited to determine its shape or size (Rowe 1944). More recently, Zapata excavated two large Formative period sites with sunken courts. At Muyu Urqo in the Cusco Valley, a sunken rectangular plaza atop a stepped platform was associated with Chanapata derived style pottery. It had benches for the northeast and southwest walls, an altar in the center, and offerings of buried llamas on the interior (Zapata 1998). At Batan Urqu, located 40 km east of Cusco along the route to the Titicaca area, retaining walls of a sunken structure were associated with Chanapata pottery, but the entire structure was not excavated.

Further north, sunken rectangular courts were built and used during the Formative period, but they were incorporated as one element of much larger monumental ceremonial complexes. In Cajamarca, at Kuntur Wasi, sunken courts were part of a larger complex with platforms, circular courts, stairways, terraces (800 – 300 BC) (Kato 1993). At Chavín de Huántar, a sunken rectangular court was built in front of the Black and White Portal of the New Temple. This construction dated to 400-200 BC according to traditional chronologies (Burger 1984, 1992; Lumbreras 1989). More recent studies date its construction and use to 900-500 BC (Kembel 2008). In either case, the sunken rectangular structure was added to an already large and diverse ceremonial complex with subterranean galleries, U-shaped constructions, and a sunken circular court.

Table 6.1: Dimensions of sunken rectangular structures from the southern Andes.

Location	Dimensions	Date	Source
Muyu Urqo (Cusco)	16.8 x 12.6 m 1.2 m deep	600 BC-AD 200	Zapata 1995
Llusco enclosure, Chiripa (Titicaca)	13.5 x 11.5 m 0.7 m deep	800-400 BC	Paz Soría 1999
Choquehuaca, Chiripa (Titicaca)	13 x 13 depth not reported	1000-800 BC	Bandy 2001
Santiago enclosure, Chiripa (Titicaca)	14 x 14 m depth not reported	1000-800 BC	Dean and Kojan 1999
Lower court, Kala Uyuni (Titicaca)	18 x 18 m at least 1 m deep	800-100 BC	Cohen and Roddick 2007
Upper court, Kala Uyuni (Titicaca)	18 x 15 m 0.6 m deep	800-100 BC	Cohen and Roddick 2007
Ch'isi (Titicaca)	14 x 14 m depth not reported	220-10 BC	Chávez and Chávez 1997

Structure 1 was more similar to sunken rectangular courts from the Titicaca Basin. Each of these structures was rectangular or trapezoidal in shape. Most were completely subterranean, but there was a precedent for structures that were partly subterranean and partly visible from both sides at Kala Uyuni. Zapata has already proposed that sunken courts in Cusco were linked to the traditions of the altiplano, though there were important differences between the two areas (Zapata 1998). I would agree the ceremonial architecture at Yuthu is part of a larger tradition in the southern highlands.

Canals

Sacred waterways were widespread elements of ceremonial architecture at early sites in the Andes (Moseley 1985). Water manipulation was an important part of ritual among the Inka and continues to be important in many parts of the Andes today. During the Formative period, canals associated with ceremonial architecture were common from the Titicaca Basin to Cajamarca. These canals may have been used for rituals involving water. Alternatively, they may have served as drains, especially during the rainy season when daily precipitation would have flooded semi-subterranean structures.

On the Taraco Peninsula in the Titicaca Basin, canals were associated with both above-ground and semi-subterranean ritual structures of the Middle Formative period (800-400 BC). Excavators rarely discuss the function of these canals, but at the Llusco enclosure at Chiripa, a stone-lined canal was found with its intake located at the lowest point in the northwest corner of a sunken court. This canal served as a drain that emptied into a nearby stream (Paz Soría 1999). At Alto Pukara, a canal was located outside the northwest corner of an above-ground ritual structure (Beck 2004b). This canal did not drain the structure, but the excavator did not suggest another function.

At Huaricoto in the Callejón de Huaylas, Ancash, the earliest canal was built during the late Huaricoto phase associated with ceremonial architecture consisting of circular structures with fire pits and subterranean flues atop a terraced mound. During the later Capilla phase (700-200 BC), the ceremonial architecture was elaborated to include a sunken circular plaza and megalithic stone walls. At that time, additional canals were added that emptied into the original canal (Burger and Salazar-Burger 1980, 1985). The excavators recognized the possibility that the structures served as drains, but because drainage was very good on the platform, they suggested that the canals had a "nonutilitarian function related to that of the adjacent ceremonial hearths" (Burger and Salazar-Burger 1985:129).

Nearby at Chavín de Huántar, a large system of stone-lined canals ran through and beneath the galleries and temple structure (900-400 BC in the old chronology; 1200 – 800 in the new chronology) (Bustamante and Crousillat 1974). Lumbreras (1976) has suggested that the extent and elaboration of the canal system exceeded practical drainage needs and would have provided acoustic effects for ceremonies within and around the temple (though this interpretation remains controversial). In this area, canals were not used as simple drains, but were incorporated as elements of ceremonial practice.

Many canals have been found in the Cajamarca area at Huacaloma, Layzón, and Kuntur Wasi. At Huacaloma canals were built during three separate phases. The earliest stone-lined canal was associated with ceremonial architecture consisting of three platforms, stairways, small rectangular rooms with painted polychrome murals, and retaining walls dating between 1000-500 BC (Matsumoto 1993; Ōnuki, et al. 1985; Terada 1985). Because this canal was on the highest platform where there was no water source and drainage was good, authors have suggested that it was used for ritual activities (Ōnuki, et al. 1985). After these ceremonial structures were buried and no longer used, a pair of canals sharing the same intake (one straight and one serpentine in form, very similar to the canals at Yuthu) were built near a large hearth on the mound (500 – 200 BC). The serpentine canal still had soot stuck to the interior wall that probably came from fire in the hearth (Terada 1985). In this case, authors suggest that these canals were used to carry burned offerings. Even later, when there was no longer ceremonial architecture at the site (after 200 BC), some structures located in a low area off the platform were associated with subterranean canals. In that area, drainage was poor and authors suggest that these canals probably served as drains (Ōnuki, et al. 1985).

At Layzón, two stone canals were associated with the elaborate ceremonial architecture consisting of platforms and structures (250-50 BC). Although both canals pass under or beside similar circular platforms, they suggest that (1) the simpler one (which was simply a channel cut into bedrock) served as a drain and that (2) the other stone-lined canal was too large to be a drain and may have served a ritual purpose (Kato and Seki 1985; Seki 1993).

At Kuntur Wasi around 700-250 BC an extensive canal network included subterranean stone-lined canals under rectangular sunken courts that linked with above-ground canals located in passageways that expelled water off the side of the large artificial platform (Kato 1993; Ōnuki 1995). These canals certainly would have drained the ceremonial architecture, but the dramatic way that the water would have jetted out of the retaining walls indicates that they were built with more than functional purposes in mind.

Throughout highland Peru, canals were integrated into ceremonial architecture. When they were associated with low areas and closed sunken courts, these structures have been interpreted as functional drains that were necessary to maintain the integrity of the architecture and to keep the area dry so that it could be used for ceremonial activities. When canals were located on top of mounds or artificial platforms, they have more often been interpreted as architectural features that were used to carry out rituals associated with water. In at least one case, these rituals also included the burning of materials in a nearby hearth.

At Yuthu, the inclination of the canals carried water away from the interior of Structure 1, yet it seems unlikely that they were built only to drain water. A sunken floor certainly might have filled with water during the rainy season, but other features of the structure were sufficient to drain it. A channel carved into bedrock ran through the gap between the two sections of the bench. Loose soil deposited in this area indicates that water flowed through this gap and that the drain was occasionally cleaned. In addition, the structure might have been open to the southeast. If that were the case, the three-sided building would not have required elaborate drainage. The intake of the canals was delimited by stones placed above the level of the original floor, and the soil deposits inside the canal were deposited by flowing liquids and contained flecks of charcoal. Therefore, it is most likely that the canals in the Southern Sector of Yuthu carried offerings of poured water or other liquids mixed with burned materials.

<u>Regional comparisons</u>

Some elements of the architecture in the Southern Sector of Yuthu were present in Formative period ceremonial structures throughout the Andean highlands. Knowing that sunken rectangular structures and canals were common has helped establish that the Southern Sector was a ceremonial area while the simple structures of the Northern Sector were residences. Yet, the simple architecture at Yuthu clearly lacked many of the features that were characteristic of better known Formative traditions. For example, constructions were never as large and did not integrate as many different buildings as the ceremonial complexes located further north in Ancash and Cajamarca. So far, no pottery or stone sculpture with elaborate iconography has been found at any Formative period site in Cusco. In contrast, rich and easily recognizable art styles were typical of other religious traditions. Chavín de Huántar is famous for its widespread art style, stone sculpture, and ritual paraphernalia such as conch shell trumpets. Likewise, the Yaya-Mama religious tradition of the altiplano had its own unique iconography, stone monoliths, and characteristic ceramic "trumpets" (which were probably not instruments).

Unlike these areas north and south of Cusco, the material culture at Yuthu was very simple. The most elaborate objects were large bowls with painted interior rims and a few figurines in the shape of humans, animals, or crops. The following section examines the distribution of more mundane artifacts such as pottery, stone tools, and food remains to determine whether the practices carried out in and around the apparently ceremonial architecture of the Southern Sector were consistent with what archaeologists would expect to see in public or ritual spaces and whether the activities that took place near the simple architecture of the Northern Sector were typical of daily domestic life.

Activities in the Northern and Southern Sectors

In order to establish which activities took place in each sector, I will examine artifact distributions on three levels. First, I will compare the overall trends in artifact distribution considering all materials recovered from contexts that were not disturbed by modern agricultural activities. Given that the two sectors are separated by a gully, it is likely that the refuse that accumulated in each area came from activities carried out nearby. I feel confident that this assumption is valid for most deposits, with the possible exception of the layer of soil that covered the walls of Structure 1 which may have been brought from elsewhere to deliberately bury it. After establishing overall patterns, I will zoom in to compare similar features in both sectors including hearths, refuse in pits, and floors.

Because the volume of excavated soil was not recorded in the field, density will be calculated two ways: (1) when quantities are sufficient, I will calculate density using only objects collected in flotation samples, and (2) when too few items were recovered from flotation to use this method, I will approximate density by calculating the ratio of objects to the total number of ceramic sherds from the same contexts. Although this measure is not ideal, total sherd count should be a reasonable proxy for total soil excavated. For example, 72 m^2 excavated in the Northern Sector yielded 56,860 sherds, and 84 m^2 excavated in the Southern Sector yielded 53,857 sherds. For all analyses, I consider $p < 0.05$ to be significant.

Overall, a greater variety of activities (including food preparation and craft production) took place in the Northern Sector and a more limited set of activities took place in the Southern Sector. In addition, the use of the Northern Sector was more continuous and intense than that of the Southern Sector.

Overall trends

When comparing all artifacts recovered from the Northern and Southern Sectors, there is a clear contrast. Food remains and tools were more dense and varied in the Northern Sector. This implies more intense use of the space for a more varied set of activities.

Density measures for faunal remains in each area produced conflicting results. When considering only bones recovered from heavy fractions of flotation, the mean density was significantly higher in the South than the North (North=3.540/liter; South=13.308/liter, $t=3.7891$, $p=0.0003$). However, the ratio of all bones recovered to pottery fragments was similar in both sectors (there were only 25% more bones per sherd in the Northern Sector). Taking into account only the food animals with more than two elements recovered (birds, deer, guinea pig, and camelids), the Southern Sector yielded much more camelid bones and less bird, deer, and guinea pig compared with the Northern Sector ($\chi^2=113.371$, $df=3$, $p<0.0001$).

The density of carbonized botanical remains in the Northern Sector was more than twice that of the Southern Sector (North=3.389/liter; South=1.457/liter; $t=-4.00594$, $df=157.639$, $p<0.0001$). There were no significant differences between plants present. In

Peru, corn is often a special or ceremonial food (Hastorf 2003). Therefore, it would be interesting to know whether corn was found in or around ceremonial architecture at Yuthu. Overall, however, corn remains were much denser in the Northern Sector (North=0.256/liter; South=0.013/liter; t=-5720, df=156.6442, $p<0.0001$). Breaking the comparison down by plant parts, we note that cupules, seeds, and a coronata were present in the Southern Sector while cupules, rachises, and seeds were present in the Northern Section. The lower density of corn in the Southern Sector does not rule out the possibility that it was a special food at Yuthu (especially if it were consumed as mush or corn beer). But, it was probably not prepared and cooked in the ceremonial areas.

Overall, contrasting densities of carbonized plant remains probably indicate that more cooking took place in the Northern Sector. The more even distribution of faunal remains may indicate that eating and discard took place equally in both sectors with the main difference being that more camelids were eaten in the Southern Sector.

If more food preparation took place in the north, one might expect grinding stones to be more common or varied in that area. In fact, the densities of one or two-handed grinding stones do not vary much (North = 0.0012; South=0.0008). Large mortars were located in the domestic sector, but the distribution of hand stone types was similar in both areas. There were no significant differences in the distribution of stones used with back and forth versus rocker motions or stones held with one versus two hands. The only notable difference was in the ratio of small pulverizing or polishing stones that were held between the fingers to pottery which was 3.2 times higher in the north than the south (North=0.0025; South=0.0008).

Pottery vessels can also provide information about food preparation and serving. When comparing pottery from each sector, there were more open vessels and restricted vessels without a neck in the Southern Sector and more restricted vessels with a neck in the Northern Sector (χ^2=87.113, df=3, $p<0.001$). The distribution of wares also varied significantly (χ^2=175.736, df=6, $p<0.0001$). More plainware was found in Northern Sector while more redware and pattern burnished pottery was recovered from the Southern Sector. Overall, relatively more plainware and cooking vessels with necks were found in the domestic area while more open serving bowls and painted redware were recovered from the ceremonial sector. This pattern indicates that although food preparation and serving took place in both areas, relatively more serving in fancier pottery took place in the Southern Sector.

It is more difficult to attribute specific functions to stone tools without very detailed analyses. But the types and materials of chipped stone recorded at Yuthu do yield interesting patterns. The overall density of chipped stone tools and debitage recovered from flotation was more than twice as high in the Northern Sector (North=0.9856/liter; South=0.4545/liter; $df=91.42$, $t=-4.560$, $p<0.0001$). When comparing the distribution of tools and debitage, relatively more tools were found in the Southern Sector ($\chi^2=6.261$, $df=1$, $p=0.0041$). This was also true when only materials recovered from flotation were considered ($\chi^2=9.692$, $df=1$, $p=0.0071$).

The presence of local, regional and exotic stone materials varied between sectors (considering only materials collected in flotation). By count, more exotic high quality stone (obsidian) was found in the Southern Sector and more locally available low quality sedimentary and metamorphic stones were found in the Northern Sector ($\chi^2=13.596$, $df=2$, $p=0.0016$). By weight, high quality regionally available materials were more common in the Southern Sector ($\chi^2=145.613$, $df=2$, $p<0.0001$). There was no significant difference in the mean weight of tools or debitage collected from flotation. With the analyses carried out so far, there is no indication of differing sizes or types of tools in the two sectors. Rather, the density of chipped stone and the quality of materials varied between the two areas. This may indicate more intense or frequent activities using stone tools in the Northern Sector, and more selective use of high quality tools for less frequent activities in the Southern Sector.

Some tools are difficult to assign specific functions. Bone tools were highly variable and difficult to compare by type, but the ratio of bone tools to pottery sherds was 2.5 times greater in the Northern Sector (North =0.0012/sherd; South=0.0005/sherd). Reworked ceramic sherds were classified as either disc or non-disc shapes. Discs were more common in the Southern Sector while other shapes occurred more frequently in the Northern Sector ($\chi^2=44.682$, $df=1$, $p<0.0001$).

Other classes of artifacts were too rare to consider with statistical comparisons. Five out of 7 pieces of quartz crystal were found in the Southern Sector. Five out of 6 beads were found in the Northern Sector. Six out of 9 metal objects were from the

Northern Sector. More stone and pottery figurines and carved stones were found in the Southern Sector including anthropomorphic figures, a painted circular stone, a pyramid-shaped stone, a human figurine, a polished stone human head, a painted white rock, a double-headed figurine in bone, and a rock shaped like a potato. In the Northern Sector, there were two figurines, both in the shape of animals (a bird and possibly a llama or alpaca) and a carved antler.

Overall, the most notable differences between the sectors were in density and quality of objects recovered. This indicates that activities were more frequent and varied in the Northern Sector in houses and outdoor activity areas as would be typical of daily life. In contrast, fewer activities were carried out in and around the ceremonial architecture of the Southern Sector. This may result from a smaller set of proscribed activities that were considered appropriate and were carried out only during periodic rituals.

Refuse in Pits

The pits considered in this analysis include: one stone-lined cist and two large oval intrusions in the Southern Sector and six storage pits from the Northern Sector. Although the primary use of these features varied, it is likely that the secondary use of each was to be filled with refuse. It is likely that the pits from the Northern Sector were filled with domestic trash discarded during the use of the pit houses and that the intrusions in the Southern Sector were filled with refuse during the use of Structure 1. In contrast, in the preceding section the materials considered came from a variety of features and contexts, making it less certain that the materials were associated with activities carried out nearby.

The density of botanical remains did not vary significantly between sectors, though the mean number of carbonized botanical remains per liter was nearly twice as high in the Northern Sector (North = 4.22/liter; South=2.22/liter). The Northern Sector yielded a much wider variety of plant remains including weeds (amaranth), fuel plants (ambrosia), forage and thatch plants (Poaceae, Scirpus, Trifolium, quinoa), food (maize, quinoa), dye (Galium), and medicine (Verbena). In contrast, the Southern Sector had a much more limited set of plants including fuel (ambrosia, quinoa), forage and thatch plants (Poaceae), and food plants (quinoa) (seeTable 6.2).

Table 6.2: Plant remains present in refuse pits		
	Northern Sector	Southern Sector
Amaranth	X	
Ambrosia	X	X
Galium	X	
Maize	X	
Poaceae	X	X
Quinoa	X	X
Scirpus	X	
Trifolium	X	
Verbena	X	

The number of bones recovered from pits was too small to yield statistically significant results from comparisons of mean densities of bones recovered from flotation. There were, however, interesting differences in the most common animals in each sector. Birds, guinea pigs, deer, llama, and mice were found in pits in the Northern Sector. All of these animals except birds were found in the south. When mice were excluded in order to consider only potential food species, camelids comprised the majority of food remains from both sectors, though they were slightly more common in the Southern Sector (North = 80.95%; South=92.16%). When only food species were used to calculate the ratio of faunal remains to sherds, the estimated density of faunal remains was higher in the Northern Sector (North = .0568/sherd; South = 0.0203/sherd).

Field mice made up a very large proportion of faunal remains recovered from the Northern Sector (North=70.63%; South=9.73%). Given that mice are attracted to food refuse, the high proportion of these animals suggests that more food waste was deposited in pits in the Northern Sector around houses. This interpretation is consistent with the higher density of carbonized plants and animal bones in these contexts.

There was no statistically significant difference in ceramic wares present in either sector, though more plainware was found in the Northern Sector and more painted and pattern burnished pottery was found in the Southern Sector. Vessel forms did vary significantly; restricted vessels with a neck were more common in the Northern Sector while open vessels and restricted vessels without a neck were more common in the

Southern Sector (χ^2=17.07, df=2, p=0.0002). Both of these patterns are consistent with the overall trends.

In terms of tools used for food preparation, trends are less clear. One-handed grinding stones that were used with a back and forth motion were present in both areas, a rocker grinder was in the Southern Sector, and small polishing stones were found only in the Southern Sector (see Table 6.3).

Table 6.3: Grinding stones in refuse pits

	North	South
Roughly spherical one-handed grinding stone	X	X
Oval to rectangular stone that fit into one hand with plano-convex cross section	X	X
Oval stone with rectangular cross section for rocking back and forth	X	
Smooth oval stone that fits between the fingers (no clear grinding surface)		X
Roughly pyramid-shaped stone that fit between the fingers		X
Small nondescript fragments	X	X

By count, there were no statistical differences in chipped stone tool types present, the proportion of tools versus debitage, or the source of material used to make chipped stone tools. Using only objects recovered from flotation, there was no difference in the mean density between sectors. When all items were considered to calculate the ratio of chipped stone to pottery sherds, there were far more chipped stone objects in the Northern Sector (North=0.067/sherd; South=0.014/sherd).

No bone tools were found in refuse pits in the Southern Sector, but two short polished tubes and one carved bone were found in the Northern Sector. In contrsast, no special objects were recovered from the pits in the Northern Sector, but the potato-shaped stone *illa* was found in the intrusion outside the sunken structure and two oddly shaped stones were recovered from the stone-lined cist in the Southern Sector. No metal or quartz were found in the pits of either area.

The patterns from the pits follow the overall trends established in the previous section. Materials were much more dense and diverse in the Northern Sector indicating more varied and frequent daily activities. Finer serving wares, figurines, and higher quality chipped stone materials were found in the Southern Sector.

Hearth contents

This section considers the contents of hearths in both sectors including two hearths in the Southern Sector located inside the sunken structure and seven outdoor hearths and two indoor hearths in the Northern Sector. Unlike the analysis of pits, the contents of hearths did not follow all of the trends found above.

There was no significant difference in the mean density of carbonized botanical remains between the two sectors, though it was higher in the north than in the south (North=4.22/liter; South=2.22/liter). A much greater variety of plants were found in the Northern Sector including plants for fuel (ambrosia and quinoa), food (quinoa, maize, Solanum, oxalis, Brassica, Fabaceae), weeds (Amaranth), dye (Galium), forage or thatch (Pocaceae), and thatch or basketry (Scirpus). In contrast, hearths in the Southern Sector contained only fuel species (ambrosia and quinoa), food (maize and quinoa), and forage plants (Trifolium) (see Table 6.4).

Table 6.4: Carbonized botanical remains in hearths

	North	South
Amaranth	X	
Ambrosia	X	X
Asteraceae	X	
Brassica	X	
Fabaceae	X	
Galium	X	
Maize	X	X
Oxalis	X	
Pocaceae	X	
Quinoa	X	X
Scirpus	X	
Solanum	X	
Trifolium		X

The distribution of faunal remains followed a similar pattern with greater diversity in the north than in the south (see Table 6.5). Camelids, guinea pigs, and some birds were recovered from hearths in each sector; but fish, most bird species, and deer were present only in the Northern Sector. So far, the diversity of plant and animal remains has followed the overall trends, but the density of remains breaks from earlier patterns. Mean density of faunal remains was higher in the Southern Sector when comparing materials recovered from flotation (North=4.17/liter; South=2.02/liter; t=-2.7310, p=0.0304). This was also true when considering the ratio of all animal bone to pottery sherds recovered from the hearths (North=0.046/sherd; South=0.084/sherd).

Table 6.5: Fauna in hearths		
	Northern	**Southern**
Unidentified fish	X	
Duck (*Anas sp.*)	X	
Coot (*Fulica sp.*)	X	
Heron (*Ardeidae*)	X	
Hawk (*Buteo sp.*)	X	
Eagle hawk (*Geranoetus sp.*)	X	
Unidentified bird	X	X
Guinea pig (*Cavia porcellus)*	X	X
Deer (*Odocoileus virginianus*)	X	
Camelid (*Llama sp.*)	X	X

Unlike other contexts, there were no significant differences in pottery wares present in hearths. Plainware and decorated pottery occurred in similar proportions. Like other contexts, there were still more restricted vessels without a neck in the south and more restricted vessels with a neck in the north, but unlike the patterns found in pits and overall, there were fewer open serving vessels in hearths in the Southern Sector compared with the Northern Sector (χ^2=8.081, df=2, p=0.0176). Hearths in the Southern Sector had a higher proportion of plain cooking vessels than hearths in the Northern Sector. In addition, there were relatively more grinding stones used for food preparation in the south (North=0.0019/sherd; South=0.0033/sherd), though diversity of forms was higher in the north (see Table 6.6).

Table 6.6: Grinding stones in hearths		
	North	**South**
Roughly spherical one-handed grinding stone	X	X
Oval to rectangular stone that fit into one hand and had plano-covex cross section	X	
Oval to rectangular stone that fit into two hands and had plano-convex cross section	X	
Oval stones with a plano-convex cross section that could be gripped between the fingers	X	X
Roughly pyramid-shaped stones with a flat, worn base that could be gripped between the fingers	X	X
Palm-sized mortars	X	X

Considering tools used for a wider range of activities including not only food processing but also other craft production activities, the mean density of chipped stone recovered from flotation was higher in the north than in the south (North=1.193/liter; South=0.126/liter, t=4.561, df=16.47, p=0.0003). This was also true when all objects were used to calculate the ratio of stone tools to pottery sherds (North = 0.0274/sherd; South=0.0085/sherd). By count of chipped stone, there was no significant difference in the quality or availability of raw materials, but by weight the difference was significant (χ^2=78.176, df=2, p<0.0001). There was more high quality obsidian and regionally available material in the Southern Sector and more poor quality local material in the Northern Sector. There was no difference in the proportion of debitage to tools.

The trend of greater diversity in tools was also true for worked bone. The only worked bone object recovered from a hearth in the Southern Sector was a long pointed tool. In contrast, a wide variety of worked bone was found in the Northern Sector including eight broad, flat pointed tools; one broad, flat rounded tool; a scapula spatula; a tool made form a carnivore maxilla; and a tubular polished bead. Though very few bone tools were recovered, the ratio of worked bone to pottery sherds indicates a higher density in the north (North=0.0015/sherd; South=0.0008/sherd). A very small bit of metal (<0.1g) was recovered from flotation in the Northern Sector. No quartz or special objects were recovered from hearths in either area.

The most striking difference between artifact distributions in hearths and other areas was the presence of less serving ware and an equal amount of plainware in both sectors. In addition, the density of carbonized plant remains was similar in each sector as was the proportion of chipped stone to debitage. Diversity of plants, animal bone, grinding stones, and bone tools was higher in the Northern Sector. It seems that in the Northern Sector, hearths were general activity areas where people not only prepared food but also gathered to engage in many other daily tasks. In contrast, it seems that hearths in the Southern Sector were used only for cooking a more limited set of foods (especially camelid). The lack of serving wares in southern hearths and the abundance of fancy serving wares in refuse pits nearby indicates that serving and eating took place away from the preparation area in the ceremonial sector. In contrast, in the domestic sector, food preparation included a greater variety of dishes and craft production and eating took place in the same space.

Floors

There were small prepared clay floors in both sectors. In addition, trampled surfaces (or areas that had become compacted from foot traffic) were present only in the Northern Sector. This indicates more intense and continuous use of that area compared with the Southern Sector which had no such compacted surfaces. Very few artifacts were recovered from the surfaces of floors in either sector and many artifacts incorporated into the trampled surfaces were deposited as part of the stratum below, so no comparisons will be made between materials recovered from floor contexts.

Ceremonial and domestic spaces

In this chapter, I have argued that the architecture and artifacts at Yuthu indicate that the Northern Sector was a domestic area and the Southern Sector was a special ceremonial space. The Northern Sector had small structures and large outdoor activity areas that were used for diverse daily activities. The presence of trampled surfaces in structures and hearths as well as the accumulation of fine strata indicate that the area was used continuously. In contrast, the Southern Sector had more elaborate architecture and a smaller set of activities that took place there. In addition, the thicker strata and lack of trampled surfaces indicate that the space was used less frequently. Infrequent use for a proscribed set of activities is typical of ceremonial or public areas.

Although each of these areas has been designated as “domestic” or “ceremonial,” it is not true that domestic activities occurred only in the north nor that ritual practices took place exclusively in the south. Cooking did take place in the Southern Sector, though it was probably food preparation for special meals focused on camelid meat. In addition, there were several tools for quotidian tasks found in that sector. Likewise, ritual activities took place in both areas. For example, bird-focused rituals took place in the Northern Sector as evidenced by the burial of an eagle hawk and the recovery of a bird figurine from one of the pit houses. In addition, human burials were common in both sectors beginning with the earliest houses in the north and the construction of the platform and sunken structure in the south (North n=7; South n=16).

The community created distinct spaces for quotidian activities and ceremonial practices. This indicates that the creation and maintenance through ritual of group identity above the level of the household was important to villagers at Yuthu. How was that identity conceptualized and enacted? The following chapter uses the features of the Southern Sector to demonstrate that community members understood their shared identity and territorial rights as established by ancestors and conceptualized through relationships with the living features of the landscape.

Chapter 7

Group identity, the sacred system, and politics

The construction of special non-domestic space in the Southern Sector demonstrates that from the moment that people moved to Yuthu to establish a village, establishing and maintaining group identity above the level of the household was important. In this chapter, I will explore ethnographic and ethnohistoric descriptions of group identity in the Andean highlands that was expressed in terms of kinship and conceptualized through relationships with the living landscape and ancestors. These systems tied together politics and economics because they established rights to territory and resources for living descendants. In addition, nested levels of group identities created a segmentary social structure that could be mobilized and reformulated to suit new political circumstances.

After discussing the antiquity of similar practices elsewhere in the Andes, I will use the ceremonial architecture of the Southern Sector and multi-phase burials described in Chapter 3 to argue that the first villagers at Yuthu similarly understood their shared identity and territorial rights as related to a sacred landscape. Later, mummy centered rituals shifted the focal point of ceremonial life from the village level to factions within the community, most likely families. Understanding the ritual and political system of the village will allow us to appreciate the context for negotiating access to resources and other political actions in this village.

Andean social groups

To provide a frame for interpretation of the material remains of ritual and mortuary practices at Yuthu, I will describe how people constructed and understood shared identity in modern and colonial period Andean communities. This discussion draws from the modern ethnography and Spanish records describing the Inka and other highland groups. The details that can be recorded when authors are able to interview informants or observe practices will always be much richer than those which are accessible through archaeology alone. Yet, recurring general themes that endured 500 years of significant political change in many regions of the highlands may have existed in earlier times and are worth exploring using the archaeological record.

In this discussion, I will introduce the role that ritual focused on ancestors and the sacred landscape played in the formation and maintenance of social group identity. The purpose of this discussion is to briefly review general trends that were widespread in the highlands, highlighting the ways that territoriality, agricultural productivity, and politics were intertwined with an overtly ritual system (for more detailed discussions, see Doyle 1988; Gose 1993; 1995; Sherbondy 1992).

This discussion includes both ethnographic and ethnohistoric examples, though there are risks associated with drawing on each as a source for analogy. Colonial accounts of ancestor veneration were recorded closer in time to a prehispanic past, but they have frequently been skewed by the interests of chroniclers or Spanish bureaucrats who tried to understand Inka statecraft for their own benefit. Even if Inka practices were accurately recorded, they come from an imperial context unlike the social environment we would expect to find in an early village. In addition, by the time priests began to record religious practices in the interest of eliminating them, many people had begun to shift to more secretive practices.

Ethnographic accounts include the richest level of detail, but they vary widely from place to place. They are also more distant in time from the Formative period and the societies represented have undergone further social and political changes such as Spanish conquest and the restructuring of group identity that accompanied forced resettling during *reducción*. Modern Andean religious belief and practices are thoroughly intertwined with Christian (especially Catholic) beliefs. In addition, politics and power are no longer understood in indigenous terms, but are negotiated within modern capitalist states. In some ways, ethnographic examples may have an advantage because the politics of empire are removed from traditional understandings of social groups within small villages. Overall, however, the significant transformations make direct analogy a dangerous endeavor.

Geographical place and genealogical descent were two key aspects of shared group identity. Both of these concepts were included in origin stories which recounted journeys made by ancestors in mythical time. The journeys began when ancestors emerged from places that were usually sources of water such as the sea, a lake, or a glacial peak (Doyle 1988; Sherbondy 1992). After that, in some colonial and modern accounts, ancestors traveled in water, oftentimes in underground channels (Allen 2002 [1988]; Sherbondy 1992), though some Inka ancestors walked at least part of the way (Sillar 2002). In either case, they completed the journey by emerging from places such as caves or springs to claim the surrounding territory and resources for their descendants. The places that these ancestors passed along the way were often seen as the limits of the territory or as important shrines for lineages to venerate during pilgrimages (Doyle 1988).

The descent groups who shared origins and rights were not necessarily entire villages, but were often large corporate kin groups within it, or *ayllus*. In ethnohistoric documents, some towns were comprised of two groups with their own origin stories—herders whose ancestors emerged from Lake Titicaca and agriculturalists whose forbearers emerged from the sea. Both travelled independently to the location of the community to claim it for their descendants (Doyle 1988).

In contrast with mythical ancestors that claimed group rights to large territories, real ancestors remembered by name legitimated rights to resources for certain families within the Inka state (e.g. Dillehay 2007; Rowe 1946; Salomon 1995). Most famously, the mummies of Inka kings could own estates that included fields, flocks, irrigation systems, and servants. In fact, according to stories recorded by the Spanish, a later ruler complained that the mummies of earlier kings were taking up too much land. In reaction, he redistributed rights to the *ayllus* and used a system of lines on the landscape marked with sacred places (the *ceque [ziqi]* system) to encode the new distribution of resources (Bauer 1998; Farrington 1992; Sherbondy 1992).

In practice, shared identity was reinforced through storytelling and rituals of integration focused on material objects. Mummies, such as those venerated by the Inka nobility, were the most straightforward material representation of shared descent. They were often claimed by families or lineages. Outside the heartland of the empire, a particularly ancient mummy could serve as a focal point for rituals of integration for multi-village social groups, but most large groups rallied around a sacred animate mountain (Salomon 1995). Even though mythical ancestors emerged from and traveled through the natural world, they cannot be conceived of as distinct from it. In fact, most Andean world views do not strictly separate the natural from the cultural (Acuto 2005).

The relationships between supernatural figures and between those figures and humans were understood in terms of kinship (Martínez 1983). Inequality was encoded in this scheme. Progenitors and older siblings were of higher status and had broader influence. Children were of lower rank, were influential within smaller territories, and had authority in a more limited set of matters. During the colonial period, the hierarchy of *ayllus* in the central Andes was understood in terms of kin relationships between the ancestors which created social differences between groups including unequal access to political power (Doyle 1988).

The sacred landscape recognized by people in myth and ritual was localized and included features that were visible from a village. Mountains were often arranged in a hierarchy based on distance and grandeur. Far away but large features were responsible for the general wellbeing of the surrounding land and people while the closest bodies of water and mountains were responsible for the productivity of the immediate land and resources (Flannery, et al. 1989; Gow, et al. 1976). In many cases, mummified ancestors were considered children of sacred mountains and were able to influence local productivity of fields and herds (Allen 2002 [1988]; Mariño Ferro 1989; Salomon 1995).

This nested and hierarchical social structure meant that any person or nuclear family could identify with several groups defined at different levels of the mythical or real ancestral family tree. This formulation is typical of a segmentary social structure, described most famously for the Nuer (see Evans-Pritchard 1967; Gose 1993; Nielsen 2006). Andean societies could activate shared groups affiliation at increasingly inclusive levels by focusing on different ancestors or landscape features. For example, in the 1970s, Ausangate, the largest most imposing glacier visible from the village of Ocongote was alled on as a rallying point and protector in the war with Chile. In contrast, the "children" of Ausangate (the smaller nearby mountains) were called upon to ensure productivity of fields, good weather, and abundant potato crops (Gow, et al. 1976).

In the highlands, six months a year pass without rain. The growing season depends on water from precipitation and melting glaciers that flows from springs and in streams from November through May. For herders and farmers, the natural environment plays a central role in organizing daily life and scheduling mundane and ritual activities throughout the year. Given the close relationship between the livelihood of people and the landscape that surrounds them, it is not surprising that group membership was closely related to territorial rights and agricultural productivity.

In the colonial period, myths held that when mythical ancestors ended their journey and founded their *ayllus*, they introduced important crops and agricultural techniques. In colonial and modern contexts, local or nearby mountains were often understood as being the ultimate owner of herds of alpacas and llamas (Doyle 1988; Flannery, et al. 1989; Martínez 1983). Occasionally, ancestors were credited with building the first irrigation canals in a community (Doyle 1988).

One of the most often cited relationships between ancestors and fertility relates to management of water needed for farming. Andean ethnohydrology conceives of all water as being part of a large sea beneath and surrounding the earth. Lakes are places where the water rises to the surface. Mountains are often considered sources of water because of their association with lakes, snow capped peaks that feed streams, and springs on their slopes. These sources of water feed rivers that cycle back into the sea (Allen 2002 [1988]; Bastien 1978; Gelles 2000; Sherbondy 1992).

In at least one ethnographic case in Arequipa, the mountain that was the focal point of community ritual was the true source of water used to irrigate their fields (Gelles 2000). But that was not necessarily the case. For example, in a modern community in Bolivia, a mountain associated with two lakes that were imagined to be united underground was the focus. In that case, villagers believed that an underground river constructed by the "Inka" (or ancestral people living in another time) carried water from the puna to fields in subterranean tunnels (Martínez 1983). The belief that mountains are sources of water justifies conducting water rituals related to mountains. The reality of the source of local irrigation water is less important.

Mountains, water, and ancestors could influence many other aspects of life as well. They could be beneficent or malevolent depending on the kinds of offering they received from their living descendants (Gow, et al. 1976; Mariño Ferro 1989; Martínez 1983; Sillar 1992). Colonial practices included more descriptions of interaction between descendants and mummified ancestral remains (*mallkikuna*). In general, funerary treatments for a deceased person took place in two phases which included dressing, feeding, and wrapping the person, as well as processions through the streets calling out to the deceased. Similar rituals took place shortly after death and one year later when the ancestor made the final transition from living society to ancestral status at which point they could be consulted for protection during travel, naming children, curing illness, recommending marriage partners, and other general life cycle events. Mummies received sacrifices and were consulted through ministers. Community-wide rituals often took place near planting and harvest time and involved sacrifices to request agricultural productivity (Doyle 1988; Salomon 1995).

Modern ethnographers have recorded more detailed descriptions of rituals, but for the most part these practices were focused exclusively on mountains because mummies were no longer created. Many aspects of ritual were related to the reciprocal relationship of care between people and supernatural figures. Local mountains were called upon most often in rituals (Kuznar 2001), which may suggest that they have taken on some of the roles of mummified ancestors in modern communities. In some cases, archaeological sites were considered to be dwelling places of ancestors who labored in fields and with herds just like their living descendant. They also became hungry and thirsty and needed to be fed (Allen 2002 [1988]). This was often accomplished by burning offerings like chicha, llama, guinea pig, or other items (Kuznar 2001).

The overtly mythical and ritual system described above was inextricably linked to politics (Gose 1993; Meddens 1994). Shortly after conquest, political influence within communities was related primarily to mummified ancestors. Although people perceived authority as being held by ancestors, living individuals decided and expressed their wants and needs. Authority was depersonalized as long as listeners were willing to pretend that influence was held not by the speaker, but by the ancestor (Nielsen 2006). The male or female minister in charge of mummies in a particular *ayllu* could influence the community, accrue fees, and build status through this ritual post (Doyle 1988; Salomon 1995).

In addition, people who were nearing death could “borrow” from the status they would soon have as an ancestor in order to influence village politics directly (Salomon 1995). Yet after death, not every person would be equally powerful. Those who were more influential in life or whose families became more prominent after their death were thought to remain close to the village and to continue to participate in local politics while less powerful ancestors eventually returned to the origin place of the *ayllu* and disappeared from the affairs of the living (Gose 1993). As Salomon (1995) pointed out, ancestor cult did not follow strict rules, but was an interaction of rules and current circumstance. Therefore, this system was a venue for status negotiation and political action.

The same ideology could be exploited by political systems that incorporated many different villages with diverse landscapes. The Inka reconfigured local sacred geography and ancestry so that their own ethnic group would be positioned at the highest level of the nested segmentary social organization. The Inka reworked origin stories by adding an additional deity who directed other ancestors. After destroying an earlier race of humanity, Wiraqucha created a new people from stone who called the ancestors of all the *ayllus* to emerge from their origin places and directed their journeys to the locations where they would found their kin groups (Doyle 1988). This revision legitimized empire in a segmentary society. Since the ancestors of the Inka emerged first, they had the highest status in the system. Furthermore, the Inka kings acquired an additional special ancestor, the sun, to legitimize their rule (Doyle 1988).

The Inka also revised conceptions of hydrology. As was mentioned above, Andean people believed that the ultimate source of water was Lake Titicaca or the sea though it emerged from locally visible locations (that may or may not have been the true source of the water). In reality, most people in the highlands could control all the water they needed for farming from within their local territory by diverting streams and springs. Yet, the Inka took advantage of the idea that the ultimate source of water was far away and that it traveled in underground waterways. By equating the empire with the control point closest to the source of the mythical irrigation system, they placed themselves at the highest level and highest status of the segmentary social structure (Gose 1993; Sherbondy 1992).

For the Inka, the sacred mountains and lakes were tools for structuring the empire and replicating icons of power in each conquered territory. The Inka captured sacred objects of conquered people (*wakakuna*), built new Cuscos, and modified local sacred mountains (for a detailed discussion see Acuto 2005). In most parts of the pre-Hispanic Andes the highest status ancestors were those who existed in separate primordial time. In contrast, Inka royalty could become the highest status ancestors after death (Doyle 1988).

One important ritual that reinforced the restructuring of sacred space was tied to the transition of a living Inka king to the new status as a mummy or ancestor. When the Inka king died, an empire-wide cycle of ritual began called the *qhapaq hucha*, or "great obligation." On mountaintops, shrines were built and offerings were made. Elite children and some women who were chosen for beauty or perfect qualities were selected and called to travel to the capital from their homes. After preparation in Cusco, they were sent out to locations throughout the provinces to be sacrificed atop local sacred mountains. In some situations, statues of humans made from gold or silver could stand in for children (Benson 2001; Ceruti 2004). Through this ritual performance, the Inka imposed hierarchy and claimed to be part of the local past through actions that were visible to people throughout the kingdom (Acuto 2005; Ceruti 2004; Cornejo 1995; Gelles 2000; Reinhard 1985).

Archaeological expectations

The preceding discussion includes rich descriptions that are available only from myth, storytelling, and observation of living people. This level of detail will never be available to prehistoric archaeologists, but it can be used to identify materials that might be found in the archaeological record. Based on the discussion above, archaeologists can investigate whether ancestors and the landscape might have been features of a sacred system that existed in some form in the more distant past.

Ancestor veneration

The preserved human body (*mallki*) was the most common object of ancestor veneration (Doyle 1988; Nielsen 2006; Salomon 1995). Therefore, finding preserved mummies would be a strong indication that a system of ancestor veneration existed in the past. Mummies were often wrapped in textiles. Most commonly, they were in a seated position, sometimes with hands raised to the mouth. We know relatively little about how mummies were made, though the topic has long been of interest to many scholars. Based on ethnohistoric documents and some investigations of preserved mummies, it is most likely that the majority of mummies were made naturally through a process of freeze-drying in the highlands, but that the Inka kings underwent a artificial embalming (Penna 1909). Since embalming was reserved for royalty, it seems unlikely that such elaborate practices were common in early villages.

Ancient mummies would be difficult to find in the highlands where the rainy environment can lead to decomposition. In addition, looting of tombs has been common for a very long time. In the absence of mummies, some archaeologists have focused on architecture where the remains could have been kept accessible for offerings and consultation, and from which they might occasionally have been taken out for processions or changing their wrappings. Human remains are rarely found in such structures, though some contain a few scattered and disarticulated human bones indicating that bodies were moved in and out of them (e.g. Dulanto 2002). When human skeletal remains are recovered, a taphonomic approach to human burials can be used to infer multiple phases of funerary treatment from the final burial (see Chapter 3). Such ongoing interaction may indicate ancestor veneration, but not every multi-phase burial does. Human remains can also be moved to be incorporated as offerings or to initiate buildings (Blom and Janusek 2004; Verano 1995). Alternatively, captives can be sacrificed and their remains processed in multiple steps (Verano 2008).

Sacred landscape

Despite the fact that many scholars readily acknowledge the importance of the sacred landscape in Andean culture, most are hesitant to study this tradition due to the dearth of satisfactory empirical methods. Some authors suggest that an "unusual" feature is more likely to be a sacred place (e.g. van de Guchte 1999), but it would be difficult to define what ancient people might have found "unusual." From any location in the Andes, dozens of impressive mountains, several sources of water, and at least a few peculiar rocky outcrops are visible. Without some archaeological evidence it would be impossible to determine which parts of the landscape were important to ancient people. The obstacles to identifying sacred places were made clear in Bauer's (1998) study of the sacred landscape of Inka Cusco. Even with detailed ethnohistoric descriptions of the shrines of the *ceque* [*ziqi*] system, many could be identified only tentatively and some could not be identified at all.

In the case of sacred mountains, the mountain itself rarely has archaeological remains on the summit. In fact, the few mountain-top sanctuaries that have been found are Inka constructions which are more common in the southern part of the empire (Castro and Aldunate 2003; Reinhard 1985). Because building these shrines was part of an imperial strategy of conquest, it is unlikely that we will find such shrines associated with early villages.

When a sacred mountain has not been modified in any way, special architecture can demonstrate that visible features were important. An ethnoarchaeological study by Kuznar (2001) found that sacred places were often marked by alignments. The Inka used architecture and lines of sight to highlight distant elements of the landscape by mimicking their form or by framing them with windows or passageways (Niles 1992; Niles 1987; Von Hagen and Morris 1998). In addition, archaeologists have found that the windows of Late Intermediate period and Inka *chullpas* (above ground mortuary structures) faced mountains and that modern chapels and churches are oriented to revered hills (Castro and Aldunate 2003). Castro and Aldunate (2003) have rightly noted that archaeologists often miss these details because they record orientation in cardinal directions that cannot detect such patterns. Ideally, archaeologists working in the Andes should record orientations of graves, buildings, and other structures by photographing the landscape that surrounds.

Ritual practice

Ritual practices associated with veneration of ancestors or the sacred landscape may help strengthen the identification of such systems in the past. Manipulating flowing water or pouring liquids were common practices. Occasionally, these rituals involved cleaning utilitarian canals in fields (e.g Gelles 2000). Alternatively, they were sometimes associated with special architecture. It was common to pour liquids through objects such as mortars with holes in the bottom or ritual channels (Nielsen 2006). In addition, Inka fountains have been found at many sites (Niles 1992; Niles 1987). At Cacha (modern

Raqchi), the Inka used canals to bring water from springs at the base of a sacred volcano to create a small sacred lake (Sillar 2002).

Certain kinds of offerings often accompanied ancestor veneration rituals, though they were rarely made exclusively in that context. In some cases, small stone receptacles or certain types of pottery vessels were used to receive offerings to ancestors (Nielsen 2006). Burning was the most common method by which supernatural beings were perceived to receive the essence of sacrificed items (Kuznar 2001). *Illas* or *conopas* (figurines that represented crops or livestock) were often used in places where ancestor veneration occurred in both ethnographic and ethnohistoric contexts (Doyle 1988; Gow, et al. 1976; Lau 2008; Salomon 1995). *Mullu*, or spondylus shells, were commonly associated with water ritual (Cornejo 1995; Doyle 1988; Reinhard 1985). This brief discussion has highlighted only a few of the most common objects used. For a more thorough inventory of all possible items, see Kuznar's (2001) ethnoarchaeological study of Andean religion.

Identifying and interpreting change

Even if we found all of these material correlates, it would not mean that a ritual and political system exactly like any of those described above emerged at a single point in time and endured unchanged until the present. Even within the 500 years, changes in the system have occurred according to circumstance.

Scholars generally agree that a sacred system that integrated mountains, water, and ancestor veneration was not spread by the Inka, but that these elements already existed as part of widespread Andean beliefs (Acuto 2005; Doyle 1988; Reinhard 1985; Sherbondy 1992). In fact, this would have been a precondition which allowed the Inka to use these beliefs as a basis for imperial expansion. Rituals like the *qhapaq hucha* marked changes in the distribution of provincial power and added an additional level to the ancestral family tree of each local group. We do not know very much about the role that local ancestors and sacred mountains continued to play within the empire (Nielsen 2006), but the sacred status of a mountain was not static. In fact, an Inka official was in charge of deciding and tracking which places had lost that status (van de Guchte 1999). At that time, a new political organization changed which mountains were important and what they meant in the context of an expanding empire.

After conquest, the Spanish colonial administration initially took advantage of the existing *ayllu* segmentary social system when creating *encomiendas,* but eventually the system was broken down as communities were resettled into new administrative units or *reducciones*. Ancestor cults were actively persecuted and people were relocated to new villages far away from the landscape and ancestral tombs that were central to group identity (Doyle 1988; Salomon 1995). As a result, the focus of rituals shifted from mummies to mountains and inconspicuous objects that could be kept secretively within homes. Overt political action based on ancestral authority declined.

In some modern communities, mountain gods were associated with ancestors from a "new" ancient time, the time of the "Inka" (Martínez 1983). These figures continue to participate in reciprocal relationships of care and are particularly important for rituals focused on agricultural or pastoral productivity. Status and power, however, are more likely to be negotiated through new institutions like the *cargo* system which is related to Andean catholic festivals or to financial success in capitalist market systems (Berghe 1978).

Great variability exists in how modern and historic Andean peoples relate water, mountains, ancestors, productivity, and ownership. This discussion has demonstrated that an apparently ritual system was intertwined with politics and economics in many times and places. Studying the changes in such a system in prehistory will be just as important to understanding ancient social structures as identifying it in the first place.

Ancestor veneration and sacred landscapes before the Inka

Some scholars have argued that the sacred landscape concept was more central for the Inka than for pre-Inka societies. For example, van de Guchte (1999) proposed that in contrast with the Wari who imposed architectural features and installations with an aesthetic of order and little regard for the natural landscape, the Inka incorporated the natural landscape into constructions as instruments for collective memory and tools for the creation of the empire. More recently, however, archaeologists have argued that the

Wari were also concerned with sacred geography (Glowacki and Malpass 2003; Williams and Nash 2006).

Archaeologists have noted that, even before the Wari, doorways, platforms, or buildings were aligned with distant mountain peaks in the Formative period in Ancash (Burger and Salazar-Burger 1986) and the Titicaca Basin (Beck 2004b; Hastorf 2008). But, they rarely explore the implications of this architectural layout in ritual or politics. With further research, we may learn that these alignments are artifacts of a widespread and ancient conception of sacred landscape.

Ancestor veneration has been detected in several pre-Inka societies in the Andes. Isbell (1997) has argued that it emerged with Andean states when people began to build above-ground stone mortuary monuments that remain visible on the landscape today, but subsequent research has shown that ancestor veneration is a much older Andean tradition that existed in earlier, pre-state societies. Two examples of ancestor veneration tied to the sacred landscape which are roughly contemporary with the occupation of Yuthu are particularly relevant to the current study.

In Formative period Pampa Chica (700-200 BC), Dulanto (2002) identified ancestor veneration by comparing the archaeological remains of the ongoing manipulation of human skeletons in a ceremonial structure with expectations for material remains of ancestor veneration inferred from practices described in 16th century ethnohistoric documents. Although the two periods are very distant in time these practices proved remarkably similar. Within the most secluded and enclosed areas of a ceremonial complex, located at least 1 km from residential sites, bodies underwent multi-phase burial treatment before being moved somewhere else. This treatment was mostly for males and involved movements between pits, small rooms, and an open sunken patio before ultimately being taken to another undetermined site. Dulanto (2002) stressed that Pampa Chica occupied a unique location between many different resource zones and that these practices were closely tied to the landscape and linked to a concerns about resource rights. He also noted the importance of ancestor veneration to community identity and politics. When many groups ceased to get along, some communities used rituals of ancestor veneration as a means to strengthen their own social group and to compete with others.

In Formative period highland Bolivia at the site of Chiripa, evidence for ancestor worship included: tombs of women located in an enclosure that were reopened to access their remains and present them with offerings (1500-1000 BC), a later niche in a semi-subterranean structure which was presumably used for displaying the dead (1000-800 BC), a new type of ritual architecture, independent lineage houses, that may have been associated with the dead (800-400 BC), and finally, community authorized houses for the "official lineages" that held burials, niches for display of sacred objects and antechambers that may have held ancestral remains which were constructed around a large community ritual space (400-250 BC) (Hastorf 2003). Hastorf stresses that practices of ancestor veneration were not static, but rather, they reflected the social structure of the people who carried them out. In each phase, ancestor veneration created a community identity that was strongly tied to a place or territory. Over time, the community identity shifted from (1) communal to (2) independent lineages to (3) lineages structured by some greater community power.

During the Formative period in other parts of the Andes, ancestor veneration was tied to group identity, sacred landscape, and territoriality. Both Hastorf and Dulanto independently emphasize three key aspects of ancestor veneration that may guide archaeological study. Dulanto outlines these criteria explicitly (drawing heavily on Salomon 1995):

> "(1) the *landscape* that was imagined as a complex of sacred objects, spaces, and natural forces originating in the actions of ancestral heroes;
>
> (2) the *public spaces* within this complex where the communities gathered periodically to add their recent dead to the heroic dead and to venerate their ancestors; and
>
> (3) the *mummified bodies* of the recent dead, which were intentionally preserved and frequently manipulated and moved within and between such public spaces" (Dulanto 2002:98)

By examining these three dimensions, it should be possible to identify a similar ritual system in Formative period Cusco. Because the material remains of the landscape and ceremonial architecture are inseparable, I will first consider these two dimensions together. Second, I will present the evidence for ongoing interaction with ancestral remains.

Ceremonial architecture the local landscape

During most of the occupation of the Yuthu, major ceremonial activities took place in a separate and prominent location. These activities occurred in a space that was constructed to emphasize important mountains, springs, and lakes in the local landscape. The Southern Sector was an artificial platform that faced Cerro Huanacaure[3], a mountain that rises out of the plain on the opposite shore of Lake Huaypo (about 1.5 km to the southeast) (see Figure 7.1). An unroofed structure with a sunken floor built on top of the platform (Structure 1) also faced Huanacaure (see Figure 7.3). A spring was located directly behind the platform to the northeast, though today it has dried up.

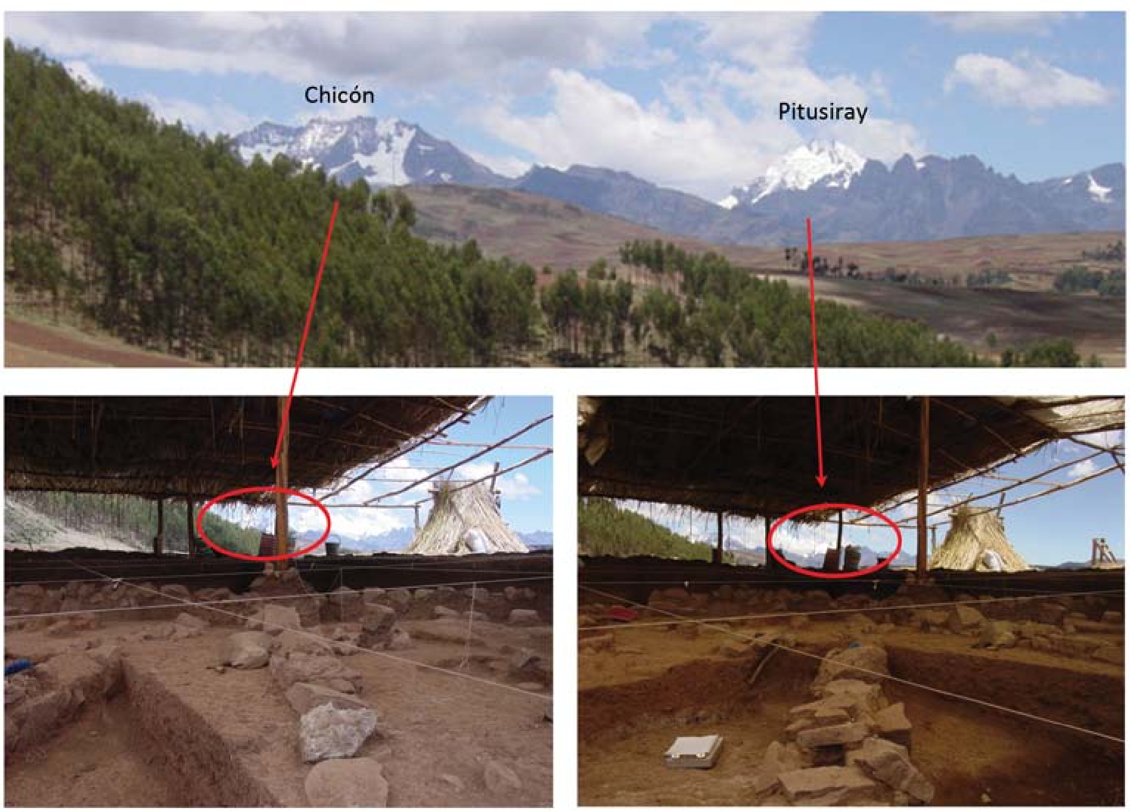
Figure 7.1: The platform in the Southern Sector faced Cerro Huanacaure.

Some of the most intriguing features of Structure 1 were ritual canals that carried water from the inside to discharge it off the edge of the platform. Each of these canals was aligned with glacial peaks visible to the west (see Figure 7.2). Canal 1 pointed to

[3] This is not the same Cerro Huanacaure where the founding ancestor Ayar Uchu turned to stone in the Inka origin story. That mountain is located south of the modern city of Cusco. There are, however, important Inka myths that cite this mountain as the source of irrigation water in this area and recount how ethnic groups and polities in this area were incorporated into the empire. See Sherbondy 1992:59 for further discussion.

Pitusiray, a glacier about 25 kilometers to the northeast above the modern town of Calca on the other side of the Sacred Valley. The flecks of carbon in the deposits inside this canal indicate that the liquid that passed through it carried burned materials. It may be the case that the bits of items burned nearby were inadvertently picked up by water being poured into the mouths of the canals. Alternatively, ash or other burned items may have been intentionally put into the intake and rinsed down the canal. Or they may have been mixed with water that was then poured into it.

Regardless of the specific activity that created these deposits, the mixture of water and charcoal bits indicates that some of the rituals performed in the Southern Sector involved burned offerings and libations of water or other liquids. Based on the ethnohistoric and ethnographic descriptions above, it seems likely that this kind of ritual was related to the association between glacial peaks and water, even though the distant peaks could not have been the true source of water for the community.



The later ritual canal pointed to the glacier Chicón. The earlier ritual canal pointed to the glacier Pitusiray.

Figure 7.2: The ritual canals in the Southern Sector were built to align with distant glacial peaks.

During the use of Structure 1, Canal 1 was replaced by a new canal that shared the same intake but was curved so that the discharge was offset to the east (Canal 2). Therefore, the new canal no longer pointed to Pitusiray, but to Chicón, another glacier located 20 kilometers northeast of Yuthu above the modern town of Urubamba (about 9 km southwest of Pitusiray). In contrast with Canal 1, Canal 2 did not have such thick deposits of soil deposited by water. This indicates that Canal 1 was used either more frequently or for a longer time than Canal 2. It seems that shortly after the replacement, the whole structure was covered with soil and abandoned.

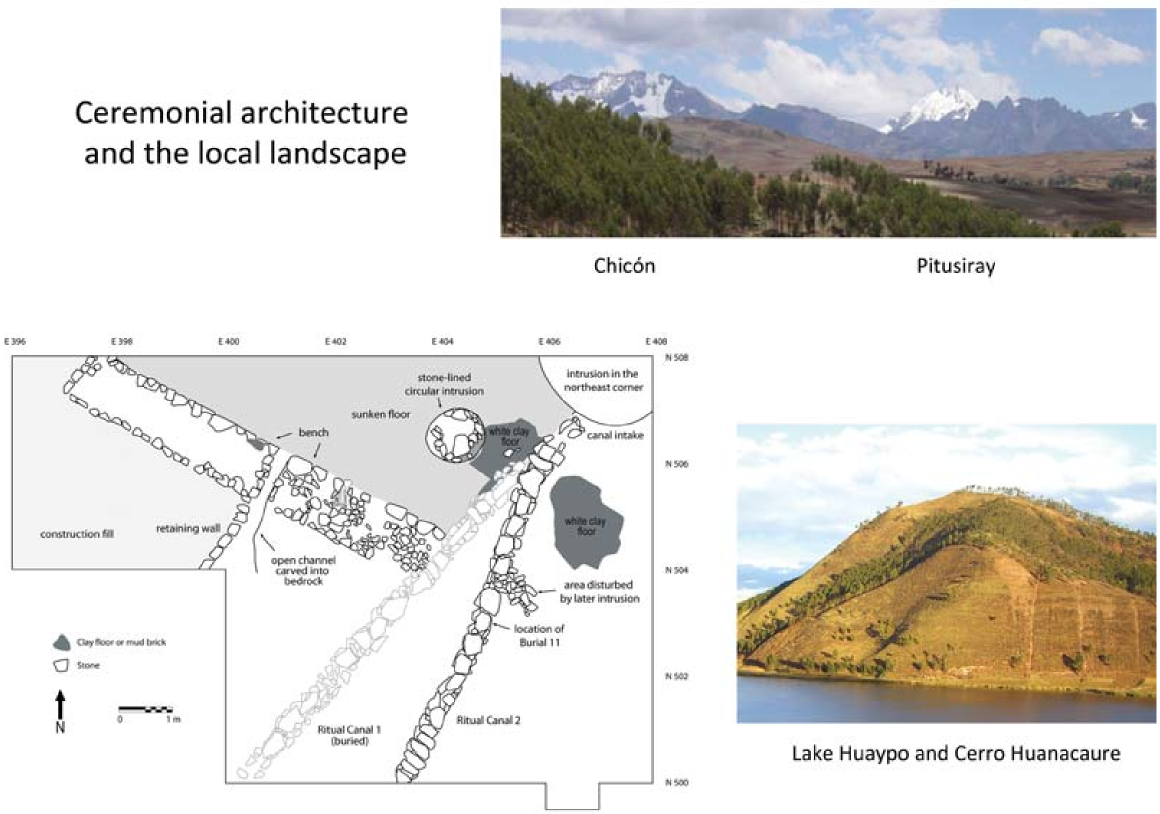


Figure 7.3: The platform and Structure 1 in the Southern Sector faced Lake Huaypo and Cerro Huanacaure. Ritual Canal 1 was built to face the glacier Pitusiray. The replacement, Ritual Canal 2, was built to align with the glacier Chicón.

Offerings or burials of human remains were included in the canal renovation. When Canal 3 was destroyed, material was burned in the eastern portion and a 1-2 year old child was buried cutting off the discharge end and ritually closing the canal (Burial 9). This interment and three others were covered with a thick stratum of soil that buried Canals 1 and 3. The other burials included a 12-13 year old child (Burial 1), an 18-25 year old woman (Burial 8) and a 36-45 year old woman (Burial 10). A secondary burial of a 2-3 year old child was placed in a small depression cut into that stratum of soil (Burial 11), and an offering that included quinoa, maize and *Galium* was burned inside the depression before it was buried and covered with Canal 2.

These burials indicate that the closing and construction of canals were ritually important events. More specifically, very young children were closely associated with the water ritual. The burial of human remains when remodeling canals at Yuthu is not unique. At Tiwanaku, an isolated skull was placed in a canal just prior to the construction of an elaborate painted elite palace in the Putini high status residential complex (Couture and Sampeck 2003).

Water rituals associated with the canals may have been related to concerns about having sufficient water for growing crops. Other artifacts from this area further suggest that productivity was a major concern. An *illa*, or stone potato, may have been used in offerings that requested a good potato harvest (see Figure 7.4). And, llama was the most common meat found in this sector, which suggests that llamas were sacrificed and eaten as part of rituals.

Figure 7.4: Objects found in the Southern Sector (from left to right): An *illa* of a potato may have been related to rituals requesting agricultural fertility. A pyramid shaped rock may have represented a mountain or platform. A human figurine in a flexed pose similar to burial positions at Yuthu may be related to ancestor veneration. Note that the head has been snapped off of the body.

Although it is possible that some other explanation may account, at least in part, for the placement of ceremonial architecture, the location of the ceremonial sector between a spring and a lake, the use of canals for offerings of water, and the orientation of the platform and structure indicate that the ritual system was closely tied to a sacred landscape in which mountains and water were prominent features. Within this context, it may be possible to interpret a pyramid-shaped stone from this sector as a representation of a mountain, though it is not possible to determine this with any certainty (see Figure 7.4).

Unfortunately, because only a small part of the platform has been excavated, it is impossible to determine whether there might be additional sunken structures. If there were no similar structures, it would indicate that group identity was shared by the entire village. If there were, it would suggest that group identity was constructed for divisions within the village such as moieties or lineages. Only further excavation will be able to determine the level of group identity that was conceptualized in terms of the sacred landscape.

Multi-phase burial and ancestor veneration

At Yuthu, some burials were the last step in multi-phase mortuary treatment while others were primary interments made immediately or relatively soon after the death of the individual. In all cases, the recovered burials at the site were final interments and the bodies were not accessed or disturbed later in prehistory. I will focus on the multi-phase human burials from Yuthu (Types 2-4 as defined in Chapter 3) to discuss how ancestor veneration emerged and changed. Multi-phase burials were common at Yuthu (10 out of 23 burials and 14 out of 27 individuals). They were located in both the Northern and Southern Sectors starting with the earliest constructions in each area.

In the Northern Sector, the earliest pit houses were associated with two burials that included the deteriorated bones of multiple individuals that were burned *in situ* before being buried (Type 2). Burial 20 contained an adult woman at least 25 years old and a 3 month old infant. Burial 21 included 4 individuals: 2 infants around 3 months old, a 5-6 year old child, and an adult of indeterminate sex more than 25 years old. In many ways, these contexts were more like “offerings” than graves. The oldest pit house was also associated with the primary interment of an infant under a small mound that would have been visible to passersby.

Secondary burial of a single individual (Burial Type 3) was never found in the domestic sector. In the Southern Sector, when Structure 1 was built, three such burials were included in the construction fill. They included a 36-45 year old man who had an extra adult right hand buried with him (Burial 12), a 26-35 year old women incorporated into the southern face of the bench with scorching on her face where it was laying on the course of stones (Burial 13), and a 26-45 year old woman with scorching on some bones (Burial 14). After initial construction, a similar burial of a 36-45 year old woman was placed within the eastern section of the bench (Burial 15).

Later when the structure was remodeled, primary burials of women and children were included in a stratum used to close Canals 1 and 3. A secondary burial of a 2-3 year old child was placed below the new canal construction. No human burials were associated with the covering and abandonment of the Structure 1.

While Structure 1 was still in use, a new mortuary treatment emerged. "Mummies" were human bodies that were stored in empty or accessible locations with soft tissue restraining the movement of bones that would otherwise occur as a part of natural processes of decomposition. This preservation was probably achieved through a process of freeze-drying. After the soft tissues had decayed sufficiently so that single bones could be removed without cutting, the cranium or pelvis was removed and the individual was buried (Type 4). The earliest mummy at Yuthu was a 12-16 year old adolescent of unknown sex whose skeleton was found in tightly flexed, articulated position with all bones present except the cranium (Burial 19). The individual was buried directly above Burials 21 and 22 and was associated with the latest domestic structure found at Yuthu.

The rest of the burials at Yuthu were made after Structure 1 and all houses had been abandoned and buried. Flotation samples recovered from the associated strata contained no or very few carbonized plants, indicating that no cooking took place at that time. The final use of the site (in both the Northern and Southern Sectors) was exclusively as a cemetery. Individuals would have been brought there from other villages for burial at that time. Dense surface scatters of human bone in both sectors suggest that the cemetery was extensive.

Two men who had been kept as mummies elsewhere were buried at the former village. After he had been stored elsewhere as a mummy, the right half of the pelvis of a 40-60 year old man was removed before he was buried in a shallow pit in the Northern Sector (Burial 16). He was buried near primary interments of two young women and an infant. All of these individuals surrounded a small stone hearth which contained ashy soil but almost no carbonized plant remains or animal bones.

In the Southern Sector, an 18-25 year old man was buried in a seated upright position with a three-sided stone box at his right shoulder that contained carbonized quinoa, *Oxalis*, and *Galium* seeds (Burial 4). Four individuals were buried nearby, including the secondary burial of a woman over 46 years old who was given burial treatment like that of earlier women in this area (Burial Type 3). Nearby, a primary group burial included three children. The oldest child was killed by blunt force to the head (Individual 6, 11-12 years old). A 1-2 year old was placed at that child's feet (Individual 7). A 7-8 year old missing his or her head and neck was placed above the older child's head (Individual 3). The right half of an adult pelvis was placed over the feet of the 1-2 year old.

In another area of the Southern Sector, the primary burial of a 26-35 year old man (the only individual at Yuthu without cranial modification) was the only cist tomb with a stone cap (Burial Type 1).

Although very little representational iconography has been found at Yuthu, a single anthropomorphic stone figurine was found in the Southern Sector in a stratum that was contemporary with the final burials (see Figure 7.4). This figurine was an individual in a seated flexed position. The forehead and nose were painted with red pigment and the head had been snapped off at the neck. Considering that the figurine was found near the burial of a male mummy whose head had been similarly removed, it seems probable that this figurine is a mummy image used in ancestor veneration rituals.

Social groups and change

Group identity above the level of the household was important to the earliest villagers at Yuthu. In the ceremonial sector, group identity was established, revised, and expressed in relationship to the local sacred landscape. Rituals carried out within the ceremonial sector were related to agricultural and pastoral fertility. The replacement of the original canal with one facing a different snow-capped peak suggests that the relationship between villagers and more distant mountains was reconceived within less than 300 years while the relationship with the nearby mountain and lake remained the same.

Based on the ethnographic and historic descriptions above, I can suggest two plausible explanations. (1) The drought that occurred near the end of the occupation may have caused people to lose trust in the ability of the first glacier to provide water. (2) The shift may indicate a realignment of political alliances as a multi-village polity was forming for the first time. In either case, the renovation occurred just before the structure was abandoned along with the related group-level ritual system.

Human burials associated with this structure were both primary interments and multi-phase burials. In either case, maintaining the recognizable identity of an individual seems to have been a priority. Most individuals were women and children, though one man was given this kind of treatment. Even though early rituals in the ceremonial sector focused on integration, they could have been venues for competition between groups who wanted their relatives or representatives to be buried in the group space.

In contrast, the earliest burials in the Northern Sector contained bones from women and children that were burned *in situ*. The burned offerings were close to houses and probably included the bones of several family members brought to this new place from their original location in a burial ground or ossuary. In these cases, the association of ancestral bones with the family group was more important than individual identity.

Mummies were never associated with Structure 1 (which was related to group identity above the level of the household). It seems more likely they were affiliated with families. The earliest mummy was buried next to a house. Later, one man was associated with two women and an infant buried around a small stone hearth. The other man was buried in close association with the secondary burial of an adult woman and three children that died violent deaths. A plausible explanation for these burials is that when the family was killed in a single event, there was no longer anyone left to care for their family or lineage mummy. Another possibility is that the children were buried with ancestral caretakers (a mummified man, and a secondary burial of a woman). In either case, these funerary arrangements mimic family structures.

Why mummies?

A key dimension of ancestor veneration is ongoing interaction with ancestral remains. Archaeologically, this is visible in the minimum number of steps an individual experienced during mortuary treatment. The earliest burials in the Northern Sector were multi-step, eventually mixing the remains of more than one individual in an offering pit. The multi-step burials associated with the ceremonial structure were individuals whose identity was kept intact when their remains were moved to a new burial place. In both cases, interaction with the remains of these people was limited to moments of burial, excavation, and reburial. Their bodies were otherwise inaccessible to their families and to other community members.

Compared to these earlier multi-step burial treatments, mummies were available for much longer and probably more intense interaction with living people. Mummies must have been maintained for a significant amount of time in order for the bodies to decay enough to remove the cranium or pelvis. During that time, the mummies remained accessible to family members, and possibly to others. It is likely that these mummies were dressed, fed, or otherwise integrated into rituals. Based on ethnohistoric description, I can suggest two possibilities for how long mummies were stored before burial. In some cases, deceased persons transitioned to “ancestral” status one year after death. In others, this transition occurred when their identity was “forgotten,” usually after about three generations (Salomon 1995).

It is not clear if the skeletal elements were removed as part of ongoing rituals or immediately before final burial. And, there is little evidence as to what happened to the curated skeletal elements, though in one case an adult right pelvis was buried in a new grave with children.

By attributing influence to a mummy during this long transition time after death, authority can be depersonalized. That is, it can be displaced it from the living speaker to the deceased. If mummies were family figures, this ideological shift could break an egalitarian ethic and allow inheritance of influence or wealth. Such inheritance along family lines would have been at odds with rights to resources and territory established at the group level through rituals in the ceremonial sector. In fact, Structure 1 was eventually abandoned while mummy veneration continued. For some time, however, large group ritual and lineage-focused ancestor veneration were two potentially conflicting practices that existed alongside each other.

Even in the Formative period, Andean ancestor veneration was part of a larger sacred system in which group identity was constructed and territorial claims legitimized through rituals associated with a sacred landscape. Politics, especially related to ritual authority and territorial rights, played out within this context. The role of this system in the origins of inequality and the development of a multi-village polity will be further discussed in the final chapter.

Chapter 8

Conclusion

When I began this project, very little was known about daily life, ritual, or politics in early villages in Cusco, Peru. Because of the dearth of information, I decided to employ a community approach which is particularly suitable for excavation of a single small village site when little is known and great variability in social configuration, economics, and ritual practice is possible. As defined in the introduction, a community approach has five aspects: (1) the unit of analysis should be a single village with a variety of people and institutions, (2) the study should be holistic, (3) it should study social institutions above the level of the village as they are experienced within it, (4) it should include the study of divisions within the community and mechanisms that can result in change, and (5) it should balance historical and comparative inquiry. This project has been able to make advances in our understanding of the Formative period of Cusco using this approach.

The ideal village for study should be neither the largest nor smallest in the area, but it should be big enough to include the activity areas and architectural remains of a wide variety of practices such as household activities and public rituals. I selected Yuthu because it was a moderately sized site with a visible platform and two separate scatters of artifacts. Surface remains suggested that a variety of activities took place in distinct spaces. Indeed, this village contained one sector of domestic houses and associated outdoor activity areas as well as a ceremonial sector where community members participated in activities above the level of the household. The presence of these two kinds of sectors allowed me to study daily life as well as social and political institutions.

The second strength of this approach requires that the study be holistic, incorporating all aspects of village life (spanning the natural environment to ideology). In any society all of these facets are intertwined with one another and no single element can be understood in isolation.

The village was situated on the shore of a spring-fed lake located on a high rolling plain northwest of the modern city of Cusco (3600 masl). Today, this area is used for planting grains and tubers and for herding sheep. High altitude grasslands (above 4000 masl) are located to the east and west and a lower warmer valley borders the plain to the north and east (about 2600 masl). In the Andes, elevation is the largest factor that determines what kinds of crops can be grown and the quality of pasture. Toward the end of the Formative period, a drought may have reduced productivity or even altered which crops could be grown on the plain.

Villagers at Yuthu were herders and farmers. In contrast to domesticated plants and animals, wild foods made up a very minimal part of the diet. Therefore farming and herding filled many hours of daily life and also served as a frame to schedule other activities throughout the year. Tending to flocks of llamas and alpacas required daily attention by at least some family members. Guinea pigs were kept in households and required little attention other than daily feeding of kitchen scraps. Farming, in contrast, would have required group labor for planting, tending, and harvesting plants. The two most demanding moments with the highest labor input would have been at the beginning of the rainy season when ground was prepared and planted and during harvest time. Quinoa, kiwicha, potatoes, and tubers could be grown in fields near the village. Corn and early crops of potatoes could have been grown in the nearby valley where the growing season was longer.

Many other daily tasks took place alongside these subsistence practices. People prepared food, gathered fuel, and cared for family members. As need arose, they crafted several kinds of items like bone tools, pottery, woven garments, and chipped stone tools. They hunted or trapped wild animals only occasionally and used herbs and wild plants to practice medicine. While performing these tasks, mothers or other caretakers probably carried their babies in a way that created a distinct head shape that was common throughout Formative Cusco. When a loved one died, they did not immediately disappear from social life. Family members and others continued to interact with deceased individuals through multi-phase mortuary rituals. Yet relationships between people were not always peaceful and positive. The rates of interpersonal violence were high at Yuthu, showing that conflict was a significant part of social life at this time.

With each added detail, it becomes easier to imagine what life might have been like in this small village. Groups might have gathered around smoky campfires to gossip and tell stories while cooking, shaping stone tools, or winnowing quinoa. During planting or harvest, work groups shared food and drink during breaks from difficult work. And each day, lone individuals may have minded herds outside of the village, without even a dog to keep him or her company. If a woman accompanied flocks, perhaps she spun yarn; if a child were the shepherd, he or she might have practiced aiming a slingshot. Life was lived mostly out of doors under the warm mountain sun with the exception of the star-filled nights when people entered small simple houses to retreat from the cold or to escape a storm during the rainy season. Imagining life in this way provides the context necessary to understand politics, ideology, and social institutions.

Taking a community approach will allow us to investigate social institutions that cross-cut many villages or existed at a level above the single settlement by considering how those institutions were experienced by local people. Based on previous studies in the Andes, I have chosen to investigate three types of institutions above the local level: (1) participation in long-distance trade networks, (2) integration into a set of vertical communities, and (3) incorporation into a multi-village polity.

Villagers participated in long-distance trade that was probably facilitated by llama caravans. Obsidian stone tools were the most visible remains of this network. This raw material has no known local source and would have been imported from distant regions of the highlands such as Arequipa or Ayacucho (Glascock, Speakman et al. 2007). Other exotic items were very rare at Yuthu, but included a macaw beak and half of a fish bone from the jungle. This dearth of imports may either indicate that trade consisted primarily of perishable items like textiles, feathers, and coca or that nearly all items used for subsistence and ritual came from the local environment. The lack of marine shell and low quantity of items from the jungle indicate that trade networks were focused on the highlands. Future studies that determine the source of the obsidian at Yuthu will help to determine the true extent of this principally highland trading network.

Were the inhabitants of Yuthu part of a multi-village community that spanned several ecological zones? It is impossible to know for sure at this time, but it seems that this village obtained most of its resources from nearby. Quinoa, the most common crop, grows very well in fields surrounding the village and llamas and alpacas can graze happily in this area year round. As long as pasture and farm fields could be managed so that llamas would not eat young plants, both the agricultural and pastoral systems could coexist successfully in this area.

The significant presence of maize (nearly 9 % of all carbonized plant remains) challenges the notion that villagers could have exclusively exploited the ecological zone in which they lived. It is true that some corn can grow around the edge of Lake Huaypo, but maize cobs grow to be considerably larger and tastier in the Sacred Valley which is only a ½ day walk from Yuthu. Because the Sacred Valley has no large Formative settlements, I would suggest that farmers living at Yuthu and other nearby villages directly exploited both the plain and the nearby valley. As a result, not only did they have access to more diverse crops, but they were also able to manage risk and schedule labor to maximize the number of fields that workers could tend. There is no evidence that Yuthu was part of a vertically integrated community that included multiple settlements or that inhabitants practiced seasonal transhumance, though it is difficult to say for sure without further study. It is most likely that villagers chose to live in a location where they could directly exploit two distinct resource zones.

A community approach should pay particular attention to the presence of factions within a single village and the potential role of competition in social change. At Yuthu, a sacred and political system that included the landscape, ancestors, and territorial rights structured society. This institution can be considered in terms of its potential to cross-cut multiple villages, but it is equally intriguing because of the potential role that competition within this venue may have played in the transformation of the village.

When I began this study, I knew that many aspects of indigenous Andean cosmology and religion focused on or integrated the dramatic mountain landscape. I also knew that studying such a system in the distant past was notoriously difficult for archaeologists. I never expected to be able to discuss this aspect of life at Yuthu, but the presence of special architecture including a platform, sunken structure, and ritual canals designed to align with prominent mountains has allowed me to suggest that a system focused on the landscape was important for establishing and maintaining group identity above the level of the household in this village. Practices associated with this collective identity focused on water and agricultural fertility. Therefore, group membership involved shared rights to territory and resources.

Unfortunately, I was not able to excavate enough of the platform in the Southern Sector to determine how many similar constructions there might have been. Knowing the number and layout of structures would have allowed me to determine whether shared identity was conceived of at a lineage, moiety, or community level depending on whether there were many similar structures, only two, or just one on the platform.

Reports from as far north as Cajamarca and as far south as the Titicaca Basin describe public or ceremonial architecture that was oriented toward mountain peaks. Though the implications have not been discussed in detail, similar traditions may have been present throughout the Andean highlands at this time. Therefore, although this institution has been studied primarily within the village of Yuthu, it has the potential to have cross-cut multiple villages or to have united several settlements into a single polity. For example, if the structures were used to maintain corporate kin groups, it may be true that members of these groups lived in several settlements. Such a system also had the potential to be exploited by an emerging multi-village polity which could have reconfigured the system, requiring veneration of a new sacred mountain that was considered higher ranking and more powerful than the local one. This may have been an ideological expression of the loss of village autonomy. Future research will be necessary to understand this fundamental aspect of social organization.

A complementary, but sometimes conflicting, tradition of ancestor veneration changed significantly over time at Yuthu. Early practices that incorporated the remains of ancestors into offerings or structures differed between sectors. In the domestic Northern Sector, the bones of several individuals were used in offerings to establish family ties to a new house. Individual identity was not a priority in household mortuary ritual at this time. In contrast, in the ceremonial Southern Sector which was created to integrate large social groups, the opposite was true. Individual identity was always maintained, even in secondary burials. This suggests that status negotiation took place in this venue even though it was overtly tied to group unity. Competition may have occurred between individuals (who were usually women) before their death, but given that most interments in this sector were secondary burials brought from other places after significant decomposition of the body, it seems more likely that surviving family members negotiated their status after the death of the individual.

Living people had limited access to these dead who were buried in enclosed spaces or environments that would allow significant decay. Interaction would have been limited to moments of primary burial, exhumation, and reburial in individual or group inhumations. In contrast, a new tradition emerged which allowed ongoing interaction between the living and the dead who had been preserved as mummies in open spaces for some time before final burial. Like the earlier offerings that incorporated many individuals, mummies were related to family groups. An important contrast with earlier family mortuary ritual is that individual identity was now highly prioritized in the same way that it had been in the ceremonial sector, suggesting that the individual could be used in status negotiation and competition.

When I first identified these mummies, I immediately thought of the implications of this type of mortuary tradition in the creation and maintenance of inequalities. Preserving and interacting with the mummy of a lineage head who was a high status person in life could have been a way for families to inherit status, influence, territory, and wealth for the first time in a formerly egalitarian village. Attributing power and authority to a dead ancestor would effectively break the egalitarian ethic and allow inheritance across generations within families.

The reality of the data, however, has challenged this interpretation. If the described scenario were accurate, we would expect that families would have selected people who had the qualities of leaders, who had earned status in life, and who had descendants. In fact, two of the three individuals were adult males. One was a 26 to 35 years old with several healed fractures on the head, face, and neck. The other was 18 to 25 years old. No evidence of trauma was recorded for this man, but the head (where most healed traumas were located for the other man) was missing from this burial. These individuals would fit the above expectations if men who earned status at least partially through violent conflict also held rights to important resources or wealth—for example, if families were interested in controlling agricultural fields and land were inherited through the male line.

The third and earliest mummified individual, a 12-16 year old adolescent, does not fit this model. This teen was very young to have gained much respect or influence. He or she had no healed injuries and was certainly too young to be the father or mother of a large number of children. Why would this person have been kept as a mummy? At this point, it is unclear whether this was a unique occurrence or a larger social pattern. If it were a common practice, I can only speculate as to the motivation. At the time that this person was buried in the domestic sector next to a house, burials of children were important in the ceremonial sector as well–especially in association with rituals that related to water and glacial peaks. It could be that children were considered best able to communicate with supernatural deities after their death and, therefore, they were regarded as suitable “spokespersons” for the living. This was true for some later groups in the Andes (Benson 2001).

If that were the case, the earliest mummies may have not have been the focus of ancestor veneration. Rather, the mummy could have served as a medium between the living and the supernatural. It may be that this system evolved only later into a mechanism that facilitated inheritance and broke the egalitarian ethic. This transition would have occurred when the caliber of the spokesperson became tied to their status, achievements, and wealth accrued during life. Of course, with the available data we cannot know for sure. Excavations at Yuthu on a much larger scale could reveal whether there was a large-scale shift from child to adult male mummies.

Although this exciting new tradition of mummy veneration involved men and children, it is important to note that the older tradition of secondary burial of individuals who were not stored as mummies continued for individual adult females. Ancestral women continued to play an important role in the community even as this new tradition emerged.

Ancestor veneration was an institution that extended beyond the limits of the local village. Two of the mummies, a secondary burial of a woman, and several primary interments of women, men, and children at Yuthu were made when the site was used exclusively as a cemetery. Families would have had to bring the dead from other villages to this site to be buried. Therefore, some kind of social institution that valued this location existed beyond the limits of this single place.

By incorporating many aspects of village life to build a holistic picture of this early community, I have been able to learn many new things about the Formative period in Cusco. Based on models of chiefdoms, archaeologists had predicted that between 500 BC and AD 200, we would find sumptuary goods, elite burials, variation in household status, craft specialization, and significant public works projects in Formative villages. From 400 to 100 BC at Yuthu, however, we see no preserved sumptuary goods or rich burials of high status people. The three houses excavated so far were very simple with no variation in elaboration. Most craft production took place around outdoor hearths in generalized activity areas, and public works were limited to ceremonial spaces for group rituals. It is possible that all of the aspects of the chiefdom model could have appeared quickly only at the end of the period when people no longer lived at Yuthu (between 100 BC and AD 200). But, it is also possible that the multi-village polities that emerged in this area were not like those anticipated by previous scholars.

<u>How might inherited rank have emerged in Cusco?</u>

The social structures and the economics of early Cusco might have created unique opportunities for inequality. Certainly, mummy focused ancestor veneration was an institution that could have allowed wealth and status to be transferred across generations. Yet typical archaeological indicators of inherited status were not present at Yuthu. Houses did not vary in quality or elaboration and health did not vary between groups. Even though the village participated in long-distance trade networks, exotic items were not used as prestige goods that might have indicated high status burials or differences in household wealth.

It is possible that all prestige goods were perishable items like textiles or colorful feathers from the jungle which would not be recovered archaeologically. In that case, influence may have been tied to economic wealth measured in prestige goods as was predicted. Alternatively, wealth may have been measured by large herds or better agricultural fields. Another possibility is that access to labor for working fields, leveling platforms, or other tasks was more important than access to prestige goods. This scenario is intriguing because later highland Andean states valued labor service more highly than tribute in finished products. It is also possible that inequalities were not overtly economic. Given that status and politics were negotiated within a ritual system, inequalities may have been linked to perceived influence with supernatural beings.

Taphonomy and non-economic status are certainly important considerations, yet it is dangerous to explain the absence of data that fits anthropological expectations by simply asserting that material correlates will be impossible to find. Given that the adult mummies were created and cared for by people living in other villages after Yuthu was abandoned, mummies may have begun to serve as mechanisms for inheritance only after Yuthu was abandoned. If that were the case, this ideological shift was present in Yuthu, but significant inequalities were not.

It is possible that future excavation at later villages will never recover indications of significant individual inequalities suggesting that society was similar to the "group oriented chiefdoms" described by Renfrew (1974). In this type of society, prestige goods were uncommon and solidarity was associated with group activities. This type of social organization contrasts with "individualizing chiefdoms" in which leaders were identifiable by rich burials or prominent residences (expectations that closely resemble those outlined for the Cusco Formative period by previous scholars).

Increasingly, scholars working in the Andes use the model of corporate societies. In this type of organization, power is held by groups rather than individuals and hierarchies rank groups such as families instead of individuals. Public ceremonies and rituals that stress shared identity and egalitarian principles are more important. Conspicuous consumption and glorification of the elite is often lacking even when real inequalities exist (Nielsen 2006). This type of social organization is a distinct possibility at Yuthu where authority was purposely depersonalized by displacing it from the speaker to an ancestor. If that were the case, personal wealth may not have been common or appropriate even if inequalities were very real.

What social institutions played a role in the emergence of multi-village polities?

Settlement patterns that include sites from at least an 800 year time span suggest that multi-village polities arose in many sub-regions of Cusco including the area northwest of the modern city. Excavations at Yuthu have found that conditions were consistent with those that anthropologists expect to see in contexts where the loss of village autonomy occurs. The population was increasing on the plain. Despite the fact that the agropastoral system seems to have been well-suited to the environment, skeletal data has shown that these villagers were under rather high degrees of stress as a result of poor nutrition, difficult work, disease, or other factors. It seems that the subsistence regime was not adequate to support the population.

This problem may have been exacerbated by a shift from a cool and wet environment to a dryer climate toward the end of the Formative period. Regionally, this chage appears by AD 100 in pollen data from Lake Marcacocha near Ollantaytambo (Chepstow-Lusty, et al. 1998). At Yuthu, gastropods that inhabit drier climates were present only after the village was abandoned and the site was converted to a cemetery. In the Andes, climatic cooling can have serious effects on the local ecology creating a dryer environment and shifting the limits of where certain crops can grow lower in elevation (Seltzer and Hastorf 1990). This might have had a real effect on the productivity of land in the Xaquixaguana Plain study area resulting in changes in: (1) which crops were grown, (2) what agricultural technologies were used, and/or (3) where people farmed.

As a result, there may have been increasing competition between communities or families that sought to expand their own access to land or other resources, perhaps at the expense of others. These efforts probably motivated at least some of the violent conflict that was prevalent at Yuthu. It is possible that violence occurred during village raids though no other evidence of inter-village raiding such as palisades, defensible site locations, or burned temples or houses have been found.

These conditions are known to be a hot-bed for the formation of multi-village polities cross-culturally. Yet, without excavations at additional sites it is very difficult to understand the relationships between Yuthu and other villages. For example, the ceramic chronology is not significantly refined to determine whether the largest site was occupied at the same time as Yuthu and other smaller settlements. In addition, it is unclear if any political institutions cross-cut multiple villages. At Yuthu, politics were tied to rituals related to ancestors and the sacred landscape. During future excavations at other Formative period sites, we may look for shared maximal sacred mountains as evidence for a multi-village polity. At Yuthu, for example, there was a shift from veneration of the glacial peak Pitusiray to Chicón. If we find a similar shift at several villages from diverse glacial peaks as objects of veneration to a single shared sacred mountain, it may indicate the emergence of a shared identity that was related to polity formation.

Implications for comparative study of early villages

This study suggests that archaeologists who study the origins of inequality should not focus exclusively on economic indicators. Ideological changes that allow inequalities may be identifiable *before* economic indicators. Findings also suggest that corporate type multi-village polities must be considered as a possible scenario for the emergence of inequality and multi-village polities. The study also highlights that in early villages, ritual and politics cannot be analyzed independently. They are not only linked, but are often a single system.

Concluding remarks

Knowing what life was like in early villages, how inequality was first established, and what institutions were used to achieve political control has important implications for understanding the long-term history of Cusco. Lack of earlier research on this time period has led to uninformed speculation, especially regarding the antiquity of certain practices recorded in ethnohistoric documents describing the Inka. Many scholarly articles have one of two tendencies. Some presume that Inka practices which were uncommon outside the heartland emerged with this late empire. Others attempt to investigate the antiquity of widespread Andean traditions. Yet, the lack of research on early villages often leads scholars to conclude that traditions emerged with earlier states – often the Wari, less often Tiwanaku. I suggest that this has less to do with the realities of history and more to do with the bias of research toward states.

This study has shown that some traditions that were widespread in the colonial and modern Andes were not practiced by early villagers in Cusco. For example, the village was not part of a vertically integrated spatially dispersed community such as the vertical archipelago described by Murra (1968, 1972, 1985a, b) who suggested that the tradition was probably very ancient and called archaeologists to investigate it.

Other traditions have been identified in this early village. For example, many scholars who study how the Inka used the conception of a hierarchically ranked sacred landscape to legitimize their rule often note that the belief system must have been ancient for this strategy of incorporation to work. Indeed, this study has shown that at least in Cusco, this tradition extends back about 2000 years before Inka imperial expansion.

Many scholars are interested in the role that ancestor veneration played in the Inka state. Some have suggested that mummy veneration emerged as a political strategy of earlier Andean states (Isbell 1997). Others suggest that the Wari specifically introduced this tradition to Cusco (McEwan 2005). We can now dismiss the suggestions that mummy veneration emerged as a tool of statecraft or that it was a practice that the Inka learned from other groups. In fact, mummy veneration was an indigenous development in Cusco that emerged with early villages in which it became a way to establish and maintain inequalities. This local practice continued and was modified and utilized much later by the Inka and other groups.

Overall, this study highlights the fact that knowledge of long-term local history will allow us to give credit to indigenous developments that contributed to the Inka state. Extensive excavation of early villages is the only way to build such a detailed local history. Moving forward, the best way to proceed will be to build a collection of similar studies that employ a holistic approach to the study of village life so that we can appreciate the similarities and differences among Formative period settlements. Through this kind of research, we will be able to identify the institutions and cultural traditions that will help us to understand *how* broad socio-political changes occurred in the Andes.

Appendix

Radiocarbon date calibration

All radiocarbon dates from Yuthu were processed by the Arizona Radiocarbon Lab and were calibrated using OxCal 4.1 software and the ShCal 04 calibration curve for the southern hemisphere. The four radiocarbon dates from Unit A were calibrated using an Analysis Model that considered the stratigraphy of the unit (the “Sequence Feature” of Oxcal software package). This kind of probability modeling effectively reduces the two sigma possible range of dates. Because the samples taken from Unit D came from features that were not stratigraphically superimposed, no modeling was used for those dates.

Table G: Radiocarbon date calibration for samples from Unit A.
This output was created by Oxcal 4.1 using a sequential model on September 8, 2009.

	Unmodeled (BC/AD)			**Modeled (BC/AD)**			**Indices A_{model} 110.5 $A_{overall}$ 111.5**				
Name	**from**	**to**	**%**	**from**	**to**	**%**	**Acomb**	**A**	**L**	**P**	**C**
Curve ShCal04											
Sequence											
Boundary Start 1				-709	-211	95.4					97.1
Sequence 1											
R_Date AA84430 Yuthu RC-61	-376	-51	95.4	-361	-62	95.4		106.2			98.2
R_Date AA84431 Yuthu RC-104	-385	-171	95.4	-384	-205	95.4		101.3			99.4
R_Date AA84432 Yuthu RC-109	-393	-43	95.4	-376	-144	95.4		114.3			98.7
R_Date AA84433 Yuthu RC-110	-509	-209	95.4	-417	-209	95.4		101.1			99.6
Boundary End 1				-371	166	95.4					95.4

I calibrated all of the published Formative period dates from the Cusco area without modeling. Those dates are listed in Table 2 with the associated pottery, starting with the earliest style. The dates that had no information about associated pottery style are included at the end of the table as “not specified.” Overall, Marcavalle pottery was associated with dates from about 1200 to 400 BC, Chanapata pottery was associated with dates from 700 to 1 BC, and Chanapata-derived pottery was associated dates from 400 BC to AD 200. The fact that these dates overlap may be due to several factors, including radiocarbon error range, non-standardized reporting of pottery styles, or the possibility that these styles were used at the same time during transition periods, either within a single site, or in different sites. Overall, however, these dates support the general ceramic chronology of Rowe (1943) that placed Marcavalle pottery as the earliest Formative period style, followed by Chanapata pottery, and finally Chanapata-derived (sometimes including Pacallamoqo style when found near Maras).

The site of Yuthu was one of the earlier sites with Chanapata derived pottery, dating to between 400 and 100 BC.

Table H: List of Cusco area Formative period dates

Ceramic Style	**Radiocarbon years BP**	**Calibrated date**	**Site**	**Source or sample number**
Marcavalle	2916 ± 55	1258 to 896 BC, 95.4%	Marcavalle	Lawn 1971
Marcavalle	2860 ± 47	1114 to 834 BC, 95.4%	Marcavalle	Lawn 1971
Marcavalle	2685 ± 49	913 to 561 BC, 95.3%	Marcavalle	Lawn 1971
Marcavalle	2661 ± 46	896 to 548 BC, 95.3%	Marcavalle	Lawn 1971
Marcavalle	2645 ± 115	976 to 403 BC, 95.4%	Marcavalle	Lawn 1971
Marcavalle	2571 ± 45	798 to 417 BC, 95.4%	Marcavalle	Lawn 1971
Marcavalle	695 BC ± 115	insufficient information	Marcavalle	Patterson 1967
Marcavalle	650 BC ± 150	insufficient information	Chanapata	Patterson 1967
Chanapata	2380 ± 70	750 to 199 BC, 95.5%	Huillca Raccay	Burleigh 1983
Chanapata	2190 ± 60	373 to 3 BC, 95.4%	Chokepukio	McEwan Et Al 1995
Chanapata	2130 ± 70	350 BC to AD 57, 95.4%	Chokepukio	McEwan Et Al 1995
Chanapata-derived	2131 ± 55	356 BC to AD 73, 95.4%	Marcavalle	Lawn 1971
Chanapata-derived	2096 ± 51	193 BC to AD 69, 95.4%	Marcavalle	Lawn 1971
Chanapata-derived	2073 ± 29	151 BC to 68 AD, 95.4%	Batan Orco	Zapata 1998
Chanapata-derived	2525 ± 39	764 to 413 BC, 95.4%	Wat'a	Kosiba 2009
Chanapata-derived	2495 ± 39	755 to 405 BC, 95.4%	Wat'a	Kosiba 2009
Chanapata-derived	2005 ± 38	49 BC to AD 134, 95.4%	Wat'a	Kosiba 2009
Chanapata-derived	1985 ± 42	41 BC to AD 212 95.4%	Peqokaypata	Bauer and Jones 2003
Chanapata-derived	1881 ± 42	AD 77 to 325 95.4%	Peqokaypata	Bauer and Jones 2003

Chanapata-derived	2213 ± 61	361 to 62 BC, 95.4%	Yuthu	AA84430 \ Yuthu RC-61
Chanapata-derived	2257 ± 36	384 to 205 BC, 95.4%	Yuthu	AA84431 \ Yuthu RC-104
Chanapata-derived	2226 ± 76	376 to 144 BC, 95.4%	Yuthu	AA84432 \ Yuthu RC-109
Chanapata-derived	2369 ± 36	417 to 209 BC, 95.4%	Yuthu	AA84433 \ Yuthu RC-110
Chanapata-derived	2329 ± 37	403 to 206 BC, 95.4%	Yuthu	AA84434 \ Yuthu RC-214
Chanapata-derived	2295 ± 38	391 to 203 BC, 95.4%	Yuthu	AA84435 \ Yuthu RC-216
Chanapata-derived	2223 ± 36	366 to 96 BC, 95.4%	Yuthu	AA84436 \ Yuthu RC-251
Chanapata-derived	2243 ± 36	383 to 118 BC, 95.4%	Yuthu	AA84437 \ Yuthu RC-255
Not specified	2520 ± 150	907 to 204 BC, 95.4%	Chanapata	Yamasaki et al 1966
Not specified	2360 ± 760	2486 BC to AD 1148 95.4%	Chanapata	Yamasaki et al 1966
Not specified	3330 ± 240	2200 to 934 BC, 95.4%	Chanapata	Kreuger and Weeks 1966

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