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Social Identities and State Collapse:
A Diachronic Study of Tiwanaku Burials in the Moquegua Valley, Peru

BY

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THESIS

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This thesis is dedicated to the people of Tumilaca, past, present and future.

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SUMMARY

State collapse is a frequent and recurring process in human history, and has been a topic of increasing interest in archaeology in the past several decades. Archaeological studies of state collapse have principally focused on recognizing the material correlates of collapse, on understanding why political breakdown occurs, and on the macro-scale impacts on economics, regional networks, monumental construction, and settlement patterns. This thesis examines the micro-level effects of state collapse and considers how small communities embedded in states respond to political fragmentation.

Scholars researching contemporary examples of state collapse have demonstrated that political disintegration can have ramifications for the entire population. Further, they have highlighted the ways in which states act as sources of identity and indicated that the political breakdown of a state has implications for how people define themselves as groups and individuals. In particular, state collapse frequently precipitates a reworking of salient identities. As identities rooted in shared membership of a state are eroded, internal factional identities become increasingly significant. Using archaeological data from Tiwanaku sites in the Moquegua Valley, southern Peru, this thesis investigates whether similar patterns are apparent in an example of ancient state collapse.

The Tiwanaku are one of the earliest Andean states. By approximately AD 500, they were dominant among competing polities in the Titicaca Basin and by AD 750, the state had expanded out of its heartland and exerted cultural and economic influence across the South Central Andes. The largest Tiwanaku settlement outside of the altiplano heartland was in the Moquegua Valley, 300km away. Tiwanaku immigrants to Moquegua brought with them homeland practices and maintained close ties with the heartland. However, by AD 1000, the

SUMMARY (continued)

Tiwanaku state was plagued by factional in-fighting in both the altiplano and the Moquegua Valley, and the state began to collapse.

State collapse in the Moquegua Valley was accompanied by the violent destruction of monumental architecture, abandonment of major urban administrative centers, the rejection of certain state associated iconographic motifs, and changes in settlement pattern. Specifically, there was population dispersal out of the middle area of the valley where state centers had been. Groups fled to the coast and up-valley, where they established much smaller, nucleated and often defensible villages

Communities in these new villages had rejected Tiwanaku state authority and physically removed themselves from state administrative centers. This thesis examines how inhabitants of these new, smaller communities viewed themselves and each other in the context of this major socio-political turmoil. Evidence from cemeteries was analyzed because a) cemeteries contain both biological and cultural data, and although identities are cultural constructs, they are often rooted in biology; b) cemeteries offer access to individuals, and to the intersection of multiple types of identity; c) burials are particularly useful for exploring shifting notions of identity during socio-political change. Burials are not straightforward reflections of a deceased individual's experiences, but instead are an idealized representation of the social categories and roles that the living thought were important. By presenting ideal, rather than actual, notions of identity, funerals are moments for materializing how things should be in the future and are thus central to the redefinition of salient identities.

A diachronic analysis of funerary practices from before and after state collapse in the Moquegua Valley was conducted. The cemetery data was drawn from two sites – Chen Chen, a

SUMMARY (continued)

state administrative center in the middle valley, and Tumilaca la Chimba, one of the small, villages established in the wake of state collapse. A total of 202 burials were analyzed, 138 from Chen Chen and 64 from Tumilaca la Chimba. The analyzed burials from Chen Chen were excavated by other archaeologists in the late 1990s and early 2000s. The burials from Tumilaca la Chimba were excavated for this thesis in 2006 and 2007. For each of the 202 burials, every stage of funerary practice was examined, including the construction and placement of the tomb, preparation and interment of the body, the cultural items buried with the dead and post-burial activities. The comparative analysis of pre and post collapse mortuary data indicates that following Tiwanaku state collapse, the population at Tumilaca la Chimba used funerals to renegotiate significant affiliations.

State period mourners at Chen Chen performed funerary rituals that were derived from homeland traditions and demonstrated their ongoing affiliation with the state heartland. But this homeland identity was rooted in specific areas of the heartland: the islands and Copacabana Peninsula, not the state capital. Mortuary behavior is consistent across the site, regardless of corporate social group. While life experience was undoubtedly colored by age, sex, status, occupation, these identities were not expressed in death. During the height of Tiwanaku state occupation in the Moquegua Valley, death was a moment to reaffirm social bonds that emphasized the united front of the community.

Collapse phase mourners at Tumilaca la Chimba maintained earlier funerary practices. Community wide identity was rooted in their Tiwanaku ancestry – despite rejecting the political authority of the state, this community asserted a collective Tiwanaku identity. As extra-community networks narrowed, innovations in funerary practice specific to the Moquegua

SUMMARY (continued)

Valley are apparent. Social organization into intra-community groups was maintained, but these groups began to use funerary ritual to assert difference between groups. Funerary display of personhood was maintained, with few distinctions in age, sex, status. At Tumulaca la Chimba, there was an overall refocusing of funerary ritual onto intra-community factions and away from village wide unity. By materializing and asserting difference between intra-community groups, so mourners used funerals to demonstrate and reinforce the salience of factions within the community, a process that may have contributed to the ultimate downfall of Tiwanaku communities in the region.

1. STATE COLLAPSE

1.1 Introduction

The disintegration of the Tiwanaku state (ca. AD 1000) marked the end of a political system that developed out of an ethos of inclusion and diversity. The state emerged around AD 300 near the shores of Lake Titicaca, and within three centuries an urban capital flourished at Tiwanaku, neighboring communities had been incorporated into the state's sphere and Tiwanaku cultural influence had spread far across the South Central Andes. The Tiwanaku state comprised multiple groups drawn into the cultural and political network that radiated from the altiplano center. Through material culture, ritual practice and daily activities, these groups simultaneously demonstrated a shared identity rooted in membership of the state and asserted difference based on regional, community, neighborhood, and familial affiliations. Increasing state centralization was accompanied by growing political tensions which threatened the bonds tying the diverse groups together. Tension turned violent, and ultimately led to the destruction, abandonment and rejection of state control in the capital and Tiwanaku enclaves. This study focuses on how Tiwanaku nested identities were reworked following the disintegration of the larger political system.

More broadly, using the Tiwanaku as a case study, this dissertation examines the ways in which identities are affected by and interwoven with state collapse. It draws on mortuary data from the Moquegua Valley, Peru to explore whether dramatic changes in the macro level political organization have implications at the micro level, affecting the ways in which members of small communities define themselves, their members and their relations with others. In short, this thesis examines how identities are negotiated and asserted during political fragmentation.

Comparison of funerary practices dating to before and after the collapse of the Tiwanaku state in the Moquegua Valley, circa AD 1000, indicates that identity was interwoven with political fragmentation in complex ways. Despite rejecting the political authority of the Tiwanaku state, post-collapse communities in the Moquegua Valley largely maintained the funerary rituals that their immediate ancestors had practiced during the height of Tiwanaku state authority. By maintaining these rituals, post-collapse mourners used funerals to assert shared identities that were rooted in Tiwanaku, and in altiplano, heritage. However, comparative burial data from before and after state collapse also suggest that in the wake of political turmoil and violent state collapse, intra-community identities became more important. Tiwanaku state collapse precipitated a renegotiation of salient identities, and following political disintegration communities were increasingly divided and fractured as their members adapted to changes in the overarching political structure.

1.2 **Collapse Studies in Archaeology**

State collapse is a common process, evident in disparate geographical and temporal contexts (Tainter, 1988). Among the most famous archaeological examples are the collapses of the Western Roman Empire and the Lowland Maya, but collapse is also a major component of the historical trajectories of China, Mesopotamia, Andean South America, Egypt and Greece (Culbert, 1973; Demarest, 2004; Grant, 1999; Hsu, 1988; McEwan, 2006; E. Morris, 2006; I. Morris, 2006; Tainter, 1988; Yoffee and Cowgill, 1988). Complex societies are not smoothly operating entities, but instead are fragile and unstable systems, liable to fragmentation and disintegration (Schwartz, 2006). States face a range of problems, including troubles attaining income, increasing costs and the need to maintain legitimacy (Cowgill, 1988). The multiple

examples of complex political disintegration demonstrate that collapse is not an anomaly, but a frequently occurring process in socio-political systems.¹

Interest in political disintegration is long-standing. As early as 700BC, Hesiod referred disparagingly to a ‘morally defective’ people who succeeded the heroes of the Golden Ages (Snodgrass, 1971). Thucydides traced Greek history from the Trojan wars until the 5th Century BC, covering the Greek Dark Ages (ca. 1200 – 750 BC). He discussed a period of unrest following the Heroic Age, during which cities were small, poverty was prevalent, piracy rife and a general sense of unease and danger pervaded communities (Snodgrass, 1971). Turning to the collapse of the Roman Republic, Plutarch structured his discussion of the failure of the republic around the biographies of six major figures (Plutarch, 2006). Even in these earliest histories there is an awareness of and a concern to narrate troubled as well as ‘golden’ periods in the past. Later, Edward Gibbon dedicated six volumes to imperial collapse in ‘The History of the Decline and Fall of the Roman Empire’ (1788). Gibbon’s descriptions of “poor, voracious and turbulent” barbarians who “subverted the laws and palaces of Rome” (Gibbon, 1788) influenced interpretations of the fall of Rome for several centuries and the legacy of his work is still evident in some work today (Ward-Perkins, 2005).

However, despite the frequency of state disintegration and despite interest by early authors, until recently understanding collapse was only a minor concern in the social sciences (Tainter, 1988). In contrast with the extensive literature on the rise of complex societies, discussion of collapse was “most conspicuous by its absence” (Yoffee and Cowgill, 1988: 1).

¹ Tainter (1988) lists the following collapses through human history: the Western Chou Empire, Harrapan Civilization, Mesopotamia, the Egyptian Old Kingdom, the Hittite Empire, Minoan Civilization, Mycenaean Civilization, the Western Roman Empire, the Olmec, the Lowland Classic Maya, Teotihuacan, Casas Grandes, the Chacoans, the Hohokam, the Eastern Woodlands, the Wari and Tiwanaku Empires, the Kachin, and the Ik.

The relative paucity of research and debate on collapse has been explained as a result of archaeologists' eagerness to study 'golden ages' when ancient civilizations flourished instead of the 'Dark Ages' of post-collapse situations (Schwartz and Nichols, 2006).

The studies of collapse that were undertaken tended to be case specific. For example, the collapse of the Roman Empire (Gibbon, 1788; Mazzarino, 1966; West, 1932), the Greek Dark Ages (1200 – 750 BC) (Foxhall, 1995; Snodgrass, 1971) and the collapse of the Lowland Classic Maya (Adams, 1973; Culbert, 1973; Willey and Shimkin, 1973) have received considerable attention. However, there was little attempt to integrate data from these diverse examples and to address comparatively the phenomenon of collapse. Alternatively, discussion of collapse was embedded in general theories of social change. The German historian Oswald Spengler argued that all cultures go through a cycle of growth and decline (Spengler, 1962). In this perspective, collapse is regular, anticipated and inevitable. Another historian, Arnold Toynbee, claimed that sustaining growth was inherently risky and that it was this risk that often leads to societal collapse (Toynbee, 1972). He suggested that 'spiritual demoralization' leads to an internal proletariat turning against society's leaders, and, although not inevitable, this pattern of disintegration was common in most cases of collapse. In her Dynamic Model, Joyce Marcus (1998) develops the notion of cyclic rises and falls in ancient state development and disintegration. Discussing examples from Mesoamerica, the Andes, Mesopotamia, Egypt and the Aegean, she argues that common to these diverse ancient states was a repeated process of "cyclic unification and dissolution" (Marcus, 1998: 91) during which states cycle through peaks, when they are territorially extensive and have complex settlement hierarchies, to valleys when "formally extensive states... [break] down into allied or semiautonomous provinces" (Marcus, 1998: 59).

In anthropology, Rappaport contested that complex systems are inherently maladaptive and that they adapt to the point where they are no longer able to respond flexibly to stress (Rappaport, 1978). Complex social systems operate through coherence in which change in one part of the system will affect other parts of the system. States are characterized by hyper-coherence, which means that disaster in one place affects the entire system and so can ultimately lead to state collapse (Flannery, 1972).

Perspectives rooted in systems theory, with their emphasis on the interconnectedness of social structures, mandate an all encompassing, devastating and dramatic perspective on state collapse. Because collapse of one part of the system inevitably leads to the downfall of other parts, state collapse is seen as a disastrous and final event. Collapse, from this perspective, must be total. Although specific case studies had received attention from their respective scholars, the absence of a synthesis of evidence from disparate examples of state collapse made it difficult to challenge the all encompassing notion of collapse.

It was in part a reaction to this totalizing view of collapse that led to critical comparative discussion in the late 1980s and a shift in the focus of collapse studies (Tainter, 1988; Yoffee and Cowgill, 1988). Drawing on archaeological and literary data from geographically and temporally distant contexts and incorporating perspectives from sociology and political science, the data oriented comparative studies published in the past two decades have focused on several key themes; defining collapse, identifying collapse, explaining collapse and examining what happens after collapse.

1.2.1 **Defining Collapse**

Debate surrounds the very use of the word ‘collapse’ as a synonym for political disintegration. While some authors see its use as unproblematic, stating that collapse is

“fundamentally a sudden, pronounced loss of an established level of socio-political complexity” (Tainter, 1988: 193), others caution that collapse implies the end of not only “political systems” but also “their accompanying civilizational frameworks” (Eisenstadt, 1988: 242). At the core of these debates are differing conceptions about what is meant by the term ‘state’; whether it refers only to a socio-political structure or whether state denotes both a system of political organization and that particular system’s associated cultural complex. This distinction is significant, and one of the principle advances in collapse studies has been the recognition that collapse is very rarely total, and scholars should approach its investigation by thinking about different institutions rather than assuming a complete, catastrophic end to civilization (Demarest, 2004; Rice, et al., 2004; Yoffee, 1988). Research in the last two decades has made a significant departure from the totalizing, all encompassing approach to collapse that was evident in earlier discussions of specific examples as well as in broad theories of social change (Chase and Chase, 2004).

However, I concur with Yoffee when he states that “the collapse of a state is a phrase with obvious political reference” (Yoffee, 1988: 15). Although political disintegration is not necessarily accompanied by the end of other cultural elements, the breakdown of a political system does represent the collapse of a significant component of society. In short, state collapse is “that process in which the political system breaks down and societies become organized on a less complex scale” (Conlee, 2006: 99).²

² In addition, the term ‘collapse’ is often used interchangeably with phrases such as ‘fall’, ‘fragmentation’, ‘decline’ and ‘transition’ (Cowgill, 1988; Rice, et al., 2004; Yoffee, 1988). The connotations of these words are different. Some (fall, fragmentation, collapse) refer to a situation in which a meaningful entity ceases to exist. Others (decline, decay, decadence) suggest a deterioration in social conditions (Yoffee, 1988). State collapse refers to the end of an existing political system. In this study, the terms ‘collapse’, ‘fragmentation’, ‘disintegration’ and ‘break-down’ are considered equivalent.

1.2.2 **Identifying Collapse**

Archaeologists and historians have noted that a series of phenomena are associated with state collapse, including the abandonment of palaces and central storage facilities, the disappearance of several levels of settlement hierarchy, the fragmentation of the military into smaller units, the abandonment of public building works, the absence of rich burials, the abandonment or reuse of elite residences, a cessation in assemblages of luxury items, the end to large-scale redistribution or market exchange, cessation of craft-specialist manufacture, reduction in external trade, shift to a dispersed settlement pattern, establishment of new settlements in defensible locations, and a significant reduction in population density (Adams, 1973; Renfrew, 1979).

The material correlates of these features are widely cited as evidence for state collapse (Bermann, et al., 1989), but increasingly identifying collapse in the archaeological record is problematized. The features mentioned above are, for the most part, identifiable archaeologically. The abandonment and destruction of monumental buildings and infrastructure, a decline in luxury items and in elaborately furnished burials, and shifts in settlement patterns are all recognizable in the archaeological record. However, several of the features taken as evidence for collapse can occur even when the political system remains in place (Bronson, 1988). For example, in late 19th century Britain, funerary practices underwent significant changes despite considerable continuity in political organization. Over time, elaborate funerals were considered ostentatious and became unfashionable (Parker-Pearson, 1982). Richly furnished burials can and do disappear without major changes in socio-political organization. Similarly, the establishment of settlements in defensible locations is not necessarily indicative of state collapse but could be associated with state defensive strategies and expansion (Arkush, 2006; Rowlands, 1970).

Central to identifying state collapse is the co-occurrence of multiple indicators. Further complicating this issue is that several scholars have noted considerable continuity in many spheres of post-collapse life despite political disintegration (Chase and Chase, 2006; Cooper, 2006). Perhaps most indicative of state collapse is the disappearance of the political state system (i.e. destruction of administrative and palatial structures) and the end of the political economy (i.e. a decline in craft specialization, central storage facilities and large-scale distribution).

1.2.3 Explaining Collapse

Understanding why state fragmentation occurs is an explicit theme in recent collapse literature. Although this thesis is concerned with the aftermath of state collapse, not with why it occurred, the reasons for political breakdown have implications for ongoing social relations within post-collapse communities and thus have direct bearing on this project. The synthesis of data from disparate examples of state fragmentation has highlighted the multiple causes of collapse.

Environmental explanations have been heavily criticized but ecological change and natural disaster are still frequently cited as principal causes of collapse. For the Tiwanaku, the paleo-limnological evidence for a major period of drought between AD 1100 and 1400 has supported the argument that drier conditions caused a decline in agricultural production, abandonment of agricultural fields and ultimately political and even cultural collapse (Binford, et al., 1997; Ortloff and Kolata, 1993). The timing of the drought relative to political fragmentation has been challenged (Williams, 2002), as has the degree to which agriculture was controlled by the state and therefore the extent to which the state relied on agricultural production to maintain and legitimize itself (Graffam, 1992). In southern Mesopotamia, Weiss connects environmental change with the rise and fall of polities, arguing that early historic societies were highly

vulnerable to climatic change. Using soil micro-morphology studies he associates the Late Uruk collapse (around 3000 BC), and the collapse of the Subir state (around 2200 BC) with droughts (Weiss and Bradley, 2001; Weiss and Courty, 1993). Yet, temporal association of climatic and political change alone is generally insufficient as an explanation for state collapse. Direct connection between the state's reliance on an agricultural base, and therefore on particular environmental conditions must be demonstrated if environmental explanations for state collapse are invoked.³

Collapse has also been attributed to subsistence problems. Culbert (1988) argues that, regardless of all of the other factors that contributed to the decline of lowland Maya political organization, subsistence failure was significant. Noting that population decline was extensive between AD 800 and 1000, he suggests that Maya agriculture became increasingly intensive over time and that it reached such a scale that it was unstable. Management systems were unable to cope with the massive scale of production, subsistence practices were vulnerable to short term environmental stress, and ultimately unsuited to long term environmental degradation. It is proposed that the Maya overstretched their ecological environment, and relied increasingly on a subsistence system unable to cope with periodic or long term stress (Freter, 1994).

Internal factors, notably political competition, have also been popular explanations for political collapse in recent literature (Hsu, 1988; Marcus, 1989; Millon, 1988). Examining the fall of the Han Dynasty, Hsu (1988) explores how the rise of intellectualism and the creation of

³ Control over agricultural resources was a core component of state development in many examples of ancient state development. I do not challenge the impact that major environmental change would have on state authority. However, it is the interplay between environmental and social factors that must be addressed. For example, Williams has argued that in Moquegua, Tiwanaku state collapse was not the result of drought, as hypothesized by other scholars, but that internal factionalism was already developing in the colony. Wari hydraulic practices reduced water supply to Tiwanaku towns, and provided the impetus for an independent movement and the subsequent destruction of Tiwanaku state centers in Moquegua (Williams, 2002).

an Imperial Academy in AD 5 led to the emergence of a subsystem of ‘literati’ in the Western Han. Solidarity among the literati was strong, and the subsystem eventually became so autonomous that conflict with the imperial court was inevitable (Hsu, 1988). At the same time, the huge Han Empire was characterized by strong regionalism and local loyalty. These internal cleavages were the ultimate cause of the fall of the Han Dynasty. Political competition is also cited as a significant factor in Teotihuacan fragmentation. Arguing that Teotihuacan and other classic polities may not have been as centralized and stable as previously thought, Marcus (1989) suggests that Teotihuacan operated as a confederacy of groups, and that rivalries between these groups were the fault lines along which the polity eventually disintegrated. Millon (1988) argues that Teotihuacan’s temples and palaces were likely destroyed by Teotihuacanoes, and the rising tension in the city was a result of deteriorating conditions in the exchange networks. The concomitant stress exacerbated existing tensions between political factions in society.

External social factors have found less favor recently, although invasion is still occasionally offered as an explanation. Certainly the conquest of the Aztec and Inka Empires by the Spanish are clear examples of invasion (D’Altroy, 2002; Smith, 1996). Ward-Perkins (2005) critiques those scholars who play down the impact of ‘barbarian’ invasion in the end of the Western Roman Empire, and argues that the Franks were a major factor in the end of the empire, an end which he equates with the collapse of civilization. Although stating that he does not consider invasion the primary cause of Roman Imperial collapse, Bronson argues that conflict with barbarians was an important contributing factor. In fact, he goes so far as to argue that “it is not easy to find a documented instance of a state that is destroyed politically, so that its former territory reverts at least temporarily to non-state organizational modes, in which the immediate

agents of destruction are not barbarians” (Bronson, 1988: 201). For Bronson, then, external factors are central to most examples of state collapse.

Most notable in recent discussions about the causes of collapse is the emphasis on multi-factor explanations (Chase and Chase, 2004; Culbert, 1988; Dever, 1989; Williams, 2002). Proponents of multi-factor explanations argue that a focus on one factor, whether environmental, political, ideological or other, is overly simplistic. Instead, they advocate an approach that focuses on the interaction of various factors. For example, discussing the cyclical collapses of state government in Palestine during the Bronze Age, Dever (1989) claims that thin soils and variable rainfall alone are not sufficient explanation for collapse, but that they interacted with culturally specific social factors, including demographic change, to contribute to repeated political disintegration.

The reason why collapse happened has direct implications for post-collapse affiliations. Comparative approaches to collapse demonstrate considerable causal variability and indicate the contextual and historically contingent nature of collapse (Yoffee, 1988).⁴ State collapse resulting from natural disaster might precipitate the rejection of broadly shared identities rooted in state

⁴ In his comparative study, Tainter (1988) actually set out to provide a model for understanding, or even predicting collapse. He argues that, contra to what he sees as the perspective of many social scientists complex society is not necessarily desirable. As he notes, when complex society is viewed as advantageous, then necessarily collapse must be seen as catastrophe. Arguing that complex societies are very recent in human history, Tainter conceptualizes collapse as a return to a normal level of lower social complexity. Following a lengthy critique of earlier explanations of collapse including natural disaster, intruders, social dysfunction and mystical factors, he creates a model for understanding why complex societies collapse. Adopting an economic approach, Tainter suggests that collapse is actually an appropriate response to declining marginal returns, which are the result of increasing investment in complexity. Although Tainter’s synthesis of numerous examples is immensely useful, I concur with Yoffee and Cowgill (1988) that analysis of numerous examples does not “produce a single powerful explanatory and predictive theory of sociopolitical failure” (Yoffee, 1988: 18) and instead highlights the range of factors that can lead to political fragmentation.

ideology, but perhaps not impact internal identities. In contrast, foreign invasion and state takeover might contribute to an increased sense of collective identity, in which state members unify in response to an outside threat. State collapse resulting from internal political competition is the most likely to result in the erosion of state based identities and the concomitant resurgence of factional affiliations. Investigating identity renegotiation after collapse requires understanding why state disintegration happened.

1.2.4 After Collapse

Cross-cultural and interdisciplinary discussions about collapse have focused on understanding what collapse means, how scholars can recognize it in the archaeological record and why collapse happens. Until very recently, the longer term implications of political fragmentation remained little considered (Bronson, 2006; Chase and Chase, 2006; Conlee, 2006; Cooper, 2006; Kolata, 2006; Masson, et al., 2006; McEwan, 2006; E. Morris, 2006; I. Morris, 2006; Nichols and Weber, 2006; Schwartz and Nichols, 2006; Sims, 2006; Stark, 2006).

Concern with post-collapse situations has largely concentrated on the political and economic implications of collapse, in particular the presence or absence of political regeneration (Bronson, 2006; Cooper, 2006; Kolata, 2006).⁵ Political regeneration refers to the resurgence of complex socio-political organization, analogous to the pre-existing state system. Comparative study indicates that political regeneration is actually a common occurrence in collapse contexts.⁶ However, studies focused on post-collapse situations demonstrate that, regardless of whether

⁵ Bronson (2006) suggests three different kinds of regeneration; false (in which there is no connection between a new complex organization and an earlier one in the same place), stimulus (in which a newly invented state incorrectly claims to be a revival of an earlier state) and template (where a new state does conform closely to the model of an earlier state).

⁶ Importantly for this study, of the eleven case studies presented in the volume *After Collapse*, the only example in which political regeneration definitely does not appear to have happened is among post-Tiwanaku Tumilaca communities in the Moquegua Valley, Peru (Sims, 2006).

political regeneration is evident, considerable continuity is actually apparent in the archaeological record even in the clearest examples of state fragmentation. For example, in Mesopotamia, cultural continuity is evident in pottery assemblages with recognizable forms maintained through the political rises and falls of the Early to Middle Bronze Ages (Cooper, 2006). In the Maya lowlands, ceramics and architecture show notable similarity between the Classic and Post-Classic periods (Chase and Chase, 2004). In the Titicaca basin, there was considerable stability in rural economic practices following the collapse of the Tiwanaku state (Graffam, 1992). One author goes so far as to state that “whenever one sets out to discuss collapse, one ends up talking about continuity” (Bowersock, 1988: 174).

1.3 Archaeological Approaches to Collapse; a Summary

Collapse occupies an increasingly prominent place in archaeological literature. Critical comparative studies demonstrate just how recurrent collapse has been in human history and also highlight the complex, variable and historically contingent nature of collapse. The need for careful terminology is clear. Collapse is very rarely total and various institutions are impacted differently. Defining state collapse in political terms means identifying the material correlates of political fragmentation, and separating these from indications of change in other components of society. Collapse can be the result of several different causes and single factor explanations generally over simplify situations in which political, ideological, economic and environmental causes are intertwined.

Archaeological collapse studies have advanced rapidly in the past two decades and are now an integral part of mainstream archaeology. However, consideration of what happens after collapse is still in its infancy. The evidence for both continuity and change in post-collapse situations has been brought to bear largely on questions of economics, politics, craft production

and settlement patterns, with particular interest in the regeneration of complex political organization. However, processes of regeneration involve the “active participation of individuals who make choices among the multiple and overlapping identities available to them” (Yoffee, 2006: 227). Political collapse involves the dissolution of certain social bonds, the social bonds that tied members of the state together. Prospects for regeneration or long term abandonment of state organization are interwoven with the choices that people make, collectively and individually, about the salience of different identities in the context of political fragmentation. Thus far, collapse studies have rarely taken the issue of identity as a central point of investigation. Similarly, scholars exploring identity in the archaeological record have seldom positioned their discussions in collapse contexts. Although there has been considerable debate about the ways in which identities are renegotiated when small scale societies are incorporated into expanding states (Mytum, 2003; Stojanowski, 2005; Voss, 2005), there has been little consideration of how identities are affected when a state dissolves into smaller political entities. Yet, the disintegration of the overarching political structure has considerable implications for the ways in which people define themselves as individuals and communities.

1.4 Identity and Contemporary State Collapse

Archaeologists routinely avoid mentioning contemporary examples of state collapse. Yet, if scholars are to move beyond the causes and immediate political and economic ramifications of state collapse, and address the impact on the ways in which communities define themselves, there are insights to be gained from thinking about the world around us as well as the world before us. Observing and thinking about ancient state collapse does not require that we regard ancient and modern states as analogous (see Appendix A). It does, however, encourage us to

think about some of the implications of collapse, specifically on ethnic and other social identities, that are less explored in the archaeological literature.

Political disintegration has ramifications for the entire populace. Nevertheless, the nature and extent to which specific members of a society are impacted by state collapse varies considerably. Furthermore, within any example, different members of a society will also be affected differentially, with political elites likely most dramatically impacted. Several archaeological authors have taken the position that rural commoners will find their lives little altered, noting that rural productive strategies often continue unchanged through times of major social disruption (Foxhall, 1995; Graffam, 1992). These scholars work from the position that the activities of the elite have little day-to-day impact on the lives of non-elites. However, even though the state superstructure may not have been that evident to people, it does play an important part in their lives, and that importance is most vivid when the superstructure falls apart (Kaufman, 1988). In Afghanistan, for example, bus and airplane services, telephone lines, and electricity supplies were all damaged by the recent conflicts. More relevant for thinking about everyday life in pre-modern contexts, recent state collapses have led to the destruction of houses, orchards, and irrigation systems as well as massive population displacements caused by refugees fleeing their homes (Lowenkopf, 1995; Marsden, 2003).⁷

Overwhelmingly, political collapse has been presented in the archaeological literature as the end, as though nothing and no-one that had been part of a collapsed state survives its decline.

⁷ Floods in Pakistan in August 2010 were accompanied by intense public anger that the government was unable to respond to the crisis, and suggestions that the disaster would precipitate the collapse of a state already badly weakened by internal factionalism abounded in international media. This reaction to the state's failure to provide adequate infrastructure necessary to help its most rural citizens again indicates the way in which, however removed from the state center, state members are impacted by the political superstructure and its ability to provide for its populace.

Yet, despite disruption, life does continue. As noted in discussions of contemporary state collapse, “civil society continues to exist – indeed, even thrive – under state collapse” (Zartman, 1995: 268). The absence of state government has not led to a cessation of daily life in Somalia, Afghanistan, Liberia or Iraq, even if routine activities have been severely disrupted (Mohamoud, 2006). In Somalia, for example, state collapse has even led to the emergence of alternative governments and alternative economic systems (Hagmann and Hoehne, 2009). If we acknowledge that state collapse has ramifications, in varying degrees, for all members, but that life also continues and processes of regeneration do occur quite rapidly, then we should ask how people view themselves in the absence of the overarching state structure.

States act as sources of common identity, desired or otherwise (Zartman, 1995). The collapse of the overarching political structure potentially means the disappearance of a shared source of identity and leads to a situation in which alternative identities become especially evident and important (Coulson, 1993; Gilkes, 1999; Mohamoud, 2006; Ross, 2001; Yenshu Vubu, 2003). With state collapse there is often a shift in the relative significance of nested identities (see Chapter Two for a discussion of the concept of nested identities). The former Yugoslavia presents a particularly clear case of nested identities which came into conflict as the state dissolved. The polity contained six republics, each with an associated nation, which in turn were intersected by three languages, two alphabets and three major religions (Coulson, 1993). Bowman has argued that a key component of Yugoslav disintegration was the absence of a common enemy. Contrasting the Yugoslav context with Palestine, where the suppression of disparate regional and sectarian differences has been central to the development of a national identity, he argues that in Yugoslavia, the absence of a common enemy has led to “the elaboration of a number of ‘imagined communities’ based on antagonism to others who, in the

past, had been neighbors and co-Yugoslavs” (Bowman, 1993: 36-37). Bowman suggests that an external enemy threatening all Yugoslavs would hypothetically have contributed to a heightened Yugoslav identity, as has happened in the formation of a Palestinian ‘national’ identity. In the absence of such a collective enemy, internal tensions led to a situation in which factional identities (in this case principally national, ethnic and religious) became increasingly salient creating an environment in which “Yugoslavia was dismembering itself” (Bowman, 1993: 37).

Even more clearly than Yugoslavia, Somalia can be understood as a political entity comprised of nested identities. Somali society is divided into six major clan-families, which are divided into clans, themselves divided into sub-clans and patrilineages. Much work on post-collapse Somalia (1991) has portrayed a society in which the disintegration of overarching state government, originally a colonial imposition, has led to the heightened importance of clan identities (Gilkes, 1999; Luling, 1997). However, class, status and rural/urban divisions cross-cut clan differences. These divisions arose during colonial rule or the subsequent era of the Somali state. Challenging the widely held perspective that Somali state collapse has heightened cleavages along ‘traditional’ clan lines, Besteman (1996) argues that “it was class, not clan [and] race, not clan that determined the post-1991 patterning of violence, terror and genocide” (Besteman, 1996: 591). In the Somali case, political disintegration led to the increased salience of intra-state identities, but contra to the Yugoslav example, the identities that took on greater significance were lines of difference that developed in the context of state organization instead of identities that existed before the emergence of the state.

Both the former Yugoslavia and the Somali state collapsed as a result of internal factionalism and conflict. Further, in both there was a post-collapse shift in the relative importance of different modalities of identity. Overarching communal identities were eroded and

intra-state identities became more significant. Drawing on Bowman's (1993) notion that it is the absence of a common enemy that leads to the development of internal antagonism, I question whether we might see a different situation with the collapse of states precipitated by invasion or external force. In such cases, might we see an assertion of shared identity among state members in opposition to a shared enemy? Ultimately, in both Yugoslavia and Somalia, the increasing salience of factional identities has further eroded the bonds that tied people together within the context of the state. As such, the choices that people make about identity in the context of state collapse become an active factor in the ongoing disintegration of those political entities.

Archaeologists have concentrated on understanding the different causes of collapse (natural disaster, environment, factional competition) and explaining why specific political break-downs happened. Literature on contemporary state collapse suggests that the reasons for collapse have ongoing implications for the ways in which identities are reworked in the aftermath of disintegration.

Scholarly literature from outside archaeology indicates that the dissolution of state authority can significantly affect the way that communities define themselves as much as it affects economic and political organization. Even a brief reflection on recent state collapses highlights the ways in which members are impacted by the disintegration of the overarching political structure. In particular, it is evident that states comprise multiple identities, and that competition between factions often contributes to the disintegration of the state but also that these factional identities become especially significant with the disappearance of a shared identity rooted in state membership. While not advocating an investigation of past social transformation that wholly relies on observation of political disintegration in the present, I do

suggest that any thorough consideration of collapse and post-collapse situations in the past should attempt to address the renegotiation of identity.

1.5 Outline of the Thesis

This thesis uses mortuary data from the Moquegua region of Peru to examine identity negotiation in an archaeological example of state collapse. Chapter Two reviews archaeological literature on social identities. Scholars examining how identities are formed, negotiated and maintained have increasingly emphasized the multi-faceted, contingent and dynamic nature of identities. As such they are particularly liable to renegotiation during times of major socio-political change. Discussing existing work on identity contestation during state expansion, I argue that archaeologists are theoretically well positioned to explore identity negotiation during state collapse. Chapter Three reviews some of the major developments in mortuary theory, and their concomitant implications for the utility of burials in identity studies. I argue that burials are the material remains of moments in time when people actively asserted who they thought they should be. As such, commemoration of the dead is utilized in the proscription of identity. By presenting ideal, rather than actual, notions of identity, funerals are loci for materializing how things should be in the future. When understood in this way, burials are excellent contexts for exploring identity renegotiation during state collapse.

Chapter Four focuses on the specific case study, the Tiwanaku. It considers the challenging environment in which the state emerged. Tracing a history of research in the altiplano, the chapter examines scholarly interpretations of the Tiwanaku state and its ultimate collapse. The chapter then concentrates on the largest Tiwanaku enclave, located 300km away in the Moquegua Valley. Here, as in the heartland, Tiwanaku communities simultaneously asserted similarity and difference through material culture, ritual activities and daily practice. State

fragmentation came earlier in Moquegua than in the altiplano and was accompanied by violent destruction, the abandonment of state centers and the population dispersal up-valley and to the coast. Drawing on the theoretical, methodological and culture history literature, Chapter Five makes the case for a comparative approach to testing the hypothesis that Tiwanaku state collapse led to a shift in the relative salience of different identities. It reviews existing literature on Tiwanaku burials, and defines categories of identity utilized in this study.

Chapters Six and Seven examine the mortuary evidence for different modalities of identity at the Moquegua Valley sites of Chen Chen and Tumilaca la Chimba, a state period and post-collapse site respectively. Chapter Eight explores the ways in which identity was renegotiated by post-collapse communities in Moquegua as they adjusted to the changing socio-political environment.

2. SOCIAL IDENTITIES

2.1 Identity in Archaeology

In recent years, the notion of identity has been a topic of considerable investigation and discussion in archaeology, with a proliferation of articles and volumes on the subject (Chesson, 2001; Diaz-Andreu, et al., 2005; Fowler, 2004; Graves-Brown, et al., 1996; Insoll, 2007a; Janusek, 2004a; Jones, 1997; Shennan, 1989a; Sofaer, 2006; Williams, 2006).⁸ Some have gone so far as to question whether “one can actually have an archaeology that is not concerned with identity” and state that “the archaeology of identities is not some form of esoteric sub-discipline, rather it forms part of the total endeavor of archaeology” (Insoll, 2007b: 1).

The notable interest in identity is not particular to archaeology. During the second half of the twentieth century, identity was a conspicuous theme in anthropology, psychology and sociology (Cohen, 2000; Goffman, 1963; Tajfel, 1982). Beyond the academy, ‘identity’ is a significant term in the contemporary world (Olwig, 1993). The assertion of equal rights, regardless of gender, ethnic or religious identity, highlights the prevalence and salience of these lines of difference. The numerous conflicts in which factions are defined on the basis of religious

⁸ The concept of identity was for a long time deemed unproblematic by archaeologists. During the first half of the twentieth century, social identity was regarded as “objective, inherent, primordial” (Diaz-Andreu and Lucy, 2005: 1). Archaeological ‘cultures’ were taken as indicators of ethnic groups, tribes or even just ‘peoples’ (Emberling, 1997; Grahame, 1998; Jones, 1997). These cultures were defined by the spatial and temporal distribution of material culture, and a high degree of homogeneity in material styles was considered the product of regular contact and interaction, while heterogeneity or discontinuities were the result of social and/or physical difference. Identity remained a marginalized topic with the New Archaeology (Jones, 1997). Although ethnicity received some attention in historical archaeology, and there was a concern with investigating status and ranking in the mortuary record (Binford, 1971; Brown, 1971; Saxe, 1970), the New Archaeology was principally concerned with defining generalizing laws as well as understanding the past within its environmental parameters. With culture regarded as essentially an adaptive mechanism to the surrounding environment, little attention was paid to the role of material culture in expressing, mediating and negotiating identity.

and/or ethnic identity (Northern Ireland, the former Yugoslavia, Rwanda to name a few), and their extensive reporting in mass media, demonstrate contemporary awareness of the significance of defining and asserting who you are in relation to others.⁹

Definitions of social identity, sometimes restricted to ethnic or cultural identity, abound in the archaeological literature (Aldenderfer and Stanish, 1993; Bawden, 1993; Bentley Carter, 1991; Diaz-Andreu, 2005; Dobres, 1995; Janusek, 2002; Jones, 1997; Shennan, 1989b; Voss, 2005; Wattenmaker, 1998; Wells, 2001). Definitions from the past two decades differ markedly from earlier notions of identity as static, inherent, and objective. Barth's 1969 introduction to *Ethnic Groups and Boundaries* marked a major shift in anthropological thought on identity. Barth stated that ethnic groups are biologically self-perpetuating, share fundamental cultural fields, make up fields of communication and interaction, and have a membership which identifies itself and is identified by others. Recent definitions of identity share a common heritage in Barth's ideas but differ in their focus; that identities should be "socially sanctioned as significant" (Diaz-Andreu and Lucy, 2005: 1), that identities are about "affiliation with certain groups of people" based on shared ancestry, gender or occupation (Janusek, 2002: 36), and that ascription by self or others is important (Shennan, 1989b).

A central theme in recent discussions of identity is the idea that such affiliations are shifting, dynamic and contextual (Diaz-Andreu and Lucy, 2005; Insoll, 2007b). Barth's 1969

⁹ The past has been utilized in asserting and legitimizing ethnic, national and supranational identity in the present (Rowlands, 2007). Particular examples include Israel, the European Union and even Tiwanaku (Dietler, 1994; Jones, 1997). The Nationalist Archaeology of Bolivia, begun in the 1950s and led by Carlos Ponce-Sangines, sought to connect the greatness of the nation's past with the greatness of its future. More recently, the first stage of Evo Morale's presidential swearing in took place at the site of Tiwanaku. Morales signified his commitment to creating an Andean Bolivia by physically situating his political authority (for one day at least) in the the thousand year old ruins of the Tiwanaku state, and simultaneously asserted and reified an identity based on pre-Columbian heritage.

essay has heavily influenced this perspective, and discussions of ethnic identity have been at the forefront of this debate. Arguing that ethnic identity is “based on shifting, situational, subjective identifications of self and others” (Jones, 1997: 13), proponents of this view postulate that identity is “subject to transformation and discontinuity” (Jones, 1997: 13). Identity is constantly in a state of change (Wells, 1999), but is particularly liable to renegotiation during times of major socio-political transformation (Jones, 1997).

For example, Roman imperial expansion led to the adoption by local populations of aspects of Roman styles and practices. Through this adoption, individuals and groups constructed new identities that were advantageous to them in the particular social context (Wells, 1999). In an 18th Century Spanish colonial military settlement in California, members of the settlement increasingly downplayed class differences between colonists as they sought to establish and maintain a unifying community identity defined in opposition to local peoples (Voss, 2005). In both these examples, colonial or imperial “encounters produced conditions under which social identities had to be reworked and refashioned in response to intercultural contact” (Voss, 2005: 461). In particular, the relative significance of different identities (Spanish versus class) shifted in response to the new socio-political environment.

Archaeological investigation into the impact of changing socio-political conditions on identity has generally focused on colonial and imperial contexts. The counter situation, in which large scale, complex political entities disintegrate has received comparatively little attention in archaeological studies of social identity. However, state collapse wreaks considerable disruption. If we are to regard social identities as particularly important and subject to renegotiation during social change, then periods of state collapse must be considered potentially critical times in identity formation and assertion.

Recognizing that identities shift with changing political contexts demands thinking about how identities are formulated, expressed and transformed. This issue is at the core of the debate over the extent to which ethnic group affiliations are the product of immutable ties to one's kin or are the result of strategic choices made in response to social conditions. Scholars taking a primordialist standpoint argue that ethnic groups are the product of deep rooted, emotional ties that result from shared language, territory and culture (Jones, 1997; Shennan, 1989a). In a primordialist perspective, identity is permanent and inherent (Rowlands, 2007). The instrumentalist view emphasizes the shifting nature of ethnic groups, and holds that ethnic affiliations are maintained for political or economic gain because "people with common interests coalesce into groups in pursuit of those interests" (Bentley Carter, 1987: 25).

In essence, this debate is about the degree to which membership of an ethnic group is an inevitable and unchangeable aspect of an individual's life experience, or is the result of active, conscious choices. Bentley Carter attempts to integrate both instrumental and primordial aspects of identity by drawing on Bourdieu's concept of habitus.

Habitus is a "socially constituted system of cognitive and motivating structures" (Bourdieu, 1977: 76), which are produced by the material conditions of a particular environment. The motivating structures that constitute the habitus have "an endless capacity to engender products – thoughts, perceptions, expressions, actions" (Bourdieu, 1977: 95). Therefore, they govern how people behave and how they react to certain situations. Behaviors engendered by habitus are not the product of conscious, deliberate obedience to rules. Instead, the habitus determines reasonable and unreasonable behaviors and responses within the particular social environment. Habitus is a result of learning, and of early experience (Bourdieu, 1977). Thus,

through their upbringing and past experiences, individuals learn what is appropriate conduct and what is unthinkable conduct in a given situation.

Significantly, a dialectic exists between the habitus and the material conditions of the social environment that structure the habitus (Bourdieu, 1977). Because a reaction to a situation is structured by habitus, which is in turn structured by the social environment, people behave in ways which reproduce that same social environment. Position within the social order is central to structuring experiences. Members of the same social class are likely to have faced similar situations, and because habitus determines the range of appropriate reactions to those situations, people within the same social class are likely to behave in similar ways and thereby reproduce the conditions of their existence (Bourdieu, 1984). The ongoing reproduction of the social environment results in a naturalization of social structures. Social and political organization is not perceived as arbitrary but as natural (Bourdieu, 2001). Specifically, ideas of class, of gender, and of age are naturalized to the extent that they form part of a ‘commonsense’ view of the world. It is not until “the social world loses its character as a natural phenomenon” (Bourdieu, 1977: 169) that social structures can be challenged.

Bentley Carter argues that it is habitus, the “structured structures predisposed to function as structuring structures” (Bourdieu, 1977: 72), that underlies collective action (Bentley Carter, 1987). Ethnicity, he argues, is not wholly guided by either emotions or interest, but is rooted in common experience, experience and practice that are the result of “the immanent law, *lex insita*, laid down in each agent by his earliest upbringing” (Bourdieu, 1977: 82). Ethnic groups are the result of a conscious sense of affinity, but this sense of affinity arises from the common practices that are produced by habitus. Bentley Carter suggests that it is during times of political, social and economic change that ethnic identities are mobilized. He claims that his theory grants

authenticity to ethnic identities, an authenticity that is denied by instrumentalist interpretations, by explaining ethnic group formation and collective action “without having to assume that ethnic identities represent either artifice or the product of some psychologically improbable process of unconscious interest aggregation” (Bentley Carter, 1987: 48).

Archaeologists were quick to recognize the potential of Bentley Carter’s work for a practice theory approach to the archaeological record (Jones, 1997; Shennan, 1989a; Wells, 2001). Jones (1996, 1997) applies it specifically to ethnicity in the past. For Jones, ethnicity is formed through the interplay between a group’s habitus and its interaction on the larger social and political landscape. Daily practice is important for creating a sense of affiliation but it is in the context of political change and interaction with others that the motivation exists to assert an ‘ethnic’ identity based on this sense of commonality (Jones, 1996).

Bentley Carter’s work on ethnicity has influenced archaeologists’ approach to other forms of identity. In his discussion of identity construction and expression during the Iron Age, Wells (2001) incorporates practice theory into his very definition of identity, stating that “the people we are studying probably did not think of identity as a category of feeling and behavior. What we call identity was embedded in the way they viewed their world, interacted with others and went about their daily lives” (Wells, 2001: 21). In his work on interactions between Germanic tribes and the expanding Roman Empire, Wells has shifted his position from a distinctly instrumentalist notion of identity (Wells, 1999) to one which proposes that group affiliations begin in the shared processes produced by habitus and become consolidated and made visible during interaction with others (Wells, 2001).

2.2 Identity and Material Culture

Central to archaeological approaches to identity is a concern with the relationship between identity and material culture. As other scholars have noted, material culture is implicated in both unintentional and intentional expressions of identity (Gosselain, 1992; Plog, 1995; Sackett, 1990). Various terms have been used to differentiate between elements of material culture that are used to intentionally assert identity, including ‘active’ and ‘emblemic’ style (Plog, 1995; Sackett, 1990; Wiessner, 1983) versus those that carry latent message about the identity of the maker or user of the material culture; these include ‘passive’ and ‘isochrestic’ style (Sackett, 1990). Scholars discussing the relationship between identity and material culture have drawn principally on ceramic data to exemplify their argument that material culture simultaneously displays intentional and unintentional messages about identity.

Ethnographic data also indicate the multiple ways in which identity is expressed in material culture other than ceramics. Based in large part on ethno-historic and ethnographic data, scholars have argued that dress is a particularly important medium for expressing identity in the Andes (Boytner, 2004). The archaeological investigation presented in this thesis utilizes data from the Moquegua Valley. A recent ethnographic study conducted with weavers from the same region exemplifies the complex relationship between identity and dress and provides a counterpoint to studies that focus on ceramics (Sharratt and Williams, 2009).¹⁰ Certainly, differences in regional, linguistic and village identities are reflected in differences in the styles,

¹⁰ Between 2007 and 2009, an ethnographic collections project (‘Ceramic and Textile Arts of the Descendants of the Incas’) was conducted for the Field Museum of Natural History. Directed by P. R. Williams, I was the principle ethnographer for the project during which we interviewed over 60 weavers in the provinces of Cuzco and Moquegua, Peru. Interviews were either conducted directly in Spanish, or when weavers were monolingual Aymara or Quechua speakers, they were conducted with the assistance of a Spanish/Aymara or Spanish/Quechua translator. The specific aim of the project was to document traditional weaving techniques and designs, as well as to collect modern examples of textiles woven using traditional methods.

colors and designs of local dress. Within villages, difference in dress exists between genders, ages and identities based on marital status. Material culture, in the form of attire, expresses the identity of the wearer. In adopting and displaying particular styles, individuals assert their affiliations with others in multiple ways.¹¹ However, in line with the debate between intentional and unintentional expressions of identity style, distinctions in dress are often not the result of conscious assertions of difference. As an example, in the communities studied, single women wear adornment in their hats, married women do not. Contrary to expectations that this might indicate a women's intended assertion that she was looking for a husband, informants explained that married women are more likely to have children. As children frequently pull out adornments, most women just gave up putting them in their hats. The expression of identity is the result of practice and activity just as much as it is the result of intentional demonstrations of affiliation.¹²

Both archaeological and ethnographic examples indicate that identity is made visible in material culture as a result of intentional assertion but also through unintended materialization. However, the influence of practice theory on identity studies perhaps means that unintended materialization is increasingly privileged in academic discussion. Scholars influenced by practice theory have investigated the ways in which engagement with the material world is central not

¹¹ The material differences between dress are often very subtle. Although regional differences can be stark, between neighboring villages, difference can lie in something as subtle as the width of a decorative band or the number of colors included in that band.

¹² Additional points of caution were raised by the ethnographic data. The rapidity of change in material styles was evident, in large part due to the fact that crafts such as weaving and ceramic production involve an element of personal choice. With each individual craft producer, the product is modified and identity expression changes a little. Secondly, discussions with weavers elucidated the significance of context for identity expression. During weddings, fiestas and other public occasions, the wearing of dress that expressed an individual's regional, linguistic and community identity took on a far greater significance than during every-day events.

only to the assertion of identity, or shared affiliations with others, but also to the creation and perpetuation of identity. As an example, recent literature on gender has argued that daily practice and material culture condition and reify gender based roles and identities, while Bourdieu's notion of habitus reveals how gender structures become naturalized (Bourdieu, 2001). It is through the performance of gender specific roles and the utilization of gender specific items that an individual takes on and asserts a particular gender identity (Sorensen, 1989, 2000). A practice theory approach, which suggests that identity is ultimately rooted in everyday commonalities of practice, has enormous utility for investigating identity through the archaeological record. It enables researchers to examine the daily practices through which people developed and asserted a sense of common identity.

The repeated action of similar practices serves to encourage a sense of unity. Application of practice theory to household and 'every-day' contexts in the archaeological record has been successful and resulted in sophisticated investigation into the ways in which identities are developed, learnt, consolidated and reified through daily activities. Everyday activities and people's reactions to common situations are structured by habitus, but so also are the less frequent behaviors that are enacted in ritual or non-daily events (fiestas, funerals, religious ceremonies and so forth). Yet, there has been less incorporation of practice theory into studies focused on ritual or 'special' contexts. This is problematic because in the eagerness to emphasize the importance of everyday practice, there has been less discussion of the performance and conscious demonstration of identity that is involved in many ritual events.

The agents in Bourdieu's theory principally act in particular ways because they share a habitus that is structured by the social environment. Although Bourdieu comments that the responses governed by habitus may be accompanied by "strategic calculation" (Bourdieu, 1977:

76), applications of practice theory to the archaeological record have highlighted Bourdieu's statement that habitus is not about conscious or deliberate action (Bourdieu, 1977). As a result of this emphasis, existing practice based approaches to identity in the archaeological record fail to sufficiently incorporate the active, intentional creation and assertion of identity

Intentional display of identity is particularly significant in the context of socio-political change and interaction. In her discussion of the Caribbean island of Nevis, Olwig argues that "as cultural belonging turns into cultural heritage and ethnicity, Nevisians have begun to display it" (Olwig, 1993: 179). This translates into the performance of Nevisian cultural identity (vocalized as dance, food, dress, music and so forth) as a conscious and visible assertion of identity in opposition to other Caribbean islands, but also in opposition to other parts of the imperial world into which Nevisians were incorporated.

Olwig (1993) focuses on carnivals and performing arts (such as dance and music). However, funerals and treatment of the dead can also be important moments for the demonstration and renegotiation of identities (see Chapter Three for a discussion of archaeological approaches to funerary data). In her study of the political use of corpses in Eastern European countries following the collapse of the Soviet Union, Verdery highlights the ways in which the dead are important symbols that are manipulated to create, promote or change perspectives of the past and present which in turn affect perceptions of common experience that define national and other shared affiliation (Verdery, 1999). As such, dead bodies and funerary monuments become important tools in the construction of post-Communist identities.

While I agree with the approach advocated by Jones, Wells and others, that archaeologists should look to daily practices to understand the formation of shared affinity, I suggest that the intentional, conscious assertion of identity has been downplayed too much in

archaeological studies of identity. If archaeologists are really to resolve the debate between instrumentalist and primordialist notions of identity, and examine the interplay of conscious and unconscious membership and assertion of affiliations, then they need to access both elements of identity in the archaeological record. We must consider both the commonalities of practice and the performance of identity, particularly in times of social change.

2.3 Modalities of Identity

Barth's influence on archaeological discussions of identity is evident in the considerable literature on ethnicity (Aldenderfer and Stanish, 1993; Emberling, 1997; Jones, 1997; Reycraft, 2005). Some scholars have cautioned against using the terms ethnicity or ethnic identity in reference to the past (Renfrew, 1996). Some argue that the phenomenon of ethnicity first came into existence with industrialism (Gellner 1983 in Shennan 1989), or with city states (Smith 1986 in Shennan 1989). Others have applied the notion of ethnicity as far back as the Mesolithic (Larsson, 1989). I concur with Jones (1997) that there is no need to restrict application of the term ethnicity to a particular period. The concepts inherent in the notion of 'ethnicity' (identification in opposition to others, shared ancestry, common experience) are relevant to any group of people that identifies itself as culturally distinct from others (Jones, 1997).

Discussions about ethnicity in the past have driven many debates about identity formation and expression. However, "affiliation with certain groups of people" (Janusek, 2002: 36) is not necessarily based on 'ethnic' identity. In addition to ethnicity, archaeologists have been increasingly concerned with community, gender, age and occupation identities.

Although community identities can operate beyond spatial boundaries (Anderson, 1991; Goldstein, 2000a), the repeated interaction resulting from sharing space leads to the development of supra-household community level identities in villages and towns. Communities are also the

product of specific historical conditions and their study in contexts of major social change, such as that represented by political collapse, is particularly interesting. However, community is not necessarily the most salient identity for groups or individuals within settlements (Yaeger and Canuto, 2000). Identity unites and differentiates at intra-community levels and past settlements were inhabited by individuals of varying genders, ages, occupations, statuses and so forth.

Gender has been especially addressed (Arden, 2002b; Arnold and Wicker, 2001; Brumfiel, 2000; Conkey and Spector, 1984; Hastorf, 1991; Sorensen, 2000). Since Conkey and Spector's 1984 article, in which they criticized their contemporaries for naturalizing modern western gender roles and identities and applying them to their interpretations of the archaeological record, gender archaeology has gone through a series of stages or 'waves.' Arising in the context of the women's movement, the first of these concentrated on adding women to accounts of the past, redressing the male-centered view of prehistory that had long dominated. The second was concerned with differentiating between biological sex and cultural gender, and led to an interest in third genders (Hollimon, 1997; Little, 1994;Looper, 2002; Prine, 2000). The notions of 'man' and 'woman' were deconstructed and the dangers of unquestioningly applying a binary gender system to the past were explored. The third wave has examined the role of material culture in producing and entrenching gender identities (Sorensen, 2000).

Age has received considerably less attention than gender. However, many of the criticisms leveled at the unquestioning application of modern western gender categories to the past can also be applied to assumptions about age. In ways that parallel the exclusion of women from interpretations of the past, children have often been ignored in reconstructions of the past, despite the fact that they make up significant portions of populations, often comprising the

majority (Baxter, 2005). Just as gender ideologies are social constructions, so are notions about age and the life course, and there must be caution in applying contemporary western categories of child, adolescent and elderly person to the past. These categories may not be any more appropriate titles than the titles ‘man’ or ‘woman’ (Lucy, 2005a). Further, the equation of biological age with cultural age should be undertaken with as much hesitation as the equation of biological sex with cultural gender, especially given the methodological difficulties in determining the sex of an individual and given that cultural practices can themselves alter the appearance of biological age (Clark Spencer Larsen, 1997; Sofaer, 2006).

Occupation as social identity has also been explored at some length, and the relationship between crafting identities has been discussed in several contexts (Brumfiel, 1998; Costin, 1998a, 1998b; Janusek, 1999). In some cases occupation was explicitly implicated in a particular identity. The *aqllakuna* (chosen women) in the Inka Empire spun and wove the finest cloth in the Empire (Costin, 1998a). Brumfiel (1998) argues that Aztec specialists belonged to ‘*calpulli*’ units who reaffirmed their distinct group identity by educating their children in certain ways and worshipping specific gods. Occupational identity is often indelibly interwoven with other identities. In the case of the *aqllakuna*, identity as weaver of the finest cloth was dependent upon female identity. Conversely, a particular occupation can contribute to the affirmation of another identity. For example, in Mesoamerica, textile production was a symbolically significant element of elite female identity (McCafferty and McCafferty, 1991).

There is a tendency in some literature to distinguish between collective and individual identities. Ethnic and community identities are normally assigned to the collective category, and age, gender, status and occupation to the individual bracket. I refrain from using these terms for several reasons. Drawing on the work of Raymond Williams, Insoll notes that the “idea of

individual identity is something of a recent construct” (Insoll, 2007b: 3). Fowler (2004) argues that the importance that individuality has assumed in the contemporary world has led archaeologists to inappropriately apply it to the past. Although I think that Fowler takes the point too far, I agree that the terms individual and collective identities imply a false distinction. Gender identity is not an individual identity; membership of a gender category and enactment of the behaviors of that gender inculcate the individual into a gender identity that is defined as socially significant by others (Diaz-Andreu, 2005). Similarly, occupation and status are rarely identities that distinguish an individual as distinct from everyone else (kings and emperors aside perhaps, although this would only distinguish them in a particular moment of time). Counter to this, it could be argued that all identities are also individual. The particular experience of ethnic identity, gender identity, status identity and so forth is individual, varying with each person and mediated by the particular intersection with other identities. All identities, then, could be said to operate both collectively and individually.

Instead of collective and individual identities, in my discussion of Tiwanaku social identities before and after state collapse, I use the terms ‘community’ and ‘intra-community’ identity. These are not necessarily appropriate substitutes in all archaeological contexts. I choose them for the particular case study. The analysis compares two sites, one a town, the other a village, and addresses the extent to which identity at the site (which I define as community) level changed over time, as well as identities based on gender, age, status, occupation (which I define as intra-community) were maintained or differed with political fragmentation.

Although I avoid the distinction between collective and individual identity, it is helpful to conceive of identities as operating at multiple levels, particularly if we are to examine the intersection of identity. Contributors to the volume *Archaeologies of the British* (Lawrence,

2003) explore this idea of nested levels of identity. At the height of empire, members of the commonwealth (and even in post-colonial contexts) were embedded in an imperial identity that extended throughout large swathes of Africa, Australia, and Asia, as well as the British Isles. This identity was expressed and maintained through the production and utilization of homeland styles (Malan and Klose, 2003). Within this overarching imperial identity were identities based on continental difference; African, Australian, Asian colonial identities. Within these was national identity, often itself a product of imperial administrative carving up of territory. In the heartland, the distinctions between England, Scotland, and Wales were further intersected by Highlander and Lowlander identities in Scotland, valley and mountain identities in Wales, and north/south identities in England (Symonds, 2003). Within these regions, identities operated at even more localized levels; town, village and so forth. Family or household identities further separated and united people. Cross cutting these ‘vertical’ identities are identities based on class, gender, religion, race, ethnicity (perhaps ‘horizontal’ identities), creating almost a three-dimensional pyramid of identities based on affiliations that cut across and intersect with one another.

Importantly, these identities do not operate in the same way across this pyramid; imperial identity in Britain meant something distinct from imperial identity in Kenya. These identities are not equally salient at all times to all people. Sporting events are one way of thinking this through; take an individual from Glasgow – aspects of his identity will be performed when the two Glasgow football teams Rangers and Celtic play each other. His choice of team is an assertion of local, political and religious identity.¹³ Yet, should (as in 1996) the Scottish team play England,

¹³ In several cities in the United Kingdom, particular football teams have traditionally drawn supporters who share religious affiliation. In Glasgow, Rangers are the ‘Protestant team’ while their bitter rivals, Celtic, are associated with the Catholic community.

those localized identities become suppressed as a higher order national identity is salient. However, during the Olympic games this individual is now affiliated with Great Britain, an identity encompassing Scotland and England, and this identity is formed in opposition to, perhaps, Australia. When asked, this individual might identify themselves as a UK passport holding, Scottish, Glaswegian, protestant, Rangers fan, opposed to political devolution from Westminster. The individual maintains these multiple identities simultaneously, but the particular identity which he (or she) actively performs or highlights at any given time is deeply contextual.

I cite the example of Britain, because it clearly demonstrates the multiple layers at which identity can operate, and the multiplicity of British identity has been examined with archaeological material. However, the notion of nested identity is widely applicable. Yugoslavia offers another clear example of ‘nested identity’ incorporating multiple identities based on nation, religion, language, history and ‘ethnicity’ (Coulson, 1993). This notion of nested identities is central to examining identity renegotiation in contexts of both state expansion and dissolution.

There has been considerable recent interest in examining particular identities in the past, especially ethnicity and gender. Increasingly, however, there have been calls that scholars ought not artificially isolate different forms of identity, because all individuals comprise multiple identities (Meskell, 2007). These identities constrain and interact with one another. One identity may limit or potentially increase other identities. For example, the Kabre in Togo do not assign gender identities to their children. Until adulthood, a Kabre individual does not have a gender specific identity (Piot, 1999). In French Catalonia, gender and age identities affect the performance of ethnic identity. Men maintain a constant ethnic identity through the life-cycle. Women, however, shift the salience of their French versus Catalan identity through their life-

spans. As children and young adults, they assert a national identity through the almost exclusive use of French. As mothers, women increasingly speak Catalan as they associate with older women, but they continue to socialize their children in French. Once they become grandmothers, women speak Catalan almost exclusively. In this community, class, age, gender and ethnicity are interwoven in complex ways (O'Brien, 1994). While the challenges of archaeological data make studying the intersection of identities arguably more complicated than an ethnographic approach, it is imperative that archaeologists acknowledge that identities do not operate in isolation, and address the impact of other forms of identity (Meskell, 2007).¹⁴

2.4 Summary

Discussions among archaeologists concerned with social identity increasingly focus on the dynamic, contextual nature of identity. The application of this perspective to the archaeological record has suggested how identities, in particular the relative salience of nested modalities of identity, are renegotiated during socio-political change. These studies have concentrated on contexts of state expansion and colonization. However, state collapse also represents a process of considerable socio-political upheaval. Missing from both archaeological examinations of state collapse and of social identity is concern with the ways in which people define themselves and renegotiate identity in the context of political fragmentation.

Significantly, recent developments in anthropological thought on identity indicate the multi-faceted nature of identity. Individuals maintain multiple identities that intersect and interact with one another. The way in which state collapse affects one individual will vary not only with factional identity, but also with gender, age, status, occupation and so forth. Post-collapse identity studies of the contemporary world have emphasized ethnicity, but as Besteman

¹⁴ There are moves in this direction, with archaeological studies addressing the intersection of gender with class (Stockett 2005), age (Derevensky 2000) and ethnicity (Lightfoot, et al. 1988).

(1996) suggests for Somalia, identities based on other lines of difference, particularly class, can take on special significance in the context of collapse. To examine identity negotiation in the face of state collapse, it is necessary therefore to attempt to address multiple modalities of identity. Finally, material culture is utilized not only in the intentional assertion of identity but also in the very formation of shared affiliations. In addition to addressing multiple lines of identity, then, investigating identity in the context of political disintegration must access evidence for both conscious and unconscious identity expression as well as the processes by which identities become especially salient.

3. MORTUARY ARCHAEOLOGY

3.1 Archaeological Approaches to Identity

As discussed in Chapter Two, identity has been a theme attracting growing interest in archaeology. This chapter considers different approaches to identity in the archaeological record. Following a brief discussion of household based studies, it turns to the use of mortuary data in investigations of identity in the past. The chapter explores how scholars have used funerary contexts to examine a range of identities, and the advantages and limitations of mortuary contexts. Finally, it reviews changing interpretive paradigms and the implications of these shifts for mortuary studies of identity. The chapter concludes by suggesting that when burials are seen as the material remains of moments in which salient identities are redefined, they are excellent contexts for examining identity negotiation during times of major socio-political change.

3.1.1 Household Approaches to Identity

Household data has been utilized in the study of ethnicity, gender, age, status and occupation (Aldenderfer and Stanish, 1993; Allison, 1997; Bawden, 1993; Brandon, 2004; Brumfiel, 1991; Conrad, 1993; Gilchrist, 1999; Grahame, 1998; Leavitt, 1999). Increasingly, studies of ethnicity have focused on domestic architecture (Aldenderfer and Stanish, 1993). Advocates of this approach argue that, because domestic architecture is not portable, it is likely that whoever constructed it was also using it (Conrad, 1993). There are arguments, however, that in certain cases, such as Roman Pompeii, commonalities in house layout reflect not the maintenance of an ethnic identity but the effects of social competition (Grahame, 1998).

Most household studies of gender rely on artifact distribution, especially examining gendered activities (Allison, 1997; Brumfiel, 1991; Gero, 1996). This approach risks naturalizing gender identities by projecting assumptions about men and women's activities onto the past and

independent lines of evidence should be sought to determine whether particular occupations really were gendered or not. Even where gendered divisions of labor exist, they may not be absolute (Gilchrist, 1999). Similarly, even when domestic space is strictly divided according to ideology, there may be considerable flexibility in the actual use of that space, as in the notionally stringent separation of female space in Greek *oikoi* (Leavitt, 1999).

Identification of aged individuals in household space has also focused on artifact distribution, specifically toys to identify the presence of children (Baxter, 2005). But few archaeologists have prior knowledge of what children's artifacts looked like, and the assumption that children used small artifacts can be misguided and the notion of toys inappropriate for certain contexts (Lucy, 2005a). I have more confidence in household approaches to status and occupational affiliations. Archaeologists certainly do commonly make distinctions between elite and non-elite residences, although these distinctions are predicated on a notion of what status is, often that it is based on wealth, expressed in structural size and fine or exotic goods. Occupational affiliations have been investigated through artifact and spatial data with considerable success. Associated material culture of occupation is perhaps more likely represented in spatial settings, although not all occupational activities will leave an archaeological marker.

Of the identity types discussed, studies focusing on ethnicity have been the most successful. However, I argue that the difficulty of associating particular artifacts with certain identities makes household data problematic for examining the identities that intersect with ethnicity. In other words, focusing on one identity without reference to the other affiliations that intersect with, for example, gender is simplistic. There has been relatively little discussion of the intersection of various modalities of identity in household archaeology. Exceptions to this

include household based studies of the intersection of race and gender in the post-bellum South and the interaction between caste and community identities in colonial San Francisco (Brandon, 2004; Voss, 2005). However, household studies of identity have largely focused on one modality of identity, in particular ethnicity and gender.

3.1.2 The Advantages of a Mortuary Approach to Identity

Household evidence is particularly useful for a practice theory approach to identity. Households are important loci for socialization, and for the creation and reinforcement of ethnic, gender, age, and occupational identities (Brandon, 2004; O'Gorman, 2001; Robin, 2006). Study of household data offers insight into the spaces and material culture utilized by individuals in the development of shared affiliations. However, I am hesitant that too much focus on habitus, and on the development of shared affiliations, risks our ignoring the performance and intentional expression of identity. This, as much as is the formation of shared consciousness, is central to examining identity renegotiation in the context of political collapse. In contrast, mortuary data are particularly advantageous for this study because they include a) the access to both biological and cultural data, b) the opportunity to access multiple modalities of identity, c) the ritual and intentional nature of burial contexts, and d) the potential to address both conscious and unconscious expressions of identity in material culture.

Social identities are cultural constructions. The shared affiliations at the root of social identities are based on particular cultural and historical conditions. Further, the roles and behaviors associated with certain identities are culturally variable. However, biology does play a role in identity (Insoll, 2007b). Noting that “there sometimes seems to be within the archaeology of identities, an emphasis upon forgetting the prosaic, but equally important rudiments such as biology, in favor of the more popularly perceived social theoretical elements”, Insoll (2007b, 4)

reminds scholars that there are biological constraints to identities. Certainly neither biological sex and cultural gender, nor biological and social age, are equivalent, but biology has offered a useful starting point for the analysis of, in particular, gender and age identities (Arnold, 2002; Stoodley, 2000). Mortuary contexts ideally contain both physical (skeletal or mummified) and cultural data, and as such offer unique opportunities to simultaneously access biological and cultural bases of identity. The treatment of individuals differentiated by sex and age offers an opportunity for the reconstruction of cultural categories. The distinction between corporeal and artifact data has recently been questioned (Sofaer, 2006), with increasing emphasis on the notion that human bodies are themselves cultural constructions, and identity is often inscribed into the body, in the form of tattoos, piercing, and, particularly in the Andes, cranial modification (Blom, 1999).

The presence of the remains of individuals offers a rare opportunity to consider multiple modalities of identity. This project is concerned with whether political collapse precipitated a shift in community identity, and also whether collapse affected changes in the social identities within communities at the level of individuals. Graves offer an opportunity to study individuals and as such may provide access to both community and intra-community identities (Joyce, 2001). The range of identities potentially available in mortuary contexts was noted in the early 1980s with the recognition that individuals differ along vertical and horizontal planes (O'Shea, 1981). The extent to which different identity modalities are represented in mortuary treatment is highly variable, but the possibility of accessing ethnic, gender, age, status and occupational affiliations in one single individual is central to investigating the intersection of these types of identity.

A great strength of household studies of identity is that they give access to the recurrent daily activities through which shared affiliations and identities are formed. However, arguably the instrumental dimension of identity, in particular the assertion and intentional performance of identity gets undermined in studies wholly guided by practice theory. Mortuary data is an important source of evidence for the performance and assertion of identity because, in contrast to household data, it “represents the direct and purposeful culmination of conscious behavior, rather than its incidental residue” (O'Shea, 1981: 39).

Despite their ritual and assertive nature, mortuary contexts do also offer insight into the unintentional expression of identity (Härke, 1997b). Close analysis of material and corporeal material can address details of difference that might not be conscious assertions of identity, but a result of everyday experience and practice. These practices can be materialized in both material culture and in the human body.

In summary, mortuary data holds the potential for a thorough investigation into identity. Contrary to non-mortuary data, burials contain evidence for the biological and cultural bases of identity, for a range of modalities and their intersection, and for both the intentional expression and unintentional reflection of identity in the archaeological record. Nevertheless, there are considerable limitations to mortuary data. I discuss these after reviewing recent mortuary approaches to ethnicity, gender, age, status, occupation and their intersection.

3.2 Mortuary Studies of Identity

There is some debate over the utility of mortuary data for addressing ethnic identities in the past. Arguing that exotic goods are mobile and tend to be associated with high status individuals, Stanish has criticized the use of artifacts from burials for examining ethnicity (Stanish, 2005). However, in limiting his discussion to burial inclusions, he overlooks the range

of data available in mortuary contexts. In contrast, Beck argues that “mortuary ritual is perhaps the fullest integration of religion, social organization, economics, ideology, material culture, symbolism, and other components of belief and proscribed action that combine to form an ethnic identity” (Beck, 1995b: 171).¹⁵ She is not alone in this view, for example Bawden (1989) argues that mortuary contexts are ideal for examining ethnicity since funerary behavior is related to ideas about death and the supernatural, and that these are a product of the conceptual histories of ethnic groups. Corporeal data from burials has also been used for examining ethnic identity. For example, non-metric dental traits are cited to support the argument that the Chiribaya of the Osmore Drainage and the Maitas Chiribaya were different ethnic groups (Sutter, 2000). Sutter argues that analysis of artifact assemblages from the two would not have distinguished these ethnicities. Ethnicity cannot be directly equated with biology (Barth, 1969), but is a social category defined by self and collective ascription. It might be countered that if the material assemblages are indistinguishable, then the Chiribaya and Maitas-Chiribaya did not seek to assert ethnic difference. However, Sutter’s study both contains important findings about the biological relationship between the two groups and also highlights the complexities of accessing ethnicity in the archaeological record, whether through biological or cultural data.

Although there is widespread agreement that ethnicity is not just a question of biology, there is still considerable confusion about what ethnicity is and at what ‘stage’ in human history the concept of ethnicity becomes applicable (Bursche, 1996; Lucy, 2005b; Renfrew, 1996; Shennan, 1989a). Beck (1995) sees ethnicity as a combination of ideology, religion, social

¹⁵ An ethnographic study of British gypsies provides an interesting counterpoint to Beck’s comments (Okely, 1983). Although gypsies do not share a Christian concept of the afterlife, they are buried in Church of England cemeteries because such cemeteries afford protection to the body. Thus, contemporary gypsy mortuary behavior is not a straightforward reflection of ideology. Instead, mortuary behavior represents an active engagement with the ‘other’ in response to perceived threats from that same ‘other.’

organization and material culture. Jones (1997, 84) defines ethnic groups as “culturally ascribed identity groups, which are based on the expression of a real or assumed shared culture and common descent”. For Jones, ethnicity is a work in progress during which groups who regard themselves as different reproduce distinctions in order to re-entrench that difference. The notion that ethnicity is contextual and shifting, and more specifically that material culture is actively utilized in the construction and maintenance of ethnicity (Lucy, 2005b) has implications for mortuary approaches to ethnicity. Thus far, mortuary studies of ethnicity, and the critiques of them, have attempted to see burials as reflectors of ethnicity at a particular moment in time (Beck, 1995b; Larsson, 1989; Stanish, 2005). I argue that, in line with increasing discussion about the role of material culture in negotiating identity, funerary rituals should be thought of as media through which ethnicity was asserted and reinforced. In fact, I suggest that funerary rituals are actually used in the materialization of ideal identities, and that as such they are moments for the prescription of future identities.

The distinction between biological sex and cultural gender is frequently utilized in mortuary approaches to gender. There are methodological limitations to determining biological sex, such as determining the sex of children without genetic material (Clark Spencer Larsen, 1997; Morbeck, 1989), and indeed there is increasing debate about the relationship between sex and gender (Stockett, 2005). However, the presence of sexed individuals still provides a ‘baseline’ for exploring culturally constructed notions of gender. Demand for osteological sexing arose in part as a response to the tradition of ‘sexing’ burials on the basis of grave goods (Lucy, 1997). This practice naturalized contemporary notions about gender identity, roles and statuses. For example, several scholars refused to accept that an Iron Age skeleton, eventually termed the ‘Princess of Vix,’ was biologically female, because the individual had been buried with high

status objects, including a bronze cauldron (Arnold, 1990). Analysis of skeletal material has also illuminated gendered differences in activity, diet and disease (unintentional markers of identity). As an example, Hastorf used bone chemistry to argue that Inka expansion into the Upper Mantaro Valley, Peru actually changed the relative consumption of maize by men and women. With Inka incursion into the valley, men increasingly had access to this preferred food which has significant political associations (Hastorf, 1996).

Cultural materials have been used to infer gendered divisions in political power (Arden, 2002a; Bell, 2002). In tandem with other lines of evidence, the inclusion of spindle whorls in graves is frequently offered as evidence for the role of women as textile producers (Brumfiel, 2000). Some of the most interesting work on gender and mortuary contexts addresses the presence of third genders or gender transformers (Arnold, 2002). With large samples of sexed individuals, researchers identify patterns between biological sex and cultural gender. Having done this, they identify anomalous burials, those that do not meet expectations for the cultural treatment of biological sex. Advocates of this approach argue that burials that contradict the norm for their sex may suggest a social system with more than two genders (Weglian, 2001). Although this has been attempted with household archaeology, the results are less than impressive, and mortuary archaeology offers a better avenue for investigating third gender identities (Prine, 2000).

A similar approach to age identities is adopted by several scholars examining the cultural treatment of individuals of different biological ages. In this way, cultural age grades are identified (Stoodley, 2000). Again, there are limitations to ageing individuals using skeletal remains, and the appearance of biological age can be affected by cultural practices (Sofaer, 2006). The analysis of status identities has been the subject of enormous debate in mortuary

archaeology, and I return to these debates in more detail later in the chapter. Briefly, however, the assumption that a burial containing expensive or exotic goods universally indicates that the individual buried in the grave held a high status in life is increasingly questioned (Barrett, 1990; Cannon, 1989, 2005; Parker-Pearson, 1982). Furthermore, occupational affiliations of the interred are often identified through the presence of tools or specific artifacts. Scholars addressing occupational affiliations have gone some way to investigating the intersection of other identities, in particular gender and ethnicity, with occupation (Brumfiel, 2000; Lozada and Buikstra, 2005).

3.3 Limitations of Mortuary Data

Despite their advantages for archaeological studies of social identity, mortuary data are “fragmentary, incomplete, partial, conceptual [and] selective” (Härke, 1997b). They are conceptual and selective because they are the product of human intent, and so are, partially at least, the result of culturally determined choices. Once interred, both corporeal and cultural remains undergo taphonomic processes and differential preservation (Williams, 2006). Mortuary data are therefore also fragmentary, partial and incomplete. In the following I review some of the limitations that result from human behavior and taphonomic process.

Not all mortuary treatments are archaeologically recognizable. For example, Ucko (1969) cites ethnographic evidence for exposure of corpses from Kenyan and Australian groups as an analogy to support his argument that the majority of the dead in the British Neolithic were disposed of in archaeologically unrecognizable ways. In the Andes, it is ethno-historic data which suggest that more mortuary treatments were practiced in the pre-Hispanic Andes than have been identified archaeologically (Carmichael, 1995; Dillehay, 1995).

In particular, the use of cremation as an alternative to burial has implications for archaeological interpretation. Although cremated material yields some information, even about age and sex, and actually preserves better in acidic soil than un-burnt bone, the identification of remains is dependent upon the curation of ashes (Parker-Pearson, 2000). The practice of preserving ashes in urns is known archaeologically as well as ethnographically (Morris, 1987), but alternative treatments of ashes, including scattering, render the identification of individuals impossible. Known both ethnographically and archaeologically, cannibalism also raises several problems for archaeologists (Billman, et al., 2000; Conklin, 2001; Verano, 2005). Cannibalized human remains are not necessarily interred in typical mortuary contexts, so locating them at all can be problematic (Billman, et al., 2000). The damage to remains resulting from cannibalism can also make identifying individuals difficult.

Mass inhumation causes problems even when material has not been cannibalized. In Neolithic communal chamber tombs, human remains were not only interred together but were intentionally commingled (Barrett, 1990; Damm, 1989; Kinnes, 1981; Shanks and Tilley, 1982). Although the archaeologist is presented with an abundance of skeletal material, the identification of individuals is generally impossible, and this clearly has implications for exploring gender, age and individual status and occupation identities. Mixing of human remains is not only a problem for scholars working on the European Neolithic, but has been identified in the Andes (Valdez, et al., 2002). Other problematic inhumation contexts include cases when incomplete human remains are interred. The Nasca buried both heads without bodies, and bodies without heads (DeLeonardis, 2000; Forgey and Williams, 2005).

Ideally, then, archaeologists examining social identity with mortuary data would have access to individual, complete inhumations. However, even when the dead are interred in

complete, single burials, societies often have more than one set of mortuary customs and not necessarily all deceased individuals are ultimately disposed of in similar ways (Binford, 1971; Verano, 1995). In Attica in the tenth to sixth centuries BC, formal burial was restricted to individuals regarded as full citizens (Morris, 1987). This meant that only adult males were interred in individual graves, a reminder that archaeologists' ability to study social identity in the mortuary record may be limited by culturally specific notions about the type of mortuary treatment afforded different individuals.

The potential of mortuary data for studying social identity is also affected by taphonomic processes, as well as recovery and curation of the data. Mortuary archaeologists have been criticized for failing to discuss taphonomy (Chapman and Randsborg, 1981), yet these factors contribute to differences between the funerary practices that occurred in the past and the mortuary record accessible to archaeologists (O'Shea, 1981). Natural processes include the effect of soil conditions, plant growth, water damage and animal activity. Infant bones are particularly delicate and so especially at risk from taphonomic process. Taphonomy has been used as explanation for the relative lack of infant skeletal remains in otherwise well preserved contexts (De la Vega, et al., 2005). While plant growth and water will likely cause damage, acidic soil can completely destroy skeletal remains (Parker-Pearson, 2000).¹⁶ Although the location of individuals may still be determined through soil staining, the complete destruction of skeletal remains clearly prevents analyses of sex, age, and pathologies. Animal activity may not destroy all skeletal evidence, but can lead to the scattering of bones, which has implications for the identification of complete individuals (W. M. Bass, 1995; White and Folkens, 2005). Human activity places further limits on the utility of mortuary data with burial contexts frequently

¹⁶ Cremated bone sometimes preserves better than un-burnt bone in acidic soils.

disturbed by both intentional looting and unintentional damage caused by agriculture or construction.

Archaeological recovery and curation practices further impact the potential of mortuary data. Locating the dead is often complicated by the disposal of human remains in unexpected places, such as caves, rather than spatially segregated cemeteries (Ashmore and Geller, 2005). Once mortuary contexts are identified, the methods by which they are excavated has bearing on the utility of data.¹⁷ This includes whether material is actually recovered. In the nineteenth and early twentieth centuries, excavators were principally concerned with the recovery of grave goods and often human remains were left behind. The concern with grave goods has negatively influenced the range of information gathered from mortuary contexts. Scholars increasingly advocate a multi-faceted approach to funerary data, which incorporates variables including the location of cemeteries, spatial arrangement of graves within cemeteries, treatment and position of individuals and funerary architecture as well as cultural grave inclusions (Ashmore and Geller, 2005; Beck, 1995b; Goldstein, 2001; Weglian, 2001). The traditional focus on grave inclusions limits the potential of funerary data for examining social identity, which is arguably accessible through a range of other evidence.

Mortuary data has enormous potential for examining social identity in the archaeological record, in large part because it ideally contains both corporeal and cultural material, and offers access to the treatment of individuals. However, the type of mortuary treatment utilized, the

¹⁷ The fragile nature of human remains, skeletal, cremated or mummified, necessitates delicate recovery procedures. While entire skeletons are rarely destroyed, the use of improper excavation technique risks failing to recover smaller, more delicate bones and this has implications for the information which can be gleaned. Meticulous recording of mortuary contexts, in notes, drawings and photographs, aids in ensuring that as much data is recovered as possible. Post-excavation curation techniques of corporeal and cultural materials, including appropriate cleaning, labeling and storage is also necessary for mortuary data to remain a viable resource for the study of past social identities (W. M. Bass, 1995; White and Folkens, 2005).

impact of taphonomic processes and the recovery and curation of mortuary evidence all place limitations on scholars' use of it. In addition to these physical considerations, major debate surrounds what scholars can determine about living societies in the past from the way they treated their dead. This debate has enormous implications for investigating social identities, essentially asserted bonds of affiliation between the living, and it has been at the core of changing perspectives on mortuary evidence over the past century. Lengthy reviews of changing perspectives can be found elsewhere, but they are important for contextualizing the most recent thought on the relationship between funerary behavior and social identity, so merit brief discussion here (Parker-Pearson, 2000; Rakita, et al., 2005).

3.4 Changing Interpretive Perspectives

The early twentieth century saw the publication of work challenging the notion that funerary rituals are related to other social behaviors (Rakita, 2005). Particularly well known is Kroeber's cross cultural study of funerary behavior. Drawing on evidence from Australia, South America, and Africa, he argued that "a feature which is pretty likely to characterize mortuary practices is their disassociation from certain large blocks of cultural activity, especially those having to do with material and economic life" (Kroeber, 1927: 314). Kroeber's caution influenced not only anthropologists, but also archaeologists who until the 1970s were hesitant to reference mortuary data in their analysis of social organization (Rakita, 2005; Ucko, 1969).

However, with the publication in 1960 of the English translation of Robert Hertz's 1906 work *Death and the Right Hand* there was renewed anthropological interest in the meaning of funerary ritual in non-traditional societies (Parker-Pearson, 2000; Rakita, 2005). Influenced by Durkheim, Hertz noted that to the physicality of death is "added a complex mass of beliefs, emotions and activities which give it its distinctive character... Thus death has a specific

meaning for the social consciousness” (Hertz, 1960: 27). Death and reactions to it then are social experiences, intertwined with, and only explicable within, the broader framework of culturally specific beliefs and ideology. Hertz’s own work was in Borneo but, its translation in tandem with the publication of the English translation of Van Gennep’s *Rights of Passage* inspired anthropological interest in mortuary behavior in a range of cultural contexts (Rakita, 2005; Van Gennep, 1960). Among the most cited of these studies are Bloch’s work in Madagascar (1971), Goody’s research in West Africa (1962) and Douglas’ (1962) work among the Basque (Parker-Pearson, 2000).

3.4.1 The Saxe-Binford Program

In the context of this increasing ethnographic research on funerary ritual, archaeologists sought to explore the relationship between mortuary behavior and social organization, in clear contradiction with Kroeber’s argument that funerary practices were unrelated to other dimensions of social life. Arthur Saxe’s 1970 doctoral dissertation *Social Dimensions of Mortuary Practices* adopted a cross-culturally comparative approach to examine how mortuary practices are interrelated with other parts of a socio-cultural system. He developed eight hypotheses which he tested on ethnographic data from West Africa, New Guinea and the Philippines (Saxe, 1970). At the core of these eight hypotheses was the argument that the complexity of social organization will be reflected in the complexity of mortuary treatment. Of key importance to this thesis, Saxe explicitly addresses the issue of social identity and funerary behavior. Defining social identity as a social position or status, Saxe notes that all individuals possess a number of social identities. In any interaction with other individuals, an appropriate composite of these multiple social identities (a social persona) mediates our relationships with others. Significantly, Saxe argued that his cross-cultural study demonstrated that “treatment of

the dead reflects the rights of the deceased and the duties of others in his various relationships” (Saxe, 1970: 5). Saxe’s dissertation marked a profound development in archaeological approaches to mortuary data, in which burial evidence was regarded as reflecting both social organization and an individual’s “position occupied in a status system in life” (Saxe, 1971: 39).

Simultaneously, Lewis Binford was also drawing on ethnographic data, in the form of Human Relations Area Files, to explore the relationship between treatment in death and social position in life. Citing Hertz’s comment that differences in mortuary ritual usually vary with the status of the person within the living community, and challenging Kroeber’s claim that mortuary customs vary independently of social organization variables, Binford argued that the number of distinctions evident in a mortuary sample correlate with the organizational complexity of a society (Binford, 1971). In simpler organizational systems, age and sex would be more significant points of difference in death, while systems with more complex status differentiation would emphasize social position independently from sex and age. Binford suggests that “form and quantity of grave furnishings and the specificity of the location of internment” would indicate relative position in the social system (Binford, 1971: 23).

These two publications represent the beginnings of what became known as the Saxe-Binford program. Several scholars drew on the idea developing out of the Saxe-Binford program that persons treated differentially in life will be treated differentially in death (Peebles, 1971). Published in the same volume as Binford’s article, James Brown’s argued that burials from the Mississippian period (AD 950 – 1450) Spiro site indicated that distribution of fine and important grave inclusions correlated with status in life (Brown, 1971; Rakita, 2005). Others added new dimensions to Saxe and Binford’s hypotheses. Tainter (1975) attempted to quantify energy expenditure, and argued that social rank of an individual correlated with the amount of energy

expended in their funerary treatment. Working from the questionable assumption that the higher social rank an individual occupied, the more corporate involvement would be afforded their interment, he argued that greater energy expenditure would be reflected in size and elaborateness of the burial, the ways in which the corpse was handled and disposed, and the kinds of grave inclusions (Tainter, 1975, 1978). A decade after Saxe completed his dissertation, Lynne Goldstein re-tested and re-supported his Hypothesis 8, which posits that one way in which a corporate group seeks to legitimize territorial claims is to establish and maintain bounded burial areas (Goldstein, 1981). Hypothesis 8 indicates that the presence of a formal cemetery suggests the existence of corporate groups and, in the face of persuasive critiques of other aspects of the Saxe-Binford program, this idea has had a lasting influence on mortuary studies (Beck, 1995a; Morris, 1991; Parker-Pearson, 2000).

The Saxe-Binford program sought to develop widely applicable, cross-cultural generalizations about the relationship between mortuary practices and social organization. The research that came out of this program was noted for its rigor, for the size of the samples used and for its nomothetic hypo-deductive approach. It dominated mortuary archaeology for well over a decade, particularly among North American scholars, and its principle propositions continue to guide work in many regions, including the Andes (see Chapter Five) (Brown, 1995; Carmichael, 1995; Hohmann, 2001; Korpisaari, 2006). Even those scholars who question the interpretive assumptions at the core of the Saxe-Binford program continue to implement several of the approaches adopted during the 1970s; the use of quantitative analyses, the study of a range of variables, and the perspective that not all aspects of funerary ritual are accessible in the archaeological record (Braun, 1981; O'Shea, 1981; Parker-Pearson, 1982; Weglian, 2001).

3.4.2 Post-processual Critiques

There are, however, valid criticisms of the core propositions of the Saxe-Binford program. Extensive ethnographic, historical and archaeological evidence has been cited to challenge the generalization that treatment in death reflects status in life (Barrett, 1990; Braun, 1981; Cannon, 1989, 2005; Chesson, 2001; King, 2004; Morris, 1992; Nielsen, 1997; Parker-Pearson, 1982, 2000; Shanks and Tilley, 1982; Williams, 2006). These critiques arose in the environment of a disciplinary paradigm shift away from functionalist, materialist and positivist approaches to the past in favor of contextual archaeology, which recognized that social behavior must be understood “as part of cultural, meaningfully constructed contexts” (Hodder, 1982: vii). Central to this approach is a concern with symbols and the argument that the meanings of symbols are not wholly arbitrary but derive in part from their use within structuring principles. The relevance of this for mortuary archaeology is that burial data must be examined through contextually specific symbolic funerary systems, rather than as the result of universally applicable generalizations about the relationship between funerary programs and social organization.

Studies criticizing the Saxe-Binford program abound, but some of the most frequently cited include Parker-Pearson’s (1982) ethnographic and historical analysis of mortuary behavior in England, Aubrey Cannon’s (1989) cross-cultural review of mortuary expressions of status, and Michael Shanks and Christopher Tilley’s (1982) discussion of Neolithic communal tombs. Parker-Pearson’s study explicitly challenged the assumption that the status of an individual will be given material form in burial, and instead conceptualized mortuary remains as a type of communication, used by the living to assert or maintain a social position. Citing data from undertakers on the funerals afforded 270 deceased individuals in Cambridge in 1977, Parker

Pearson found no correlation between the social position of the deceased and the form and expense of a funeral (Parker-Pearson, 1982). In fact, those members of society normally associated with the lower levels of the class system (gypsies and showmen) had the most elaborate and expensive burials. Parker-Pearson's access to detailed data on individuals indicated that in mortuary behavior "the symbolism of ritual communication does not necessarily refer to the actual relations of power" (Parker-Pearson, 1982: 112).

Parker-Pearson also noted shifts in what was considered tasteful funerary ritual, with an increasing move away from greater wealth expenditure. This point was developed at length by Cannon (1989). Drawing on data from Victorian England, Cannon discusses the idea of cyclical change in ostentatious funerary display. Working from the perspective that the correspondence between socioeconomic status in life and differential mortuary treatment in death is unpredictable, Cannon conceptualizes mortuary ritual as a context for competitive display among the living, and argues that this competition can ultimately lead to a reduction in display. Thanks to the growing affluence of large scale farmers in the nineteenth Century, the middle classes in Victorian England were increasingly able to emulate upper class elaborate funerary displays (Cannon, 1989). Cannon found that this emulation by the middle classes led to a rejection of ostentatious funerals by the upper classes as they became redundant media for status display. Cannon argues that English mortuary behavior from the medieval period until the present has been characterized by cycles of increasing ostentation and restraint, which are rooted in the dynamics of fashion (Cannon, 1989). Examining data for the Iroquois and Ancient Greece, he suggests that these cycles are common processes of human behavior. Cannon's later work further explores this notion of fashion in mortuary behavior. Adopting a gendered approach to burials, he argues that scholars cannot think of burials as simply the result of collective, culturally

specific practices, but also determined by choices made by particular individuals (Cannon, 2005).

Both Parker Pearson and Cannon suggest that funerals are important loci status assertion by the living. Influenced by Marxist theory, Shanks and Tilley further explored the ways in which mortuary practices are actively used by the living in the construction of social reality, arguing that they may act as “a powerful means to reproduce and legitimate the social order” (Shanks and Tilley, 1982: 152). Examining Neolithic communal chamber tombs from Sweden and England, they suggest that funerary practices were important loci for emphasizing the collective identity of small scale groups. This necessitated diminishing the appearance of distinctions within the community. Elites achieved this, they argue, by commingling disarticulated skeletal remains to deny asymmetrical relationships and stress the bounded-ness of society.

Mortuary studies that developed in the context of emerging post-processual approaches to the archaeological record, in particular those mentioned above, presented a persuasive challenge to the Saxe-Binford program and its adherents. Criticism of some of this post-processual work, especially that influenced by Marxist thought, has focused on the absence of a clear methodology for an interpretive, symbolic approach to archaeological mortuary contexts especially as much of the research had relied also on historical or ethnographic data (Härke, 1997a; Rakita, 2005). Some of these critiques appear to essentially suggest that because it is difficult to investigate burials in this way, scholars should just give up trying and revert to the approach advocated in the 1970s, with its straightforward methodology. Nonetheless, the considerable challenges to the assumptions at the core of the Saxe-Binford program have enormous relevance for mortuary studies of social identities. The work that emerged in the 1980s consistently challenged the

argument that the treatment of an individual in death is a direct reflection of their social identities or social persona in life. However difficult this makes our interpretation of mortuary contexts, merely ignoring the critiques presented by Parker-Pearson, Cannon, Hodder and others, is misguided and makes for weak interpretative frameworks.

3.4.3 Identity Construction in Funerary Ritual

Contrary to Saxe's suggestion that an individual's composite social identities would be displayed in their funerary treatment, the challenges to the notion that persona in life is reflected in treatment in death make accessing social identities in the mortuary record problematic (Saxe, 1970). Ian Morris has attempted to resolve the interpretive problem raised by the demonstrated disjuncture between status in life and treatment in death. In his analysis of changing mortuary ritual in the Aegean, he utilizes Edmund Leach's (1954) distinction between social structure and social organization (Morris, 1987). Social structure is the ideal system of social organization in a community, and this can differ from social organization which is the "empirical distribution of relationships in everyday experience" (Morris, 1987: 39). Morris argues that, allowing for issues of symbolism and interpretation, scholars can ask questions about social structure from mortuary data. This has implications for mortuary studies of identity. Although the life experiences of interred individuals and the actual relations between the living might be inaccessible through burials, the ideal set of relationships that existed in a community could be. Mortuary analysis, while not necessarily revealing the actual life experience of individuals, can shed light on the ideal categories, based on gender, age, status and occupation that structured social life within a community.

Applying the concept of 'real' and 'ideal' identities to the Middle Bronze Age in the southern Levant, Hallote (2002) notes a profound disjuncture between the mortuary and the

settlement evidence for identity. During Middle Bronze Age IIA, tombs projected identities based around a warrior ethos, which “does not correlate with realities perceived in settlement archaeology, which reveals a rapidly urbanizing society with increasingly far-flung commercial connections” (Hallote, 2002: 106). Similarly, the wealthy elite identities displayed in Middle Bronze Age IIB fit uneasily with the reality of the concomitant violent political decline (Hallote, 2002). She explains this disjuncture by conceptualizing burials as loci for the projection of idealized identities, that are part of a society wide “identity phenomenon” (Hallote, 2002: 106). Burials, then “reflect the idealized identity of a people, the way a society would like to perceive itself, rather than the reality of the situation” (Hallote, 2002: 108). To investigate more than this idealized presentation of identity, scholars must look at not only burials, but at the funerary practices and broader religious structures within which burials were constructed.

Morris’ distinction between social structure and social organization offered some resolution to debates raised by critiques of the Saxe-Binford approach. Hallote’s distinction between real and ideal identities works from the same idea; that scholars can access society wide ideological notions of how community is structured and the roles and identities that its members maintain. Yet, although Morris criticized the notion that burials are passive reflectors of an individual’s life, his 1987 volume still worked from the concept that cemeteries reflect the social structure as a whole.

However, post-processual mortuary studies have also sought to explore the ways in which funerary practices are central to the very negotiation of social structures (Cannon, 1989). Mortuary rituals are also utilized in shaping conceptions of identity (Schiller, 2001; Verdery, 1999). Through their treatment of the dead, people present their understandings of the past and their expectations for the future (Chesson, 2001). As such, representations in death are both

descriptive and prescriptive. Burials might suggest the idealized identities that comprised a society's ideological understanding of the world (Hallote, 2002), but they are also the material remains of funerals, which are "enterprises in world building" (Bruck, 2004: 326) in which notions of identity are made visible and publicly recognized (Schiller, 2001). Future identities are formulated within pre-existing structural understandings of the world (Bourdieu, 1984). Identities develop through practice (Bentley Carter, 1987; Bourdieu, 1984, 2001), and it is in the very practice of differential treatment of the dead that ideal identities are not only reflected but are asserted and entrenched by and for the living.

Mortuary data is utilized in this project, therefore, not because it offers a direct reflection of real identities in the past, but because graves are loci for the projection of ideal identities. Through this assertion, the living renegotiated and asserted who they considered their dead to be and therefore who they themselves were. In this regard, the performance and display of ideal identities can be understood through practice theory; it is during the repeated action of representing ideal identities that these identities become entrenched, proscribed, and naturalized.

Proponents of the idea that burials are the material remains of ritual processes, rather than static moments in time, advocate the analysis of multiple variables, including the location of cemeteries, the spatial arrangement of graves within cemeteries, the treatment and position of individuals and funerary architecture rather than the longstanding focus on grave inclusions (Ashmore and Geller, 2005; Beck, 1995a; Goldstein, 2001; Hallote, 2002; Weglian, 2001; Williams, 2006). Such an approach is all the more significant if scholars are to exploit the potential of mortuary contexts for examining both intentional and unintentional indicators of identity. This interest in a range of data from burial contexts was adopted by many of the scholars working within the remit of the Saxe-Binford approach. I suggest that many of the

methodological tools employed by these researchers continue to have enormous utility for mortuary investigations. In addition to multiple lines of data, the study of large samples, and the utilization of quantitative analyses are not only relevant, but also particularly important for examining identity negotiation in the past. Despite the theoretical flaws inherent in the interpretative framework of the Saxe-Binford program, researchers working under that program utilized methodologies that have relevance regardless of the theoretical paradigm adopted.

3.5 Summary

Archaeological investigations of identity have drawn on various types of data. Household evidence has been particularly utilized in studies of ethnicity and gender. Household data, with its potential to elucidate the repeated, daily actions through which people develop and entrench a sense of shared affiliation, has particular relevance for scholars adopting a practice theory approach to the formation of identity. However, there are limitations to household studies of identity. In particular, the fluid use of space makes isolating identities difficult, and this compounds the problems of investigating the intersection of multiple modalities of identity.

A mortuary based approach has several advantages for examining the renegotiation of identity in the context of political disintegration. While identity is a cultural construct, it is often enacted within biological constraints, and burials contain both biological and cultural data. The presence of individuals, allowing for particular mortuary treatment, is an opportunity to study a range of modalities of identity, both at community and intra-community levels. Furthermore, mortuary contexts, because they are the material remains of ritual processes, are evidence for the performance or assertion of identity. This is a dimension of identity that, I argue, can be overlooked in studies which concentrate too much on the unconscious aspect of habitus when utilizing practice theory in archaeological studies of identity.

However, the limitations of funerary data are considerable. As a result of both taphonomic processes and human behavior, mortuary data is fragmentary, incomplete, and selective. Further, in addition to agents of decay and disturbance that transform the original burial into the fragmentary remains available to archaeologists, changing theoretical paradigms have radically altered the interpretive frameworks through which scholars understand those remains. Although criticisms of the Saxe-Binford program make a direct reading of identity from burials problematic, the debates that have emerged from these criticisms indicate that scholars actually can deduce a great deal about the way that communities wanted themselves and their members to be seen. Hallote's (2002) distinction between real and ideal identities is a helpful way to conceive of the relationship between the actual social identities that people experienced in life and the way they were treated in death. Drawing on discussions by Chesson (2001), Joyce (2001), and Bruck (2004), the notion of real versus ideal can be taken further. These authors suggest that funerals were important moments for the assertion of identities, for the proscription of how things, including the identities accepted and acknowledged in society, should be in the future. As such, ideal identities were asserted as a form of proscription for future real identities.¹⁸

Identities are constantly shifting but they are particularly subject to renegotiation in times of major socio-political change, when people redefine their relation to others. During social flux, rituals, including funerals, "offer families and other corporate units a unique opportunity to present themselves as they would wish to be viewed before their own community" (E. Morris, 2006: 62). Analyzing mortuary behavior across such social change offers an opportunity to track changes in the ideal identities asserted and proscribed in burials, and as such to examine

¹⁸ My thoughts on 'real' and 'ideal' identities, influenced heavily by Chesson et al (2001), differ somewhat from Hallote's. In her example of the MB II and III in the Levant, Hallote argues that ideal identities referenced the past, and considers less the notion that they were (instead or also) a prescription for the future.

changing notions of identity, both at community and intra-community levels. In order to explore the renegotiation of identity in the wake of state collapse, I propose comparing the assertion of identity in burials before and after political disintegration of the Tiwanaku state (ca. AD 1000) to elucidate the extent to which the identities proscribed following collapse maintained those identities asserted before collapse.

4. THE TIWANAKU

4.1 Introduction

By AD 400, the Tiwanaku state was the dominant polity in the challenging environment of the south-central Andean highlands (Stanish, 2003). The capital of the state, the site of Tiwanaku, has attracted interest from explorers, national and colonial governments, indigenous political movements, tourists, New Age mystics, and archaeologists. An expansive and long-lasting state, recent scholarly characterizations of the Tiwanaku polity range from a highly centralized, hierarchical state to a loose confederation of independent polities who shared little more than a widely dispersed iconographic style. This chapter traces a history of the Tiwanaku polity and examines competing interpretations of the nature of the state. Examining the indications for significant diversity in the state, as well as evidence for its violent end, I suggest why Tiwanaku is an apt case study for studying identity negotiation in the context of political fragmentation.

4.2 The Titicaca Basin

The Tiwanaku state developed in the Titicaca Basin, in the altiplano region of the South Central Andes (Figure 1). Visitors to the region have long commented on the inhospitable environment of the altiplano, which spans both modern Bolivia and southern Peru, and expressed surprise that anyone should live in the area, let alone that a major expansive state could have developed there (Posnansky, 1945; Squier, 1877). Cold, windy and high, the region experiences average daily temperature highs of 19.1 degrees Celsius during the wet season of November through February. Average nighttime readings can reach as low as minus 10 degrees Celsius in the dry winter months of June through August (Binford and Kolata, 1996).

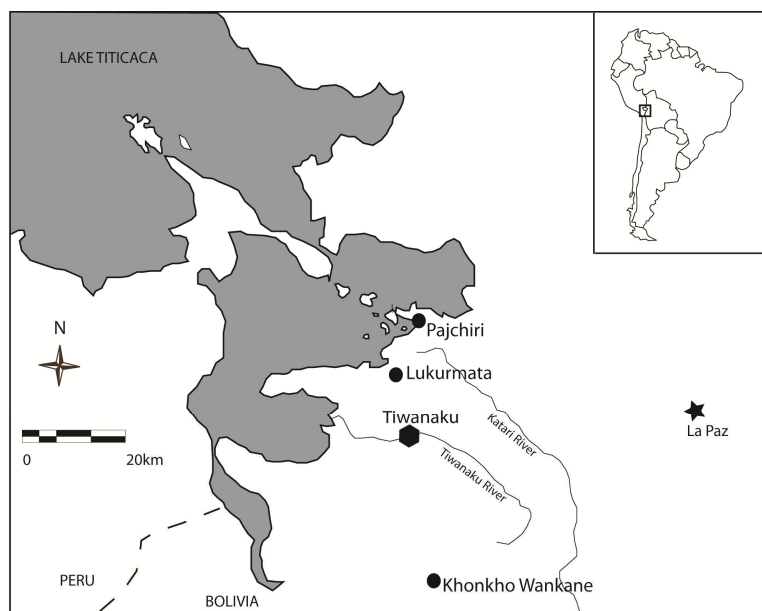


Figure 1. The South-Central Andes showing the state capital at Tiwanaku and second tier settlements mentioned in the text.

The majority of the Titicaca Basin is located at elevations at least 3800 meters above sea level (masl), and is divided into two agricultural regions. The *suní* (3800 – 4000 masl) represents the upper limits for plant production, while the *puna* (4000 – 4800 masl) is too high and cold for agricultural crops, and today is used principally for camelid herding (Stanish, 2003). Mean annual precipitation varies between 500 and 1500 mm. Paleo-climatological data, in particular those retrieved from Quelccaya ice cores, indicate that the region has undergone significant climate fluctuations during the past several millennia (Binford and Kolata, 1996). Evidence for wetter and drier periods from AD 540 onwards, in particular wetter periods in the early seventh century, and drier periods in the mid thirteenth century, have been implicated in conflicting interpretations about the nature of the Tiwanaku state and its ultimate demise (Binford, et al., 1997; Stanish, 2003; Williams, 2002).

Despite the challenges inherent in living in such an environment, the region is remarkably productive. The site of Tiwanaku is located near the shores of Lake Titicaca, which covers approximately 8500 square kilometers at an altitude of 3810 masl (Binford and Kolata, 1996). The lake was, and continues to be, an important source of food. Endemic fish species include more than twenty species of *Orestias*, a pupfish, and *Trychomycterus*, a catfish (Stanish, 2003).¹⁹ Water fowl supplement the fish resources. Although the *suní* is generally too high for maize cultivation, a large variety of plant crops are grown there, and it is particularly suited to tubers, legumes and chenopods (Stanish, 2003). In addition to their role as pack animals and provider of wool, camelids are a source of meat. The vast expanses of grazing land in the *puna* regions of the altiplano support large herds of llamas and alpacas, a fact witnessed by Sixteenth century visitors to the region (Cieza de Leon, 1973).

4.3 **Research on Titicaca and Tiwanaku**

One of the earliest written accounts of the site of Tiwanaku is in Cieza de Leon's 1553 *La Cronica del Perú* in which he describes "large buildings, which are certainly noteworthy and worthy of seeing [and] stone idols.... so large that they appear to be small giants." He goes on to comment that "this ancient ruin is the oldest in all of Peru" (Cieza de Leon, 1973: 264). Its antiquity was apparently recognized by the Inca. Cobo described how Inca leaders had sought to reproduce the monumental stone construction of Tiwanaku (Cobo, 1979). Recognizing the ideological potential of the site, the Inca state incorporated Tiwanaku into one of several origin myths (Bauer and Stanish, 2001; Cobo, 1979). The Creator God, Viracocha, was said to have created Andean society at Tiwanaku, bringing forth different nations with distinct clothing, dances, music, languages and crops (Sarmiento de Gamboa, 2007).

¹⁹ Today Lake Titicaca also contains introduced fish species, in particular rainbow trout and *pejerrey* (Stanish, 2003).

Several visitors to the altiplano in the early and mid-19th century offered brief descriptions of Tiwanaku, among them the naturalist D'Orbigny in his 1839 volume *El Hombre Americano* (D'Orbigny, 1944). De Rivero and von Tschudi also included Tiwanaku in their account of sites in the region. Noting the ruined state of the site, they argued that its construction was never completed (Rivero and von Tschudi, 1854). Ephraim Squier provided detailed descriptions and drawings of Tiwanaku and commented that the visitor to Tiwanaku finds “the evidences of an ancient civilization, regarded by many as the oldest and most advanced of both American continents” (Squier, 1877: 272). Although there were mistakes in his drawings, Squier’s work was more systematic than earlier visitors (Stanish, 2003). However, he interpreted the site as a religious center, not as the capital of a large state, stating “I can hardly believe that it was a seat of dominion” (Squier, 1877: 300). In 1894 Max Uhle visited Tiwanaku, although even before that, he had worked with Alphons Stübel to publish elaborate drawings of the monumental architecture at the site (Janusek, 2008; Stanish, 2003).

Near the turn of the twentieth century, the Austrian born archaeologist Arturo Posnansky proposed a five phase chronology for the region, one that was strongly influenced by evolutionary thought (Posnansky, 1912). Posnansky has been rightly criticized for the racist overtones of his work, and for the outlandish nature of some of his suggestions, among them the claim that the site was originally on the pacific coast, and that it was as a result of tectonic action that it had risen to 3,800 masl (Stanish, 2003). Nonetheless, he provides some of the earliest photographs of the site, which continue to be reproduced today (see Janusek 2004, 2008). Other early researchers in the Titicaca region include Adolph Bandelier, who visited Tiwanaku and excavated sites on the Islands of the Sun and Moon in 1894, and Philip Ainsworth Mean, who attempted to attach dates to Posnansky’s chronology (Janusek, 2008; Stanish, 2003).

The earliest recorded excavations at Tiwanaku are those of the Conde G. de Crequi-Montort (Stanish, 2003). Focusing on the architectural core of the site, his 1903 project excavated in the semi-subterranean temple, the Putuni and Kalasasaya (Janusek, 2008). Lacking methodological training, the crew did substantial damage to the site (Janusek, 2008). The first modern, systematic work at Tiwanaku was directed by Wendell Bennett in the 1930s and 1940s (Bennett, 1934; Stanish, 2002). Bennett sought to better understand Bandelier's notes from thirty-five years earlier, and refine the proposed chronology for the site by excavating stratified contexts and analyzing the ceramic material in the strata (Stanish, 2003). The result of this work was a chronology composed of the four phases: Early Tiahuanaco, Classic Tiahuanaco, Decadent Tiahuanaco and Post-Tiahuanaco (Kolata and Ponce-Sangines, 2003).

Research in the 1930s and 1940s was dominated by foreign researchers with Stig Ryden and Alfred Kidder also visiting and reporting on the region. However, in the 1950s, in the context of major political reform, Bolivian led research at Tiwanaku began in earnest (Kolata and Ponce-Sangines, 2003) and the site has since been taken up as a major ideological symbol in nationalist and, more recently, indigenous, movements. Carlos Ponce-Sangines sought to achieve a National Archaeology, defined in opposition to the neo-colonial archaeology of the preceding century (Janusek, 2008). Significantly, contrary to much earlier research, Ponce-Sangines argued for a direct link between the creators and inhabitants of Tiwanaku and the modern Aymara (Janusek, 2008). He directed large-scale excavations at Tiwanaku in collaboration with the *Centro de Investigaciones Arqueológicas de Tiwanaku*, with the aim of detecting earlier strata than those examined by Bennett (Stanish, 2003). Based on the numerous radio-carbon dates produced by CIAT projects, Ponce constructed a five-phase sequence that in many ways refined Bennett's earlier chronology (Stanish, 2003).

During the 1950s, 60s, and 70s, research at Tiwanaku was state-funded and, under the guidance of Ponce-Sangine's National Archaeology, was concerned with excavating and, in several cases, restoring the monumental core of the site. By the 1980s, however, the Bolivian government was increasingly interested in international research, and the past two decades have seen several large-scale collaborative bi-national projects. Project Wila Jawira, directed by Alan Kolata, included large-scale excavations at several Tiwanaku sites in the Titicaca Basin, as well as regional surveys, and inter-disciplinary paleo-environmental research aimed at understanding the relationship between Tiwanaku and the natural environment (Kolata, 1993a, 2003). Kolata concurred with Ponce-Sangines in his interpretation of Tiwanaku as the center of a highly centralized, economically dominant state (Kolata, 1991, 1993a). Active research continues today both at the site of Tiwanaku, with Alexei Vranich's work in the monumental core, Nicole Couture and her students' research in residential sectors at Mollo Kunto and the palace in the Putuni, and also in the hinterland with John Janusek's work at Khonko Wankane, and Marc Bermann's household excavations at Lukurmata (Bermann, 1994, 1997; Couture, 2003; Couture and Sampeck, 2003; Vranich, 1999, 2001).

4.4 Tiwanaku Chronologies

Various chronologies have been proposed, utilized and reworked for the rise and decline of the Tiwanaku state (Table I). Building on Bennett's framework of a quadripartite chronology, with the stages Early Tiahuanaco, Classic Tiahuanaco, Decadent Tiahuanaco, and Post-Tiahuanaco, Ponce-Sangines developed a ceramic sequence organized as Phases I through V. This was closely linked to a three stage evolutionary model, with Tiwanaku I and II (200 BC – AD 200) corresponding with village like organization, Tiwanaku III (AD 200 – 400) the early state, Tiwanaku IV (AD 400 -800) referring to the height of the state, during which the

monumental core was constructed and Tiwanaku V (AD 800 – 1200) the period of imperial expansion before the state’s decline in the 13th century (Kolata and Ponce-Sangines, 2003). This chronology has been used extensively in recent scholarship, not only in the altiplano, but also in the Tiwanaku provinces (Goldstein, 1985, 1989b). The chronology has been further refined into shorter phases, with the division into early and late phases of both Tiwanaku IV (early AD 400-600, late AD 600 – 800) and V (early AD 800-1000, late AD 1000-1150) (Janusek, 2003b).

Tiwanaku I through III correspond with the Late Formative (200 BC – AD 400), part of the more general period, the Upper Formative (500 BC – AD 400) and Tiwanaku IV and V correspond with the presence of the Tiwanaku state. More recently, Janusek (2008) has opted to employ the terms Tiwanaku 1 and 2, noting that they better parallel recent chronologies advanced for the contemporaneous Wari. For clarity of reference, I maintain the earlier distinctions IV and V, but work from Janusek’s (2008) definitions of Tiwanaku 1 and 2. Tiwanaku IV (or 1) then, refers to the creation of the state and the incorporation of diverse groups, and Tiwanaku V (or 2) with consolidation of the state into a “more tightly centralized political economy” (Janusek, 2008: 23).

TABLE I
TIWANAKU CHRONOLOGIES

Phase	Andean Chronology	Janusek (2008)	Date
Tiwanaku I & II	Upper Formative		200 BC – AD 200
Tiwanaku III			AD 200 – 400
Early Tiwanaku IV	Middle Horizon	Tiwanaku 1	AD 400 – 600
Late Tiwanaku IV			AD 600 – 800
Early Tiwanaku V		Tiwanaku 2	AD 800 – 1000
Late Tiwanaku V			AD 1000 - 1150

4.5 Early Human Occupation in the Tiwanaku Heartland

Human occupation of the Titicaca Basin began as early as 8000 BC. Around 2000 BC, at the start of the Early Formative Period (2000 – 1300 BC), people lived in small communities along the lake shore. Pottery, in the form of cooking, storage and some serving ware, first appears in the archaeological record at this point (Stanish, 2003). The Middle Formative was marked by the creation of the region's first non-residential, corporate architecture, and later on the construction of sunken courts at sites including Tiwanaku, Chiripa, Pajchiri and Qaluyu. Stanish (2003) suggests that these sites were primary regional centers that housed emergent elites in a region that shared a religious ideology materialized in the sunken courts and the Yaya-Mama iconographic style (Chavez, 2004; Chavez and Chavez, 1975). Hastorf (2005) argues that these shared religious beliefs served to both bring people together and also incite competition between families and communities.

By the end of the Upper Formative (500 BC – AD 400), two of these centers (Tiwanaku and Pucara) had become considerably larger than the others (Stanish, 2003). There is evidence for an increase in population, settled village life, agricultural intensification, craft production, and long-distance trade during this period (Bandy, 2001). Stanish (2003) suggests that instead of forcible coercion, elites used competitive feasting, marriage and fictive kinship to create alliances within regional centers, but he argues that there was considerable competition between Tiwanaku and Pucara. The presence of warfare during the Upper Formative is suggested by the depiction of trophy heads in Pucara and Early Tiwanaku ceramic and stone iconography (Hastorf, 2005). Stanish (2003) contends that it was with the ultimate, and as yet unexplained, decline of Pucara around AD 200 – 300 that Tiwanaku emerged unrivalled in the region. Tiwanaku arose in the context of long-established traditions of political, economic and religious

interaction (Janusek, 2008). As I discuss later, diversity and multi-ethnicity are now regarded as key hallmarks of the Tiwanaku state. Yet, the interaction and diversity that characterized Tiwanaku had firm roots in the long-distance interaction networks and shared ritual practices that are evident in the Titicaca region as early as the Middle Formative (Janusek, 2004b).

4.6 Tiwanaku; core, hinterland, province

During Tiwanaku IV (AD 400 – 800), definite hallmarks of a hierarchical state became evident in the elaboration of the site, the hierarchical settlement pattern, intensification of agricultural production and the establishment of long distance ties throughout the South-Central Andes. In Tiwanaku V (AD 800 – 1150), processes of centralization and consolidation are apparent as elites sought tighter control of production both in the hinterland and in particular provinces. Competition between elite factions increased, and display became ever more ostentatious both in elite residences, and in sponsored feasts (Janusek, 2008).

4.6.1 Core

In Tiwanaku IV monumental construction was on an unprecedented scale at the site of Tiwanaku (Figure 2). The Akapana and Pumapunku temples were erected. The Akapana, still visible on the landscape today, was a multi-tiered monument with a main stairway climbing the west side (Janusek, 2004b). The base of the temple was constructed from andesite blocks, perhaps covered with metal lamina or textiles during ceremonies (Kolata, 1993a). Excavation at the Akapana has revealed elaborate offerings of smashed ceramic vessels, llamas and humans (Janusek, 2004b). The Pumapunku, located to the southwest of the Akapana, was a vast complex, attached to a large plaza. As with the Akapana, the Pumapunku underwent several construction phases, as evidenced by the layers of colored floors (Vranich, 1999). Worshippers and ritual

specialists at Tiwanaku continued to use older ceremonial structures, specifically the Sunken Temple and the Kalasasaya which had both been constructed in the Late Formative.

In addition to temples, the ritual landscape of the city included monumental portals, including the Sun Gate, and huge monoliths, depicting elaborately dressed and masked individuals holding keros and snuff tablets. During Tiwanaku IV, then, multi-phase construction of new ritual space coupled with the continued use and incorporation of earlier ritual space served to establish the site as a symbolically potent center, which surrounding and distant communities referenced in the creation of their own ritual spaces (Goldstein, 1993a).

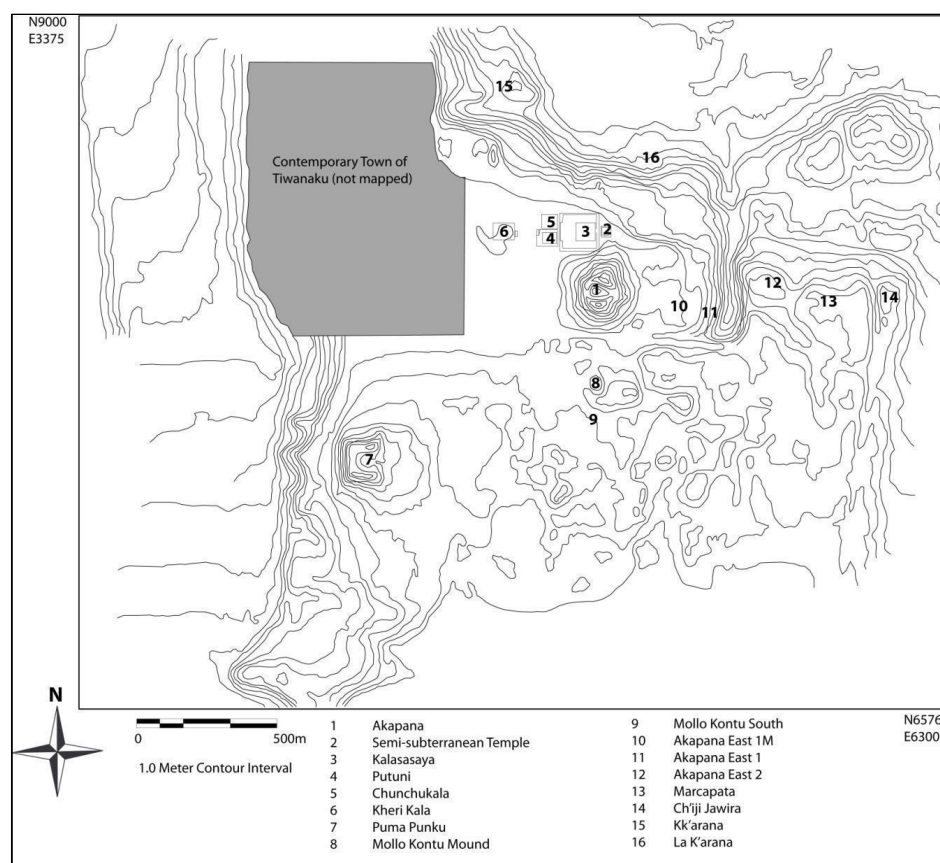


Figure 2. The site of Tiwanaku (redrawn from Kolata 2003).

It was this impressive monumental architecture, coupled with the apparently inhospitable environment, that led some earlier researchers to doubt that Tiwanaku could have been a major habitation site and to posit that it was an empty ceremonial center instead (Squier, 1877).

However, much of the research in the past two decades has focused on understanding the residential components of the city, many of which were not evident on the surface in the way the monumental architecture is. Couture's (2003) excavations in the Putuni complex have revealed the extensive, elaborate architecture that characterized this palatial structure. During Tiwanaku IV, the complex served both ceremonial and domestic functions, likely home to high status occupants (Couture and Sampeck, 2003). In Late Tiwanaku IV, the earlier structures in the Putuni area were destroyed and replaced by two densely occupied residential compounds. The main building of the complex was large (50 meters by 70 meters), with a multicolored staircase, and paved corridors leading to small rooms (Couture and Sampeck, 2003). The complex was served by an elaborate, well-constructed underground drainage system. The complex included one elite structure in which painted adobe walls, ceremonial serving vessels, obsidian points, carved marine shell and copper and silver craft items were identified (Janusek, 2008). There was also a mortuary complex, composed of well-constructed tombs and containing high-quality as well as exotic offerings (Couture and Sampeck, 2003). By the beginning of Tiwanaku V, and the consolidation of the state into a hierarchical, increasingly centralized political economy, elites inhabited large, extravagantly constructed residences. They enjoyed the most modern of household amenities and surrounded themselves with beautiful and exotic goods.

The elite population at Tiwanaku materialized and asserted their high-status through the location, size and construction of their homes, the material goods they used in daily and ritual practices, and in the ways they treated their dead. But residence at Tiwanaku was not solely a

privilege of elites. During Tiwanaku IV, the city expanded to cover 4-6 square kilometers. In Tiwanaku V, the city was inhabited by as many as twenty thousand people and was reorganized into residential neighborhoods which comprised large walled compounds surrounding shared ceremonial space. Of these, Mollo Kontu, Ch'iji Jawira, and Akapana East 1 and 2 have been most thoroughly investigated (Couture, 2003; Janusek, 1999, 2002, 2004a). These neighborhoods contained residential compounds which were separated from one another by large walls, canals and streets. Each compound contained at least one household which had its own kitchen, patio space, storage facilities and housing for animals (Janusek, 2003a). The identification of this repeated nested pattern of residential space has been central to understanding social organization, particularly at the kin-based level, at Tiwanaku and other regional communities (Janusek, 2002, 2004a).

Tiwanaku IV was also a time of major urban expansion. The site's ceremonial and ideological functions were consolidated, and Tiwanaku developed into a busy, crowded metropolis, home to groups and individuals separated perhaps by rank or status, but united in their common participation in daily and ritual life-ways (Stanish, 2002). In Tiwanaku V, residential districts became distinct neighborhood communities within the vast urban center. Elite residences were refurbished, elaborated and became almost palatial in scope. Through this building program, class differences became entrenched and visible (Couture and Sampeck, 2003).

4.6.2 Hinterland

Surveys in the Tiwanaku and Katari valleys, as well as the Taraco Peninsula, indicate that the establishment of the monumental capital was accompanied by the development of a four-tier settlement hierarchy in the state hinterland (Albarracin-Jordan, 1996; Bandy, 2001; Janusek and

Kolata, 2003; McAndrews, et al., 1997). Second tier settlements included Lukurmata, Pajchiri, and Khonko Wanakane (Figure 1) (McAndrews, et al., 1997). At Lukurmata, daily and ritual practices similar to those at the capital are evident. Patio groups resembling household groups at Tiwanaku were constructed, Tiwanaku style pottery was used and dedicatory sacrifices like those at the Akapana, were made (Bermann, 1997). Beyond the immediate hinterland, Tiwanaku occupation stretched both to the western side of Lake Titicaca (Stanish, et al., 2005), and onto the islands in the middle of the lake (Bauer and Stanish, 2001; Korpisaari and Parssinen, 2005).

During Tiwanaku IV, agricultural production was intensified, as farmers expanded the raised field system into marshy areas (Janusek, 2008). Communities continued to make use of *qochas*, (modified reservoirs), and lake resources and camelid herding took place on a massive scale. The maintenance of large camelid herds was crucial in the establishment of long-distance trade networks. With expansion, llama caravans were an important means of transport in the movement of heartland manufactured goods and exotic commodities between the Titicaca basin and distant provinces. In Tiwanaku V (AD 800 – 1150), elaborate feasting was central to factional competition and as elites sought to provide for these feasts, they tightened control over agricultural production (Janusek, 2008). The transformation of Lukurmata into essentially an agricultural estate that served to provide the center with the resources necessary for mass feasting is indicative of the centralization of control of agricultural produce (Janusek, 2004a).

4.6.3 Province

During Tiwanaku IV, ties with communities in varied eco-zones across the South Central Andes are evident in both the presence of exotic goods at Tiwanaku, and the appearance of Tiwanaku affiliated material styles in distant locales (Figure 3) (Bennett, 1936; Goldstein, 1993b; Plunger, 2007; Rodman, 1992; Torres-Rouff, 2008). Nevertheless, the relationship

between particular regions and the Tiwanaku center varied. In the Moquegua Valley, immigrants from the altiplano replicated the household and ritual practices, as well as the material styles, of the homeland (Blom, et al., 1998; Goldstein, 2005). Links with Cochabamba were strong also, with evidence for immigrants from there at Tiwanaku as well as the presence of Tiwanaku style ceramics in Cochabamba (Janusek, 2008; Plunger, 2007). In San Pedro de Atacama, local elites co-opted Tiwanaku styles as they increasingly interacted with the altiplano heartland (Torres and Conklin, 1995). Elites at Tiwanaku utilized these ties to obtain desired resources; maize and coca from the lower elevation, temperate valleys of Moquegua and Cochabamba, salt from Potosi and Northern Chile, and psychotropic drugs and feathers from the jungle valleys of east Lake Titicaca (Janusek, 2008).

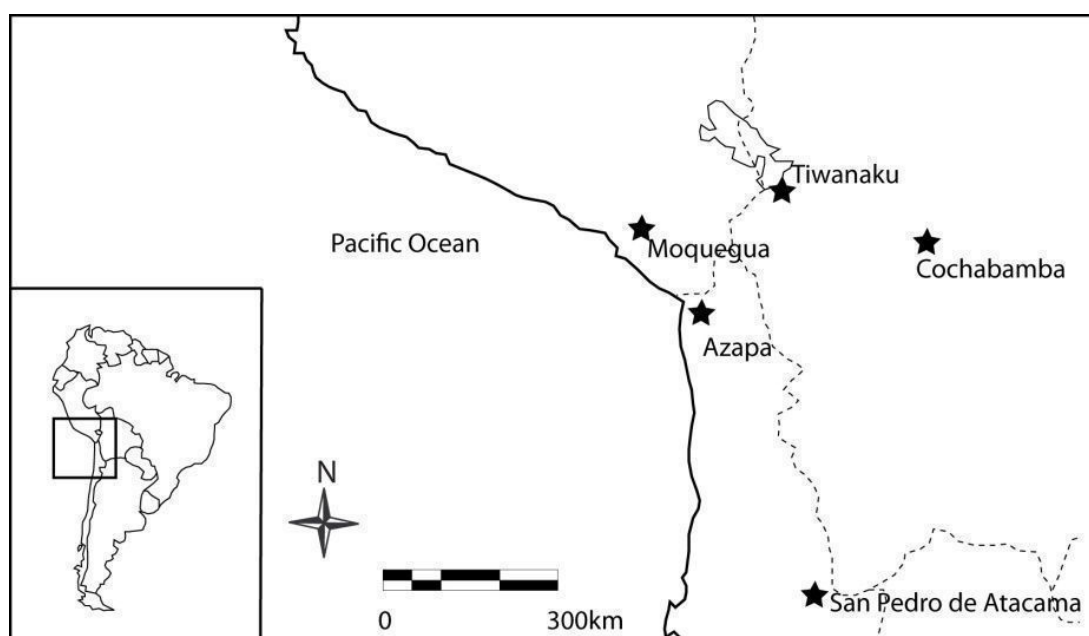


Figure 3. Major locations of Tiwanaku affiliated materials.

In Tiwanaku V, elite interactions with the productive provinces became increasingly strategic (Janusek, 2008). As elites sought the produce and goods necessary for sponsoring elaborate feasts, they tightened control on provinces such as Moquegua. As control of the production of maize and coca was increasingly centralized, the nature of some of the principal regional settlements shifted from diaspora-led province to fully fledged colony integrated into a hierarchical, tightly controlled political economy (Goldstein, 2005). I return to Moquegua in the second half of the chapter, but it is evident that changing politics in the core had repercussions for its relationship with the distant provinces.

4.7 Recent Interpretations of Tiwanaku Statehood

Both the city and the state of Tiwanaku have undergone repeated re-interpretations. Kolata (1993) envisions Tiwanaku as a highly centralized, political economy in which elites at the urban center controlled production and movement of resources. Arguing that raised field construction was on such a scale that it could only have been organized and controlled by a centralized state, Kolata suggests that the urban elite “systematically co-opted land and labor” (Kolata, 1991: 760). He interprets the tiered settlement hierarchy as indicative of a “quadripartite division of administrative and primary production responsibilities” (Kolata, 1991: 760). For Kolata, settlements such as Lukurmata were designed to serve the interests of the state and were part of a strong, centralized polity that wielded political and economic hegemony over the hinterland and distant provinces (Kolata, 1993a, 1993b).

The challenge to Kolata’s model has been two-fold; directed both towards his argument that raised field agriculture necessitated the organizational capabilities of the state, and that the settlement hierarchy reflects a state directed administrative system. Field experimentation indicate that raised field systems can be constructed and maintained by households, and do not

require large-scale corporate organization (Erickson, 1993). Further, research in the Pampa Koani suggests that raised fields continued to be constructed after the collapse of the state and its supposed attendant administrative hierarchy (Graffam, 1992). Challenging the argument that the tiered settlement hierarchy is a result of the administrative system, McAndrews (1997) and Albarracin-Jordan (1996) have interpreted the regional survey data in terms of Andean systems of social organization. Arguing that the evidence must be understood in terms of Andean social structures, not models developed in distant cultural contexts, Albarracin-Jordan argues that the fundamental system of organization was the ayllu, and that, instead of the direct control posited by Kolata, it was systems of ideology and reciprocity that drew local elites into the Tiwanaku economy.

Despite these challenges to the centralized state model, most recent scholarship does concur that Tiwanaku was a powerful, hierarchical state (Goldstein, 2005; Janusek, 2004b; Kolata, 1986; Stanish, 2003). This is evident in the urban core with its monumental ritual facilities and extensive status differentiated residential sectors. It is apparent in the hinterland settlement hierarchy, and in the increasing centralized control of agricultural products both in the state heartland and the distant provinces. However, there has been a growing concern with examining the state in terms of Andean systems, and interest has turned to the considerable diversity accommodated in the state (Janusek, 1999, 2002, 2004a). Regional survey, coupled with excavation at Tiwanaku-affiliated sites in the altiplano and in the provinces (Bermann, 1994; Goldstein, 1989b), has demonstrated that communities across the South Central Andes shared ritual and daily practices as well as material styles with the Tiwanaku centre. Through practice and style they asserted their affiliation with the urban center, and with each other.

Nonetheless, regions, communities and even households simultaneously maintained their own specific styles and practices. Attention to these details of difference, much of which has been focused around analysis of ceramic assemblages, has highlighted the room for diversity in the state. As I discuss later, although the Moquegua Tiwanaku communities maintained the life-ways of the homeland, there are particular ‘Moqueguano’ variants of Tiwanaku material styles (Goldstein, 2005). Within the Titicaca Basin, inhabitants of Lukurmata, a major secondary tier site, affiliated with the Tiwanaku center by utilizing similar residential architecture and pottery styles (Bermann, 1994). Yet, the ceramic assemblages at Lukurmata also exhibit distinct stylistic features; for example, they include tan-wares with a highly polished beige (instead of red or orange) paste (Bermann, 1994). Particular burial practices were also utilized at the site (Janusek, 2002). Within sites, distinctions are evident between neighborhoods, and even households. Noting that there is considerable conformity between residential compounds, Janusek (2002) argues that differences in assemblages (largely in terms of a concentric gradation away from the monumental core) indicate social difference between the compounds. Adopting a practice theory approach to the assertion and maintenance of identity, Janusek (1999, 2002, 2004) argues that the production and utilization of distinct assemblages was important in creating and reproducing social boundaries. Tiwanaku, then, was a state that drew together diverse groups, who maintained visible expressions of their diversity while simultaneously utilizing common styles and engaging in shared practices that marked them as members of the state and created bonds between distinct regions, communities, neighborhoods and households.

It was Tiwanaku leaders’ ability to incorporate such diversity that was both the state’s strength and its weakness (Janusek, 2004a). Janusek suggests that state development was actually an “unintended consequence” (Janusek, 2004a: 280) of this inclusivity. Political emergence and

expansion was intimately tied up in the inclusive nature of state ideology. Yet, recent discussions of the end of Tiwanaku also implicate this inclusivity in the ultimate downfall of the polity.

4.8 Collapse

The collapse of the Tiwanaku state is still comparatively under-explored. Ecological disaster has long been posited as the reason for the decline of the Tiwanaku state (Ortloff and Kolata, 1993). Project Wila Jawira sought to contextualize the Tiwanaku in its environmental setting and the project made major contributions to paleo-climatological research in the region (Kolata, 2003). Citing paleo-environmental data derived from the Quelccaya ice cap in southern Peru and from sediment cores from Lake Titicaca, Kolata and colleagues argue that the immediate cause of the collapse was a widespread drought that began after AD 1000 (Kolata and Ortloff, 2003). This drought led to the gradual deterioration and ultimate abandonment of the state's agricultural systems; first in the irrigation fed systems in the lower altitude colonies, and later in the hinterland raised field systems. This environmental model is clearly intertwined closely with Kolata's argument that the state tightly controlled and heavily relied on agricultural production.

The environmental explanation has met with several challenges. In addition to those who challenge the argument that raised field agriculture was dependent on state control (Graffam, 1992), others have questioned the timing of the drought, suggesting that drought actually post-dates the collapse of the state, at least in the provinces (Williams, 2002). These challenges have contributed to a focus on the role of social factors in the collapse. Williams suggests that it was factionalism in the Tiwanaku colony in Moquegua, coupled with agricultural activity by Wari settlers that drew hydraulic resources away from Tiwanaku sites, which ultimately led to the collapse of state authority in Moquegua.

In the altiplano, internal factionalism is now also considered a major factor in the downfall of the state (Janusek, 2005a). In line with recent thought on state collapse, Janusek interprets the Tiwanaku collapse as a long, drawn-out process of disintegration (Janusek, 2005a; Yoffee and Cowgill, 1988). He suggests that during Tiwanaku V elites had strained deeply held values of reciprocity to such an extent that groups began to turn against one another. For Janusek, then, the increased competition and control during Tiwanaku V led to a situation in which “Tiwanaku populations – elite and commoner – fragmented into conflictive factions” (Janusek, 2008: 296).

These factions turned against one another, and the result was violent destruction, abandonment and dispersal at the end of Tiwanaku V (around AD 1150). In the urban core, large scale construction in monumental areas of the site ceased, and after AD 1000 the monumental and residential core were largely abandoned (Janusek, 2004b). Desertion was accompanied by destruction. The roof of the elite residence associated with the Putuni complex burned and collapsed, leading Couture to suggest that it was deliberately razed to the ground (Couture and Sampeck, 2003). Noting the large quantities of smashed storage vessels and animal bones, she suggests that inhabitants vacated the palace quickly, leaving behind supplies of food and drink (Couture and Sampeck, 2003). At approximately the same time as the capital was abandoned, there was a concomitant increase in small hamlets and villages in the state hinterland. Overall, there was a decline in population and an increasingly dispersed settlement pattern (Albarracín-Jordan, 1996; Bandy, 2001; Bermann, 1994; Janusek and Kolata, 2003; Stanish, 2003).

Due to differences in opinion about the nature of the Tiwanaku polity, there has been some hesitation in referring to its decline as collapse. Certainly, the considerable continuity in daily practice and material styles has added weight to this reluctance. However, it is apparent

that widespread disruption and destruction occurred. While environmental change may have added an extra layer of stress, the situation was already volatile, a product of increasing tensions between elite factions, and between elites and non-elites in the city, the hinterland, and the provinces. I turn now to one of the principal provinces, the Moquegua Valley.

4.9 The Moquegua Valley

The Moquegua Valley, in the modern Department of Moquegua, Peru, is located approximately 300km from the altiplano heartland of the Tiwanaku state. Referred to also as the Osmore Drainage, the valley is on the Pacific Watershed of the Andes (Williams, 1997). Running through the valley is the Rio Moquegua, and its tributaries, the Rios Torata and Tumilaca. This river system is fed principally by seasonal rainfall on the western slopes of the Andes as well as by melting snow on the mountains in the high-altitude region to the east of the Moquegua Valley.

The valley is divided into three environmental zones; the lower, middle and upper valleys. The lower or coastal valley is located between sea level and 1000 meters above sea level (masl). The middle valley, in which the modern city of Moquegua is situated, is between 1000 and 1500 masl. It is characterized by a comparatively wide valley bottom, which is overlooked by low hills. The upper valley runs from 1500 to 3000 masl, and begins at the confluence of the major river tributaries. The valley bottom is considerably narrower here with steep, rugged topography (Williams, 1997). Compared with the altiplano, temperatures are mild. Between sea level and 1800 masl they average 15 degrees Celsius in the winter months (June-August) and 21 degrees Celsius in the summer (January-March). Between 1800 and 3000 masl, annual temperature averages are between 14 degrees in June-August and 18 degrees Celsius in January-March (Rice, 1989).

There is rainfall on the coast only in El Niño years. Even at higher altitudes, the environment is classified as arid, and rainfall is limited to 125 mm annually (Rice, 1989). Irrigation, then, is necessary for agriculture, but with it the valley is productive. Of irrigable land in the middle valley, thirty percent is arable (Rice, 1989). Maize grows in the middle and upper valleys. The temperate climate of the middle valley makes it an excellent location for growing coca, and more recently avocados and grapes.

The valley is not without its challenges; minimal rainfall and environmental aridity necessitate irrigation for any agricultural enterprise, while soil salinity and erosion pose additional threats to crops (Rice, 1989). However, with its temperate climate and lower elevations, the Moquegua Valley represents a very different set of ecological zones from the high, cold altiplano. The range of crops that can be grown in the valley is different from those that are supported in the altiplano. Valley crops include maize and coca, both important in Tiwanaku (and other Andean) feasting. Moquegua's agricultural potential may explain its recurrent colonization by expansive states, first the Tiwanaku and Wari, later the Inka, and finally the Spanish (Dayton, 2008; Goldstein, 1989b; Williams, 1997).

4.10 Research in the Moquegua Valley

The Moquegua Valley does not have the long history of exploration and archaeological research that the Titicaca Basin does. Although reference is made to the valley in early Spanish writings, scholarship on these documents is still in its infancy. Compared with the hundred and fifty years of investigation at archaeological remains in and around Tiwanaku, archaeological research in Moquegua was on a small scale until the early 1980s (Stanish and Rice, 1989). The major Tiwanaku site of Chen Chen was the subject of limited investigations in the middle of the twentieth Century. It is thought that the site was visited by the Tokyo Scientific Expedition to the

Andes in the 1950s (Goldstein, 2005). However, as the author of the expedition report, Ishida, does not list Chen Chen by name, this is uncertain (Blom, 1999). The first confirmed excavations at the site were in the 1960s by the Misión Peruano-Aleman (Disselhoff, 1968). Disselhoff published radiocarbon dates and Tiwanaku style pottery from the excavations there.

In the 1980s, however, following a visit by Michael Moseley to the Moquegua Valley, the bi-national Programa Contisuyo was begun. Designed to “study, preserve, and promote the region’s social and natural resources” (Stanish and Rice, 1989: 1), the Programa Constiuyo has served as an umbrella organization uniting and supporting research by anthropologists, archaeologists, historians and natural scientists. Under the auspices of Programa Contisuyo, extensive archaeological research has made the Moquegua Valley one of the most thoroughly investigated valleys in Peru. The entire valley has now been surveyed (Goldstein, 2005; Owen, 1994), and numerous excavations have been undertaken at sites pertaining to all stages in Moquegua’s prehistoric and colonial occupations (Dayton, 2008; Goldstein, 1989b; Green, 2005; Williams, 2001; Williams, et al., 1989; Wise, et al., 1994). These excavations have produced enormous quantities of cultural material, and the participation of bio-archaeologists, faunal specialists, and paleo-botanists has contributed important dimensions to understanding Moquegua’s prehistory (Blom, et al., 1998; DeFrance, 1996; Moseley, et al., 2005).

4.11 10,000 Years in Moquegua

Human habitation in the Moquegua Valley dates to as early as the Archaic period. The site of Asana, located at 3430 masl in the higher reaches of the valley, was occupied between 10,000 and 4000 BP (Aldenderfer, 1993). At the other end of the valley, near the coast, excavations at the site of K-4 have revealed domestic and mortuary practices during the Archaic (Wise, et al., 1994). Pottery is first apparent during the Formative Phase, locally referred to as

Huaracane, which began approximately 500 BC (Goldstein, 2005). Huaracane sites are identified by the presence of neck-less ollas and distinctive boot tombs (Goldstein, 1989b). Huaracane sites were situated along the valley floodplain, in prime agricultural land. They were relatively small and uniform in size, but densely occupied (Goldstein, 2005).

During the Middle Horizon (AD 500 – 1000), the Moquegua Valley was occupied by both Wari and Tiwanaku settlers. As the only known locale simultaneously settled by these contemporaneous states, Moquegua has attracted particular interest from scholars working on the Middle Horizon. The Tiwanaku and Wari largely occupied different areas of the valley. The major Tiwanaku settlements are on the hilltop bluffs overlooking the floodplain in the middle valley, and Wari sites are largely located in the steeper, rugged upper valley. The most well-known of these is the imperial center of Cerro Baúl (Williams, 2001). In Moquegua, Tiwanaku and Wari settlers replicated the architectural styles, agricultural practices and material culture of their respective heartland. Around AD 1000, both states underwent processes of disintegration and the imperial presence of each collapsed in Moquegua (Williams, 2002).

The succeeding four hundred years, the Late Intermediate Period, is locally referred to as the Estuquiña phase. As elsewhere in the Andes, the Late Intermediate Period in Moquegua is characterized by the presence of apparently autonomous communities, who established villages in defensible locations. There is a clear break with the Middle Horizon. Tiwanaku and Wari ceramic and textile traditions, architectural styles and mortuary practices disappear from the archaeological record at this point (Bawden, 1993; Clark, 1993; Conrad, 1993; Lozada Cerna, 1987; Williams, 1990). Inka incursion into the valley happened around AD 1475 and local residents took refuge at Cerro Baúl as they resisted imperial forces (Williams, 1997). In Moquegua, the Inkas co-opted local towns and established *tambos* (way-stations) along the Inka

road that runs through the south-central Andes (Dayton, 2008; Williams, 1997). Following the Spanish conquest of the Inka Empire in 1532, much of Moquegua was granted to *encomenderos* and the valley was established as a major producer of wine and olives (Rice and Ruhl, 1989).

4.12 Tiwanaku in Moquegua

Interpretations of the Tiwanaku occupation of Moquegua have undergone significant revisions since intensive research began at Tiwanaku sites in the early 1980s (Figure 4).

Tiwanaku presence was recognized by Disselhoff (1968), and he included in his publication recognizably Tiwanaku style pottery excavated at Chen Chen. Since then, Paul Goldstein has been the leading scholar on Tiwanaku in the middle valley, while Bruce Owen's research on the coast and in the upper valley has shed light on Tiwanaku populations slightly removed from the state centers (Goldstein, 1985, 1989b, 1990, 1993a, 1993b, 1995a, 2000a, 2005, 2007; Owen, 1993, 2001, 2005; Owen and Goldstein, 2001).

Tiwanaku presence in Moquegua is evident in the archaeological record from Tiwanaku IV onward. Migrants from the altiplano established settlements at the middle valley Omo complex between AD 525 and 700 (Goldstein, 2005). First identified at the Omo M12 site, these Tiwanaku immigrants used a distinctive pottery style that included both red-slipped and black polished fine-wares, which are visibly indistinguishable from contemporary altiplano Tiwanaku vessels. These serving wares are consistently found in household contexts. Contrasting this with the minimal number of vessels in San Pedro de Atacama and the Azapa Valley, and their restriction to elite households and graves in those locales, Goldstein (2005) argues that the degree of interaction with the altiplano was far stronger in Moquegua than in other regions. Domestic pottery in Moquegua also replicated altiplano forms. Omo style sites are predominantly in the middle valley on open areas between 1000 and 1500 masl, but smaller Omo

affiliated sites have been identified in the upper valley, including La Cantera (Owen and Goldstein, 2001). Recently, Goldstein has interpreted these early Tiwanaku settlers as pastoralists, noting that the major Omo sites (Omo M12, Los Cerrillos and Rio Muerto), are located near llama caravan routes and not near the valley flood plain which was exploited by later farmers. He argues that the few Omo style cemeteries indicate that Omo style settlements were short term settlements, and that residences were temporary tent-like structures (Goldstein, 2005).

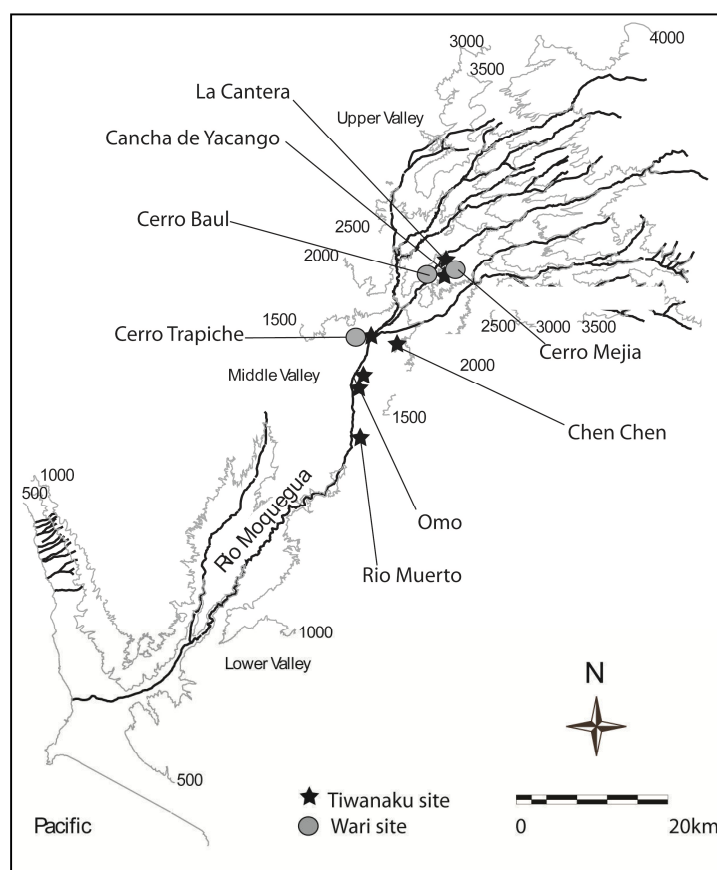


Figure 4. Middle Horizon Moquegua Valley Sites mentioned in the text (map re-drawn from Williams 2002).

Beginning around AD 785, the Chen Chen style is apparent in the archaeological record (Goldstein, 2005). It is the most ubiquitous Tiwanaku affiliated ceramic style in Moquegua. There is no polished black-ware in Chen Chen style assemblages, and red-ware slips are lighter, exhibit lower firing and are slightly thicker than Omo vessels (Goldstein, 1985). However, ceramics of this style are standardized in form and decoration. Chen Chen *keros* are larger than Omo ones, and assemblages are dominated by *tazones* (flaring sided bowls). Although Chen Chen forms and decorative motifs are similar to those in the state heartland, there are unique components of Chen Chen assemblages, including the ‘coca cola glass’ *kero*, so named for its bulbous upper body (Goldstein, 1985). Chen Chen style pottery is present predominately at four large towns in the middle valley; Chen Chen, Omo M10, Rio Muerto and Cerro Echenique. These towns were situated near major irrigation systems and large, flat pampas (Williams, 1997). In addition to residential areas and cemeteries, they contained large storage facilities. Goldstein (2005) suggests that the inhabitants of Chen Chen style sites were farmers, noting the presence of chipped stone hoes and large grinding stones (*batanes*) at Chen Chen sites. Although sites with Chen Chen style ceramic material are predominately found in the middle valley, a few smaller sites have been identified in the upper valley, including Cancha de Yacango (Owen and Goldstein, 2001).

Cultural affiliation with the altiplano has long been recognized in the form of material styles as well as residential and ceremonial architecture. However, it was bio-archaeological research that proved the presence of altiplano immigrants in the Moquegua Valley. Analysis of non-metric cranial and dental traits, as well as strontium isotope analysis of individuals from Chen Chen sites and the altiplano confirmed that people, as well as styles, were migrating from the Tiwanaku heartland to the Moquegua Valley (Blom, 1999; Knudson, 2004).

The relationship between the Tiwanaku state center and the Tiwanaku affiliated communities in Moquegua has been subject to considerable debate in recent years. Initially, the Omo and Chen Chen styles were thought to have been produced during different time periods. Omo was associated with Tiwanaku IV, and Chen Chen with Tiwanaku V (Goldstein, 1985). The Omo 'phase' occupation was interpreted as a colonial incursion by a group of migrants who imported Tiwanaku lifeways and maintained affiliations with the altiplano through kin-based networks. It was during the Chen Chen 'phase' that Moquegua became a tightly administered province, directly controlled by the altiplano state center. Chen Chen communities, it was argued, were Tiwanaku 'citizens' who had political and economic connections and obligations with the center (Goldstein, 1989b).

However, a proliferation of radiocarbon dates from Omo and Chen Chen sites, coupled with an increasing concern for thinking about Tiwanaku social organization in Andean terms (per Albarracin-Jordan and Janusek in the altiplano), has led to revisions of this model. Although Omo styles do appear in the archaeological record earlier, it is now recognized that there was chronological overlap between Omo and Chen Chen sites. Recently, differences between the two styles have been interpreted as indicative of different corporate groups, whose occupation of Moquegua partially coincided (Goldstein, 2005; Owen, 2001). Inhabitants of Chen Chen sites did not replace Omo inhabitants, as previously thought, but underwent an independent migration from the homeland, bringing with them their own material styles and cultural practices. While both styles are recognizably Tiwanaku, inhabitants of Omo and Chen Chen sites used distinctions between the ceramic styles, residential architecture and funerary practices to assert and maintain difference. Chen Chen and Omo communities engaged in shared practices and ideologies that tied them into the Tiwanaku sphere. Yet, in ways analogous to those used by

communities at Tiwanaku and Lukurmata, inhabitants of Tiwanaku sites in Moquegua simultaneously enacted and maintained distinct identities (Goldstein, 2005; Janusek, 2002). Goldstein (2005) tentatively suggests that Omo affiliated communities may have been comprised of immigrants from the Copacabana peninsula and the lake islands because Omo style ceramics share most affinities with pottery from that region of the Titicaca Basin. Further, based on the presence of similar vessels in Cochabamba assemblages, he suggests that a sister colony may have existed there. Goldstein (2005) comments that it is more difficult to pinpoint the ancestral location of communities at Chen Chen style sites, because ceramics stylistically similar to those at Chen Chen are so ubiquitous throughout the Tiwanaku sphere of influence.

As in the heartland, differences are also evident within Tiwanaku sites in Moquegua. At Omo style sites, residential space was divided into clear segments. Neighborhoods comprised groups of houses organized around a central plaza. Goldstein (2005, 315) suggests these distinct spaces reflect “numerous insular communities, each with its own ritual space [that] probably correspond to minimal *ayllus*.” He comments that perhaps they correspond with homeland equivalents. Goldstein also argues that even as members of the different neighborhoods simultaneously asserted their affiliation with other Omo neighborhoods, other Omo settlements, other Moqueguano Tiwanaku, and ultimately with Tiwanaku communities in the heartland and other provinces, the spatial separation of residential and ritual activities would have contributed to the maintenance of distinct neighborhood identities. The distinct cemetery sectors at Chen Chen sites, most notably at the site of Chen Chen itself, have been seen as indications of intra-community corporate groupings (Blom, 1999). As in the Titicaca heartland then, Tiwanaku communities in Moquegua simultaneously asserted commonality and difference at various levels of social identity. Tiwanaku affiliated populations in Moquegua actively used material culture, as

well as daily and ritual practice, to assert their membership of the Tiwanaku polity and to demonstrate and reify local identities.

4.13 **Wari**

The Middle Horizon is a time of particular interest in Moquegua, because of the contemporaneous occupation of the valley by both Tiwanaku and Wari settlers (unknown anywhere else in the Andes). The Moquegua Valley represents the point of geographical overlap for these two expanding states, and as such is central to recent investigations into the relationship between them (Moseley, et al., 1991; Williams, 2001, 2002).²⁰ Despite the common icons, principally the Staff God or Front Faced Deity, there are notable differences between the states. Wari's heartland was further north, in the Ayachucho Valley, and sites established there and in the Wari provinces are characterized by multi-story compounds, D-Shaped temples and the patio-group style of architecture (Brewster-Wray, 1989; Schreiber, 1987; Williams, 2001). This contrasts with the Tiwanaku emphasis on sunken courts and pyramidal shaped mounds (Williams, 2001). Some Wari burial practices are also distinct from Tiwanaku, and included burials in vessels, under floors, as well as multiple internments in stone chambers (Tung and Cook, 2006; Valdez, et al., 2002).

Wari incursion into the Moquegua Valley is evident principally in the upper valley, at the monumental imperial center of Cerro Baul, which was occupied as early as AD 600 – 685, with a second construction phase apparent between AD 780 and 990 (Williams, 2001), as well as at smaller sites, apparently designed to house non-elites. Of these Cerro Mejia has received the most investigation (Nash, 2002, 2010; Nash and Williams, 2009). Wari presence is not absent from the middle valley. Cerro Trapiche, located in Tiwanaku 'territory,' was home to a Wari

²⁰Shared iconographic motifs led to Wari materials originally being called Coastal Tiahuanacoid, until Tello defined Wari as a distinct style in the 1930s.

community (Green, 2005). At Cerro Mejia and Cerro Trapiche, there is Wari style pottery, likely both imports and local imitations, as well as Wari style architecture, including a D-Shaped temple atop Cerro Baul (Dussubieux, et al., 2007; Williams, 2001). Wari immigrants instituted major irrigation and hydraulic systems in the steep topography of the upper valley, and turned it into a highly productive landscape (Williams, 1997, 2002). Just as Tiwanaku settlers brought with them material styles, and subsistence systems to the middle valley, so did their Wari contemporaries in the upper valley.

The relationship between Tiwanaku and Wari in Moquegua continues to be debated. Wari style ceramics have been found in Tiwanaku tombs (Garcia Marquez, 1990), and infrequently, Tiwanaku styles are incorporated into Wari vessels at Cerro Baul (Williams, et al., 2001). Goldstein (2005) argues that interaction between Wari and Tiwanaku was limited and emphasizes the “extraordinary segregation” between members of each colony (Goldstein, 2005: 319). However, there is evidence for Tiwanaku presence atop Cerro Baúl, in the form of a Tiwanaku temple (Williams, 2008). Further, after AD 800 Tiwanaku communities established small villages on the flanks of Cerro Baul (Sims, 2006; Williams, 2001; Williams and Nash, 2004).

4.14 State Collapse in Moquegua

As discussed, in the altiplano the Tiwanaku state underwent a prolonged process of disintegration that was violent and hugely disruptive (Binford, et al., 1997). Indications of decline began in the heartland with the end to monumental construction in the urban center by AD 1000. Around the same time, the Putuni complex was destroyed (Couture and Sampeck, 2003). By AD 1150, residential sectors throughout the urban center had been abandoned as populations fled into the hinterland (Janusek, 2005a).

The collapse of the Tiwanaku state in Moquegua was marked by similar processes. As in the heartland, events in Moquegua are similar to those indicative of state collapse and disintegration of the overarching political order in cross-cultural contexts (Yoffee and Cowgill, 1988). Violent destruction was wrought on symbols of state authority and religious ideology. In state centers, monumental architecture was attacked and torn apart (Goldstein, 2005). The temple at Omo was physically taken to pieces, and stones were reused in later tombs (Goldstein, 1993b). Elite burials were ransacked and idols were smashed (Goldstein, 2005). In addition, residential and corporate storage areas were deliberately destroyed as state authority was vehemently rejected.

Populations emptied out of state administrative centers. Small scale occupation continued at some earlier settlements in the middle valley, including Omo (Goldstein, 1989b), and some communities were established in view of earlier sites. These include the multi-neighborhood Maria Cupine, situated on the opposite side of the Moquegua River from the Omo complex, and the smaller Cerro Chamos (Goldstein, 2005). However, abandonment of state centers was also accompanied by mass dispersal to both the coast and to the upper valley (Figure 5), in a movement that Owen (2005) has called the second Tiwanaku diaspora in Moquegua (Owen, 1993, 2005; Owen and Goldstein, 2001).

Goldstein attributes the collapse of Tiwanaku to internal disruption, seeing it as the result of “rebellious Tiwanaku provincials” who no longer believed in the state’s ability to provide successful crops, high status goods and religious security (Goldstein, 1993b: 42). William’s (1997, 2002) investigation of hydraulic resources offers a reason why populations in Moquegua should have lost faith in the Tiwanaku state and turned against it so ferociously. Testing Kolata’s (1993) claim that it was drought that caused the collapse of the Tiwanaku and Wari states, he

argues that the drought post-dated Tiwanaku collapse in Moquegua at least (Williams, 2002). Instead, the creation of Wari hydraulic systems in the upper valley, including a 13km canal, disrupted and diminished water supplies to the middle valley. This coupled with political fragmentation within the Tiwanaku province, evidenced by the dispersal of some Tiwanaku groups to the upper valley, “created an environment of vulnerability” for the Tiwanaku state authority in Moquegua (Williams, 2002: 361). Although relations between Tiwanaku and Wari remain unclear, Williams’ research on hydraulic systems indicates that Wari incursion into the valley significantly contributed to the demise of the Tiwanaku state in Moquegua and its overthrow by its own members.

The period immediately following the collapse of the Tiwanaku (and shortly soon after that of the Wari) state in Moquegua, has received considerably less attention than the preceding five centuries. As in other cultural contexts, the emergence, expansion and consolidation of state authority has been the focus of much research on the Middle Horizon in the valley. The implications of political disintegration for inhabitants of the valley have been comparatively less investigated. Existing research on Moquegua immediately following state collapse has focused on settlement patterns, architecture and ceramic styles (Bawden, 1989; Goldstein, 1989b; Owen, 1993; Sims, 2006; Stanish, 1985), and there is a notable absence of investigation into mortuary contexts, and other components of material assemblages.

The communities established in the wake of state collapse in Moquegua are locally termed Tumilaca, with those on the coast specifically named Ilo-Tumilaca (Owen, 1993). These communities built their settlements in previously uninhabited locations. Sites were also located in more defensible locations than before, often on hill-slopes, away from the valley bottom, as with Maria Cupine, Tumilaca la Chimba, Cerro San Miguel and Santa Rita la Chica (Bawden,

1993; Owen and Goldstein, 2001; Sims, 2006). Compared with state period sites like Chen Chen and Omo M10, accessing these sites often involves a steep, arduous climb and the sites themselves afford views up and down the valley. At some settlements, inhabitants constructed an extra line of defense in the form of a solid wall around the residential sector, most clearly seen at Omo M11. These sites are considerably smaller than earlier Tiwanaku sites, with a mean habitation area of less than one hectare (Goldstein, 2005).

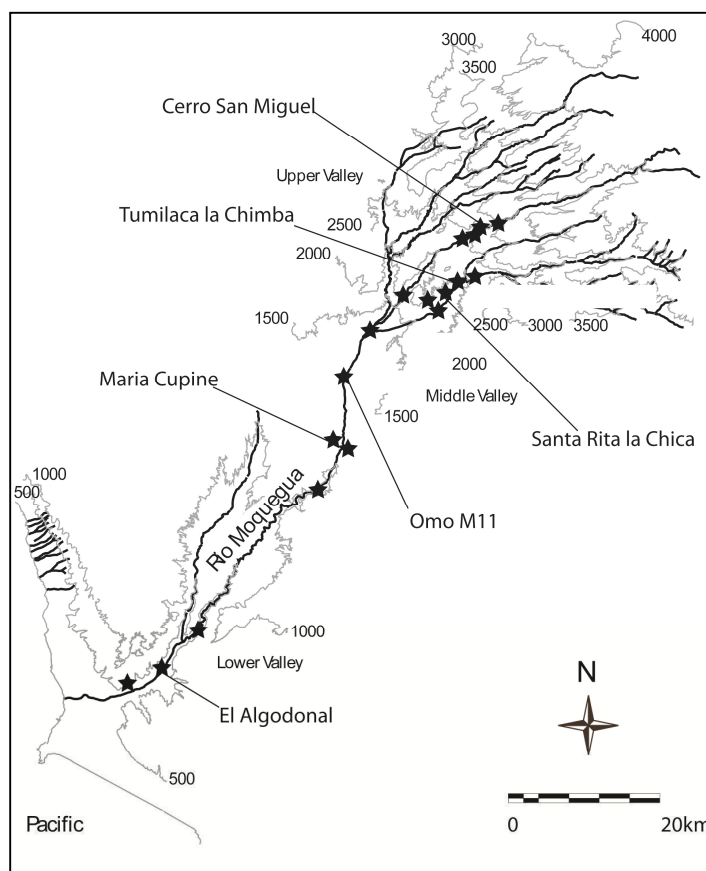


Figure 5. Tumilaca phase sites in the Osmore Drainage.

Investigation at collapse phase sites has been limited, but so far indicates remarkable continuity in many spheres of life. Just as their ancestors replicated altiplano homeland traditions and practices during the first Tiwanaku diaspora in Moquegua (Owen, 2005), so participants in the second diaspora that occurred in response to state collapse maintained many pre-collapse traditions as they established new settlements in the upper and coastal sections of the valley. Although sites for the most part lack the public space and monumental construction seen at state period sites, residential architecture at Tumilaca phase sites is very similar to earlier styles (Bawden, 1989, 1993). In the middle valley, Tumilaca phase houses were made using the same wall trench and *quincha* techniques that were used at earlier sites (Goldstein, 2005). Ceramic assemblages demonstrate considerable continuity, although distinctions are apparent between Tumilaca communities in the coastal, middle and upper valleys (Bermann, et al., 1989; Goldstein, 2005; Owen, 2005). There is more variation in Tumilaca pottery than in state period Tiwanaku ceramic production, which was very standardized (Goldstein, 2005). In the Tumilaca phase most of the earlier vessel forms were maintained, although *keros* were larger. Slip colors are similar, although slightly more variable (Goldstein, 1985, 2005). Ratios of pitchers, *keros* and *tazones* are approximately the same in residential space leading Goldstein (2005) to argue that there was considerable continuity in domestic practices. Significantly, however, in line with the rejection and destruction of symbols of Tiwanaku state ideology, pottery assemblages from the Tumilaca phase lack the Front Faced Deity and the Staff God. Rejection of state symbols was not a brief moment of angry reaction to the state's central authority and religious dogma, but was consolidated and reaffirmed through craft production in the succeeding several centuries.

4.15 Summary

It is now widely accepted that the Tiwanaku polity was a complex, integrated state that became increasingly hierarchical overtime. Extensive research at the site itself and in the hinterland has negated the 19th century argument that the site of Tiwanaku was little more than an empty religious center. Instead, the site was a busy, working city. It was simultaneously the focus of a far reaching, powerful ideology and home to thousands of inhabitants who were increasingly distinguished by rank as elite residents consolidated and asserted their elevated position in the social hierarchy with the transition from Tiwanaku IV to Tiwanaku V. State emergence and consolidation was accompanied by a regional settlement hierarchy, and the incorporation of regional centers. Over time, as urban elites relied ever more on agricultural produce to finance their aggrandizing feasts, these regional sites came under tighter state control, a process that likely contributed to the ultimate downfall of the state. Hallmarks of statehood are also evident in the long-distance networks, as Tiwanaku affiliated goods and practices infiltrated such far-away places as Cochabamba and San Pedro de Atacama. In Moquegua, there is evidence for increasing control by the altiplano center, as the productive resources of the province were also co-opted by elites jostling for power in the urban core. Although the model of Tiwanaku as a highly centralized political economy responsible for the very infrastructure necessary for agricultural production has been persuasively challenged (Erickson, 1993; Graffam, 1992), the evidence for a complex state society that exerted political and religious influence, albeit in varying degrees, over considerable geographical and temporal distance does exist.

Like most states, Tiwanaku was characterized by considerable diversity. The state emerged in the context of far-reaching interaction networks and shared religious ideologies. As

the state developed, diverse groups were incorporated into the polity. Members of the state simultaneously asserted shared affiliation with the urban core, whether they lived in the capital, in the hinterland or in distant provinces, and demonstrated identities rooted in regional, local, and neighborhood differences. Existing work on diversity in the state indicates that ritual and daily practices, as well as particular variants of crafting styles were central to not only the expression but also the consolidation of identity in the state. In Moquegua, communities used material culture to maintain an identity rooted in their altiplano homeland, but they also asserted a particular variant of that identity. Within the valley, Tiwanaku affiliated communities can be separated into two main groups; those associated with Omo styles and those with Chen Chen styles. Communities pertaining to these two groups appear to have been further separated into distinct intra-community corporate groups. Although identity differentiation within these corporate groups remains comparatively little investigated, it is likely that individuals were differentiated on the basis of age, gender, occupation and so forth.

The impact of political disintegration on these multiple modalities of identity remains unclear. It is evident however, despite some reluctance to refer to Tiwanaku collapse, that beginning around AD 1000, the state underwent a process of political fragmentation that was punctuated by violent episodes. This precipitated major shifts in settlement patterns and a rejection of particularly significant state symbols. Research on post-collapse communities in Moquegua has concentrated on settlement patterns, ceramic assemblages, and residential architecture. Yet, numerous questions remain about how these communities negotiated, defined and asserted who they were as groups and individuals and in the remaining chapters I utilize mortuary data from before and after Tiwanaku state fragmentation to explore these questions.

5. A MORTUARY APPROACH TO TIWANAKU IDENTITIES

5.1 A Mortuary Approach

This thesis examines how the multiple, layered identities that thrived in the Tiwanaku state were reconfigured following violent political fragmentation. Mortuary data are particularly well suited to addressing this topic because they give access to multiple modalities of identity. Further, funerals are important loci for the very negotiation of identity. In materializing ideal identities, mourners use funerals to offer a picture of how the world should be and funerals participate in a shift from proscriptions to descriptions of social organization and affiliations (Bruck, 2004; Schiller, 2001). Consequently, the analysis of mortuary data offers an excellent opportunity for examining the renegotiation of identities in a changing socio-political environment.

This interpretive framework differs significantly from that utilized in many studies of Andean mortuary contexts. The notion that burial treatments represent reflections of status in life is apparent in mortuary studies of the archaic (Wise, et al., 1994), the Pre-ceramic (Quilter, 1989; Rivera, 1995), the Early Intermediate Period, (Carmichael, 1995; Donnan, 1995; Donnan and Mackey, 1978), the Middle Horizon (Korpisaari, 2006), and Late Intermediate Period (Burgi, et al., 1989; Lozada and Buikstra, 2005). Some Andean scholars recognize the problems with the Saxe/Binford school (Dillehay, 1995), and some have attempted to think beyond the processual program (Blom, et al., 2003; Isbell, 1997; Tung and Cook, 2006; Valdez, et al., 2002). However, still strong in Andean mortuary studies is a reaction best espoused in the statement “while general cautionary tales are always kept in mind, the immediate concern is with mortuary behaviors in the Andean context. The general concepts developed by James Brown, Binford, Tainter, and others are applicable in the Andes” (Carmichael, 1995: 163).

In particular, existing studies of Tiwanaku burials have referred to the Saxe/Binford framework (Blom, 1999; Buikstra, 1995; Goldstein, 2005; Korpisaari, 2006). For example, Korpisaari's (2006) analysis of social stratification in Tiwanaku society synthesizes early data and presents excavations at a Late Tiwanaku cemetery. His investigation represents an immensely useful contribution to Tiwanaku archaeology and Andean mortuary studies. Korpisaari acknowledges the importance of Hodder et al's critiques, but he argues that "processual mortuary theory...is still the best analysis tool we presently have at our disposal" (Korpisaari, 2006: 14).

Korpisaari justifies a processual approach through reference to ethnographic and ethno-historic accounts of mortuary practices. Citing Spanish chronicles,²¹ he argues that the pronounced social stratification extant in Colonial Andean society was materialized in differential funerary behavior. Inka rulers were given elaborate funerals and their corpses venerated. Inka nobles and their principal wives were also afforded lengthy rituals attended by entire communities and buried with elaborate goods (Korpisaari, 2006). Distinctions between nobles were evident as "the length of the funeral ceremonies depended on the social status of the deceased" (Korpisaari, 2006: 22). Ethno-historic accounts indicate that mortuary rites distinguished the empire's elite from commoners whose funerary treatments are described in the chronicles through negation (Korpisaari, 2006). While these documents suggest that the very highest strata of society in 16th and 17th Century Cuzco were marked out in death, the Tiwanaku data set is so far removed temporally, geographically and socially that they have limited utility for interpreting funerary practices eight centuries earlier.

²¹ Korpisaari refers principally to Bernabe Cobo (1653), Garcilaso de la Vega (1609), Juan de Betanzos (1557), Pedro Pizarro (1571), José de Acosta (1588-1590), Polo de Ondegardo (1571), Pedro Sarmiento de Gamboa (1572), and Guaman Poma (1615) (Korpisaari, 2006).

Korpisaari also draws on ethnographic data to suggest that social structures and their expression in funerary behavior are deeply rooted in enduring Andean practices. Noting that many of the practices reported by David Forbes (1870), Harry Tschopik (1946), Weston La Barre (1948) and more recently Hans and Judith Buechler (1971) and Bastien (1985) are similar to customs discussed in the chronicles despite the subsequent five centuries of cultural, religious and political change, Korpisaari suggests that “contemporary Aymara mortuary practices...retain some elements with an Andean origin” (Korpisaari, 2006: 49). Commenting that children are afforded less attention than adults in their burials, and that a respected elder may be buried with a whip as a sign of respect, he argues that “such age and status differences that there are among the contemporary Aymara are ... manifested in mortuary rituals” (Korpisaari, 2006: 50). Although Korpisaari maintains that status is reflected in contemporary Aymara burials, he acknowledges two problems. The first is the fluidity of status in small Aymara communities, in which leadership positions rotate among members of the community. As such, political status in death may not be that experienced earlier in life. Secondly, many of the distinctions that ethnographers do note would not be evident archaeologically. I concur with both of these points, but also think that ethnographic data actually challenge the notion that individual rank is the principal determinant in burial treatment. Published ethnography and interviews I conducted on funerary practices in Aymara communities in southern Peru indicate that instead of individual rank, community membership is highlighted in Aymara funerals.²²

²² I refer to interviews I conducted on funerary practices in Aymara communities in southern Peru. Interviews were conducted with three female informants (aged 30, 40 and 50) in the summer of 2009. All three currently live in the city of Moquegua but maintain homes and ongoing connections with their native villages in the Carumas Valley. The informants all speak both Aymara and Spanish and discussed funerary practices both in the city and in their rural communities. I conducted these interviews in Spanish. Many of the specifics detailed in the published ethnography from highland Bolivia were also described by my informants in 2009.

Other than the details mentioned by Korpisaari, there is very little evidence in existing literature for the direct expression of status in funerals. Further, informants today emphasize the absence of distinctions. Contrary to expectations based on a processual approach, personal rank in a community is not particularly expressed in funerals. Instead, leaders (*alcaldes* and *yatiris*) are treated in the same way as other members of the community. Men and women are accompanied by similar items, including food, a candle and matches, as well as specific possessions held dear by the deceased. The only individuals to be notably marked out in death are babies under the age of two, who are dressed in white, given wings, carried to the cemetery in a white chair and buried in a white coffin, sometimes accompanied by a bottle of their mother's breast milk and yellow flowers.

Not only are those holding particular political positions not accorded special treatment, but the community as a whole ensures that those lacking in personal resources are afforded the same treatment as others. If an individual's family members cannot afford to buy a coffin or provide the requisite funerary meals, community members will often meet the cost.

The role of the community was a repeated theme in interviews. My informants emphasized the participation of all village members from the moment of death. Community members take turns sitting with the family in their vigil over the corpse the night after an individual dies, and the following day the entire community accompanies the corpse to the cemetery.

The deceased's membership of that same community is central to funerary practices. Although neighboring communities, as many as four, may share the same cemetery, space is demarcated and it is imperative that the deceased is buried in their community's section. One

informant reported carrying her grandfather's body much further than practically necessary so that he would be buried in the cemetery of his birth village.

Community identity is significant in the funerals of members no longer resident in their native villages. Informants, themselves emigrants from highland communities, emphasized that regardless of whether an individual died in the homeland or the city, they would be dressed in their homeland costume. Further, if an individual died in the city, their membership of a highland community would be even more visibly expressed by draping a shawl, typical of their village, over the coffin during the procession to the city cemetery.²³ This practice also indicates the way in which mourners highlight certain aspects of identity during funerals. Many Carumeña residents of Moquegua have lived in the city for decades; they are Moqueguanos as well as Carumeños. Yet, mourners emphasize heritage and homeland. As such they reiterate their own membership of those communities and use funerals as tools, consciously or otherwise, to maintain and reinforce social bonds.

Missing from both published ethnography and the interviews discussed here, is evidence for the clear expression of individual rank and status in burial. Instead, membership of the social group is emphasized in burial placement, adornment and community participation. This indicates the ways in which mourners actively highlight certain aspects of identity and down play others. Ethnographic data is arguably too temporally removed to provide an appropriate analogy for the Tiwanaku, but if we do argue for enduring Andean funerary traditions, then we must acknowledge that in-fact aspects of identity other than personal rank are more significant in mortuary behavior. Further, mourners actively emphasize certain elements of identity as they negotiate their own position in the world.

²³ As discussed in Chapter Two, distinctions in dress, including in shawls, can be very subtle between neighboring villages.

5.2 A Comparative Approach

Adopting an interpretative framework that rejects the premise that Andean burials simply reflect social organization but that sees them instead as part of the process of social change, I compare funerary behavior before (AD 750 – 1000) and after Tiwanaku state collapse (AD 1000 – 1150) to examine the validity of my suggestion that political fragmentation precipitated a shift in the salience of different modalities of identity.

I examine funerary behavior in the Moquegua Valley, southern Peru. At the height of state occupation, Moquegua was home to several thousand individuals who demonstrated their affiliation with the Tiwanaku state center, 300 km away, through daily and ritual activities, and through the construction and use of recognizably Tiwanaku material culture and buildings. Although Korpisaari's (2006) recent synthesis of burial data now provides a comprehensive overview of changing funerary practices in the Titicaca Basin, sample sizes are relatively small and this is in part due to poor preservation conditions. In particular, the wetter environment and soil chemistry of the altiplano make survival of organic remains rare. In contrast, the extremely dry, desert like conditions of Moquegua have resulted in excellent preservation, particularly on the coast and in the middle valley, where human remains are frequently mummified and the likelihood of excavating complete burial contexts is greater than in the altiplano.²⁴

This thesis compares funerary behavior at two sites in the Moquegua Valley; a major state administrative center (Chen Chen) that was established and chiefly occupied during the

²⁴ There are other locations with excellent preservation conditions as well as evidence for Tiwanaku influence. San Pedro de Atacama, in northern Chile, is the most well studied of these, and has been the focus of considerable mortuary archaeology (Rodman, 1992; Torres-Rouff, 2008). However, the nature of Tiwanaku presence in San Pedro appears to have been considerably different to that in Moquegua. Although elites in San Pedro co-opted Tiwanaku styles in an effort to associate themselves with the state, there is little evidence for the large-scale migration of altiplano inhabitants as there is for the Moquegua Valley (Knudson, 2004).

height of Tiwanaku state influence, and a much smaller, village (Tumilaca la Chimba) established by refugees fleeing state centers after state collapse. Before describing the sites, I review existing literature on Tiwanaku burials in the heartland, hinterland and provinces during the two periods (state and collapse) under consideration.

5.3 Existing Research on State Period Tiwanaku Burials

The majority of known Tiwanaku burials date to the height of the state. Figure 6 shows the location of sites mentioned in the following discussion.

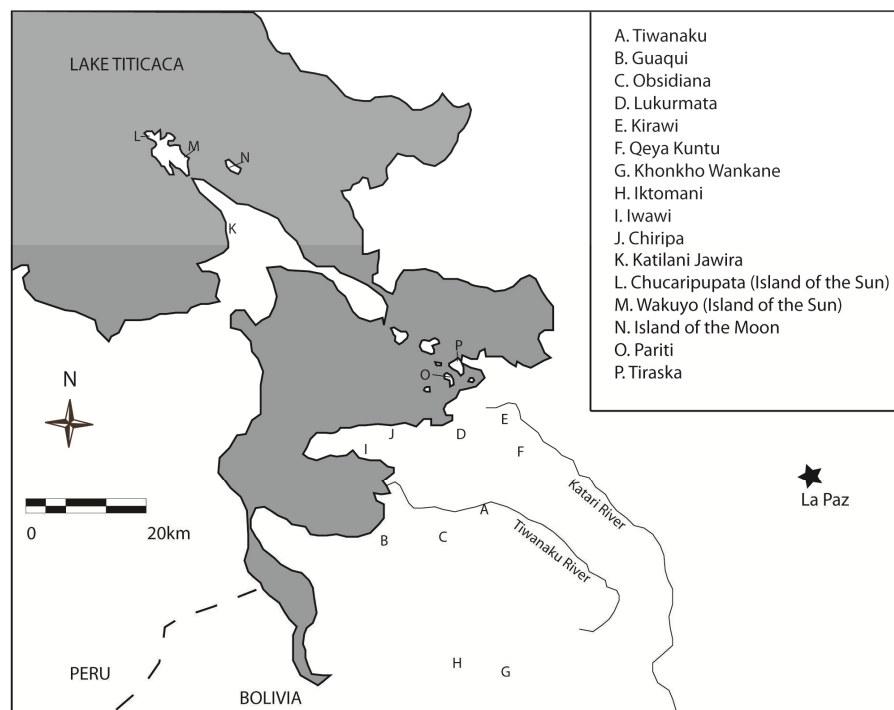


Figure 6. Locations of heartland burials (redrawn from Korpisaari 2006).

Data on altiplano funerary practices are limited. Further, many of the published burials were excavated as part of larger excavation projects focusing on monumental and residential areas. There have been far fewer dedicated cemetery excavations in the heartland than in the provinces (particularly Northern Chile and Moquegua). However, Korpisaari's (2006) recent synthesis of funerary data brings together disparate reports on excavated mortuary contexts and I draw heavily on his work in the following, specifically on his review of Tiwanaku IV and V burials.²⁵ The data are understandably patchy, given the varying quality of excavation and recording practices utilized over the past century.

5.3.1 Capital

Despite numerous excavation projects at the site of Tiwanaku, information on burial practices at the capital is limited. Several mortuary contexts appear to contain sacrificial victims, including twenty individuals excavated on the terraces of the Akapana (Manzanilla, 1992) and fourteen dating to the razing of the Tiwanaku IV occupation of the Putuni (Couture and Sampeck, 2003). Other burials contained no or incomplete human remains. Six burials (late Tiwanaku IV or early Tiwanaku V) contained the remains of at least fifteen individuals but many were sub-adults represented only by their skulls (Couture, 2003). Couture also excavated an elite mortuary complex in the Putuni. Although the cylindrical and bell-shaped tombs contained hundreds of Late Tiwanaku IV ceramic sherds, there were no human remains (Couture and Sampeck, 2003).

Other apparent elite tombs at the capital include a subterranean elite tomb, similar to those at Wari and Conchapata, with a stairway and portico for accessing the tomb, located north of the Kalasasaya (Janusek, 2008). On the summit of the Akapana, Linda Manzanilla excavated

²⁵ See Korpisaari (2006) for a more in-depth discussion of Tiwanaku burials in the altiplano.

six burials, all without grave architecture (Manzanilla, 1992). Five flexed adults sat in a row aligned east-west facing the sixth individual, an adult male. This sixth individual was accompanied by a miniature *vasija*, a bone snuff spoon, and had a broken feline *incensario* in his lap (Janusek, 2004a; Korpisaari, 2006). Kolata (1993) argues that mummies of elites were also housed in the chambers of walls in the Kalasasaya but this has not been substantiated with archaeological data (Korpisaari, 2006).

At Tiwanaku, burial within residential areas was common, suggesting the role of funerary practices in emphasizing “the significance of emotional bonds and collective memory among local groups” (Janusek, 2004a: 222). There were six burials beneath the walls and floors of the Palace of the Multi-colored rooms in the Putuni (Couture and Sampeck, 2003), and three under an outside patio in Akapana East 2. Individuals were wrapped in mantas and the burial was marked with stone (Korpisaari, 2006). In Akapana East 1M, an infant was found in a small pit in a foundation wall of the compound, and a young adult female, sat flexed facing east was under another wall. The absence of several bones suggests this was a secondary internment (Janusek, 2004a).

Many of the burials at Tiwanaku appear to represent ‘special’ contexts. Excavation has revealed evidence for sacrifice, for the revisiting and even removal of human remains, and the burial of individuals under living spaces. Although no complete cemetery data from Tiwanaku exist, more ‘normative’ contexts have been recorded. In Akapana East 2 there was an adobe lined shaft with two chambers. An adult in the shaft was accompanied by a *vasija* and a *tazon*. In one chamber was a child with a *tazon*, *kero*, duck effigy vessel and in the other chamber was a child with a *vasija* and *tazon* (Korpisaari, 2006). In Ch’iji Jawira, Claudia Rivera recorded a late Tiwanaku IV pit burial that contained a flexed individual accompanied by four ceramic vessels,

and a Tiwanaku V burial. This was a bell shaped pit with two small depressions at the base. One depression contained an infant, the other an infant and three unfired miniature vessels (Korpisaari, 2006). In La'Karana, Escalante excavated three pit burials. One contained a flexed adult, one a partially extended and one an extended adult.

5.3.2 Heartland Valleys

At the site of Guaqui, in the Tiwanaku valley, Albarracin-Jordan excavated five stone lined cists, two of which were empty but still had cap-stones. A third contained an adult, and the fourth and fifth, which Albarracin-Jordan refers to as 'proto-chullpas,' would have protruded above the ground (Albarracin-Jordan 1996 in Korpisaari 2006). He also excavated at the site of Obsidiana, in the Lower Tiwanaku Valley, but the simple pit burial may post-date the Tiwanaku state (Korpisaari, 2006).

For the Katari Valley, there exist considerable burial data from the site of Lukurmata which flourished during Tiwanaku IV and went into decline during Tiwanaku V (Bermann, 1994). Tiwanaku IV saw a marked change from earlier burial practices, with the dead increasingly interred near the spaces of the living. Of 24 Tiwanaku IV burials, ten were in the main excavation area. Eight of these were below ground cists that were rectangular or oblong in shape and lined with stone slabs. The cap consisted of a grinding stone in four cases. Each tomb contained an adult, flexed and lying on their side, with few or no cultural inclusions (Bermann, 1994). The other two were elaborate, partially above ground double chambers. Human remains were placed in the above ground cylindrical stone chambers. The other 14 burials were in the central platform. Individuals were placed in their own circular shaft or pit graves, some of which had a horizontal circular bench near the base of the tomb. Most individuals were adults sat flexed, normally facing north. Graves included at least two polished black-ware or polychrome

Tiwanaku IV vessels, intact animal bones (including camelids), stone tools, jewelry, unfired clay pots, and zoomorphic figurines (Bermann, 1994). Bermann argues for social differentiation with children and lower status adults buried near residential contexts, and higher status adults buried with more grave inclusions in the platform near the center of the site.

In Tiwanaku V, burials were arranged in discrete cemeteries. Nine bell-shaped pits with a collar of fieldstones ringing the mouth were excavated. Several were partially stone-lined and caps were constructed of two to five stone slabs. Several tombs contained more than one individual, and, where it could be determined corpses were seated, flexed facing east. Although no standard suite of burial goods was identified, a range of inclusions was recovered, including weaving tools (Bermann, 1994). Lukurmata, then, is notable for mortuary practices that distinguished it from Tiwanaku, but also the differential use of mortuary practices between different areas of the site itself (Janusek, 2004a), suggesting that even within sites group affiliation is evident in the particularities of funerary ritual.

Another Katari Valley site, Kirawi, had a series of Tiwanaku pit burials. These contained flexed individuals who were accompanied by grinding stones, *tazones* and *vasijas* (Janusek and Kolata, 2003). There were several Tiwanaku V cist tombs at Qeya Kuntu, also in the Katari Valley. They were collared and lined with flagstones and river cobbles. Of the three excavated burials, two were adults, one a child, and each of the adults was accompanied by a *tazon* (Janusek and Kolata, 2003).

In the Machaca Pampa, Ryden excavated a slab chamber at Khonkho Wankane. The individual was buried in a flexed position accompanied by a *kero*, *tazon*, and a one-handed bowl, and the burial of an individual with a *kero*, a *tazon* and a bone object but no grave architecture. Ryden also reported burials that he referred to as ‘stone-fence graves’ but that he

thought post-dated the Tiwanaku occupation (Ryden, 1947). More recently, the Proyecto Arqueológico Jach'a Machaca, directed by Janusek, excavated a series of Tiwanaku burials at Khonkho Wankane (Janusek, 2005b; Janusek and Plaza Martinez, 2006). These burials vary in structure, body position and grave inclusions. Although simple circular pit burials were identified, there were also rectangular slab burials, and burials capped with rectangular shaped slab-stones (Janusek, 2005b). The dead were buried in extended as well as flexed positions. Although some individuals were buried facing east, others were facing north and in one case the head was turned to the west (Janusek and Plaza Martinez, 2006). Burials included Tiwanaku style vessels, lithics, and in one case camelid bones were found on top of the human remains (Janusek, 2005b). At Iktomani, Ryden excavated two Tiwanaku burials. One was rectangular and lined with stone slabs. A seated, flexed individual was buried with a *kero* and sherds of a *tazon*. The other was a circular tomb that had been disturbed but may have contained a *kero*, *tazon*, a stone implement and a llama bone (Korpisaari, 2006).

5.3.3 Peninsulas and Islands

Beyond the immediate core territory, both primary and secondary Tiwanaku sites are located along the lake shore and on islands in Lake Titicaca (Stanish, 2003). At Iwawi, near the shore of Lake Titicaca, three burial types were noted during excavations in 1993 (Burkholder, 1997). The earliest were pit burials, containing a flexed individual with considerable grave goods. There were also shallow depressions containing flexed individuals. No grave inclusions survived in these. Finally, there was one case of secondary internment (Burkholder, 1997).

On the Taraco Peninsular, at the site of Chiripa, the Taraco Archaeological Project recovered thirteen Tiwanaku burials. There was one example of a multiple internment. Five tombs were stone lined cists. Bodies were flexed and either seated or on their sides. Two of the

burials had grinding stones as caps. Ceramic vessels were present in six of the graves. Continuity with the earlier Chiripa period may indicate long-term altiplano funerary practices (Blom and Bandy, 1999).

At the site of Katilani Jawira, to the north of Copacabana, 67 cists with stone linings were recovered. They were dug into sterile soil and individuals were seated and flexed. Nearly 60% faced east. Of the 40 intact tombs, 20 contained ceramic vessels. Both adults and children were buried with ceramic vessels, and *keros* and *tazones* were the most common forms (Korpisaari, 2006).

At Chucaripupata, on the Island of the Sun, Seddon recovered 15 burials, several of which were stone lined cists (Seddon, 2004). He argues that three burials contained vessels brought from Tiwanaku itself. These vessels included a *kero* decorated with a front-faced deity, a *kero* with a cross motif and a one handled pitcher. Individuals were buried in a tightly flexed, seated position and adults graves were capped while infants and children were in shallow, uncapped graves. One capstone consisted of an old grinding stone (Seddon, 2004). The base of a broken *olla* was found on the floor of one tomb, and Seddon suggests that this might have held a perishable offering or incense. *Olla* bases were also found in the cemetery of Wakuyo where there were eight rectangular or heptangular cists inside a low mound (Korpisaari, 2006). On the Island of the Moon, Bauer and Stanish recovered nine cists that possibly date to the Tiwanaku period (Stanish and Bauer, 2004). At Pariti, Tiwanaku period cist burials, without grave inclusions were excavated (Korpisaari, 2006).

5.3.4 Northern Chile

The nature of Tiwanaku presence in Northern Chile is debated. Some scholars argue for the presence of representatives of the Tiwanaku state in San Pedro de Atacama (Rodman, 1992;

Valera and Cocilovo, 2000). Others suggest that although Tiwanaku material goods are found at San Pedro de Atacama, there is no evidence for a colonizing altiplano population (Browman, 1997; Torres and Conklin, 1995). Most Tiwanaku affiliated materials have been found in graves, lending support to the argument that inhabitants of San Pedro were engaged in indirect relationships of “clientelaje” (Berenguer, 1998; Stovel, 2001) and that “affiliation with Tiwanaku appears to have conferred benefits to a segment of the local population” (Torres-Rouff, 2008: 335). That funerary patterns remained consistent from before until after the Middle Horizon suggests that burials at San Pedro de Atacama were not created by immigrant mourners who brought with them altiplano traditions (Torres-Rouff, 2008).

However, possibly the differences between Atacameño and regional Tiwanaku burials have been overplayed. Graves at San Pedro were remarkably homogeneous (Stovel, 2001). They were marked with wooden poles and consisted of either circular or ovoid pits, which contained individuals in a seated, flexed position (Torres-Rouff, 2008). They are considered local and distinct from Tiwanaku graves because of the use of designated cemeteries and the organization of space (Torres-Rouff, 2008). While this differs from the considerable variation found in the heartland as a whole, and from the practice of burying individuals in association with residential space (as seen at Lukurmata and Tiwanaku), these practices are not so very distinct from patterns evident at other sites in the heartland or the provinces. These are quite generic patterns, and I do not argue that Atacameño burials were Tiwanaku burials, but perhaps the similarities in some aspects of funerary behavior suggest there were notions about how to treat the dead common across the South Central Andes.

There is more support for the idea that Tiwanaku colonial populations inhabited the Azapa Valley (Berenguer, 1998; Goldstein, 1995b; Kolata, 1993a).²⁶ Those arguing for Tiwanaku colonials suggest a multi-ethnic situation in Azapa, in which Tiwanaku immigrants coexisted with local Azapeños. Goldstein (1995) reports three cemeteries with altiplano influence. He notes that in San Pedro de Atacama, burials with Tiwanaku style goods appear only in individual tombs of local elites, but that in Azapa there were entire cemeteries that had “predominantly or exclusively Tiwanaku grave goods and may have been reserved for altiplano individuals” (Goldstein, 1995b: 64). Stone lined cists were common in one cemetery of burials containing Tiwanaku style pottery, textiles and arrows. Another Tiwanaku cemetery of stone lined cists was located on the site of an earlier Alto Ramirez phase burial ground (Goldstein, 1995b). A third cemetery, Atoca-1, was excavated by Muñoz who recovered Tiwanaku sherds and a fragment of a wooden *keero* from four cists (Muñoz 1986 in Goldstein 1995). In 1995, Goldstein suggested that the presence of black-ware indicated that Atoca-1 was contemporaneous with Omo sites in Moquegua. Interestingly, Goldstein’s team interpreted a pile of stones at the site as an above-ground burial structure. Although at the time such structures were “not known for peripheral Tiwanaku” (Goldstein, 1995b: 65), Goldstein’s more recent work at the cemetery at the Omo style site Rio Muerto in the Moquegua Valley has revealed similar rock piles over groups of burials (Baitzel, 2008; Green, et al., 2007) (see below).

5.3.5 Moquegua

There has been extensive excavation of Tiwanaku affiliated burials in the Osmore Drainage in the past three decades. The vast majority of excavation at Tiwanaku cemeteries in Moquegua has been in the middle valley at the Tiwanaku state center of Chen Chen. Excavations

²⁶ Non-metric dental trait data has been used to challenge the argument that immigrants from the altiplano lived in the Azapa Valley during the Middle Horizon (Sutter, 2000).

in the cemeteries at Chen Chen were carried out during the 1990s and early 2000s, as part of a larger rescue archaeology project undertaken prior to the development of the site as low-cost housing for modern inhabitants of Moquegua (Bandy, et al., 1996; Goldstein, 1995a; Williams, 1998). Cemetery investigations at Chen Chen resulted in the recovery of more than 6,000 burials, excavated during a series of projects (Owen, 1997a; Palacios, 2008; Pari Flores, 1995; Pari Flores, et al., 2002; Vargas, 1994).²⁷ Additional Chen Chen style burials were excavated during Goldstein's dissertation research at Omo M10 (Goldstein, 1989b). Of 19 cemeteries at Omo M10, Goldstein excavated six that he determined were affiliated with Chen Chen styles, and suggested that an additional nine could also be associated with communities utilizing Chen Chen styles.

Tombs at Chen Chen affiliated sites were either stone lined cists or unlined pits. Examples of both types had stone mouths (Buikstra, 1995). Individuals were buried tightly flexed, facing east, northeast or southeast. They were buried in warp-faced tunics, and some individuals also had a shawl (*manta*) and a thick blanket (*frazada*) (Goldstein, 1989a). Braided fiber rope was found in some tombs. Cultural items in graves included *keros*, *tazones*, spindle whorls, baskets, gourd vessels, pigment boxes and textile bags (Buikstra, 1995). One cemetery at Omo M10 and one at Chen Chen (Sector 29) have been interpreted as a 'deviant' cemetery for the unusual treatments enacted there.

Although thousands of tombs have been excavated at Chen Chen style sites, particularly at the site of Chen Chen itself, analysis of them has been largely bio-archaeological. Non-metric skeletal trait analysis was significant in demonstrating the migration of individuals from the altiplano to Tiwanaku settlements in Moquegua (Blom, 1999; Blom, et al., 1998). Comparison of

²⁷ I discuss these projects in more detail in Chapter Six.

strontium isotope data from bone and teeth from individuals at Chen Chen and the altiplano confirmed this migration pattern (Knudson, 2006, 2004). Analysis of cranial modification styles in the altiplano and at Chen Chen also indicated the maintenance of altiplano practices of inscribing identity onto the body at an early age (Blom, 1999).

The thorough bio-archaeological analysis of individuals from Chen Chen made enormous contributions to interpretations of Tiwanaku presence in Moquegua. However, analysis of cultural inclusions has been far more limited, even cursory. To date, analyses of funerary behavior at Chen Chen are largely found only in short field reports (Vargas, 1994). Although these have been cited in such a way as to indicate that scholars have a thorough understanding of Chen Chen mortuary practices (Blom, 1999; Buikstra, 1995; Goldstein, 2005), analysis of large samples of entire grave assemblages is absent. Despite the large sample size, holistic studies of Chen Chen data have not been undertaken. So far, discussion of Chen Chen mortuary behavior has largely consisted of brief descriptions that demonstrate that funerary practices at the site were similar to those in the altiplano (Buikstra, 1995). There has been little discussion of difference between burials at Chen Chen, although Palacios' (2008) work on a 'deviant' cemetery represents one exception to this. Thus, although enormous quantities of material have been excavated at Chen Chen, and although thousands of tomb contexts were documented during the 1990s and 2000s, the lack of detailed analysis of entire mortuary contexts means that scholars have not been in a position to examine the complex question of identity negotiation in funerary rituals.

Omo and Chen Chen styles are now understood as representative of distinct ethnic groups rather than representing temporally discrete occupations of the valley (Goldstein, 2005). Until recently there had been very little investigation of burials associated with Omo style sites. In

2006 and 2007, Goldstein and his students excavated a cemetery in its entirety at the Omo site of Rio Muerto (Baitzel and Goldstein, 2009; Green, et al., 2007; Plunger and Goldstein, 2008). Seventy-four burials were recovered, of which only thirteen were looted. In addition to pit and cist tombs, semi-subterranean tombs, in which the upper body of the deceased would have been above ground level, were also present at Rio Muerto (Green, et al., 2007). They were concentrated toward the center of the cemetery. Two variants of semi-subterranean tombs were identified; slab-lined and pits. Although both sexes and a range of ages were interred in semi-subterranean tombs, infants and children were more common in the slab-lined version (Green, et al., 2007). Tombs at Rio Muerto were collectively covered by a layer (approximately 1m deep) of medium and thick sized stones (Baitzel, 2008), reminiscent of that at Apoca-1 (Goldstein, 1995b). In addition to differences in tomb architecture, Rio Muerto is also noteworthy for the numerous funerary offerings found on the cemetery surface, indicating the importance of revisiting graves (Baitzel, 2008).²⁸ Green (2007) suggests that distinctive funerary behaviors at Rio Muerto may be an indicator of ethnic identity, distinguishing mourners at this site from those elsewhere in the Moquegua Valley. She suggests that the stone piles may be connected with pastoral practices of marking boundaries (Green, et al., 2007), given the possibility that Omo style immigrants initially migrated to Moquegua as pastoralists (Goldstein, 2005). Finally, she notes that similarities between the stone markers at Rio Muerto and Huaracance rock-piling at cemeteries might indicate that the Rio Muerto community maintained a closer relationship with local Moqueguano populations, than other Tiwanaku communities in the valley did.

Large amounts of well preserved data, both cultural and biological, from state period Tiwanaku cemeteries in Moquegua has been recovered and curated, but until this study there had

²⁸ Given the disturbed nature of Chen Chen, it is difficult to state with certainty that the practice of leaving cultural items on the surface of cemeteries was not common at Chen Chen sites also.

been no research synthesizing that data. Such a synthesis is necessary for examining identity negotiation and assertion during the height of state occupation in Moquegua. Further, the analyses that had been done were also undertaken before the completion of Korpisaari's (2006) review of burial patterns in the altiplano, and thus previous researchers had only very limited comparative material from the Tiwanaku heartland. Korpisaari's work provides an excellent data set against which evidence from Moquegua can now be compared.

5.4 Burials Dating to the Collapse of the Tiwanaku State

Terminal and immediately post-Tiwanaku occupations in the altiplano and in the state provinces have received less attention than those dating to the height of the state, and far fewer burial contexts have been recovered from this period.

5.4.1 The Altiplano

Korpisaari's (2006) excavations at Tiraska, on the shores of Lake Titicaca produced seven radio-carbon dates that fall between the 11th and 12th Centuries, and average around AD 1100. Korpisaari argues that the cemetery was in use between the 10th and 13th Centuries, referring to it as late or post Tiwanaku. It currently represents the most thoroughly investigated collapse period cemetery in the altiplano. Thirty-two burials were excavated between 2001 and 2003. Funerary treatments at Tiraska were very similar to those at earlier lakeshore and island sites. There were twenty-four stone lined cists with stone mouths, containing Tiwanaku V style pottery. Corpses were seated, flexed and they faced in various directions. There were also four chamber tombs which only contained local ceramics. Finally, there were three pit tombs which had no ceramics. Individuals in these had been placed on their stomachs, leading Korpisaari (2006) to suggest that pits were deviant burials. Burials were arranged on terraces, which were in use at the same time. The different burial types were also created at the same time. Burial

inclusions in the cists included *keros*, *tazones*, and one handled pitchers interred with the dead. A single stone slab was placed on the floor of two child burials. A *wichuña* (a weaving implement) was found in another tomb, and camelid bones were recovered from three graves. Limited excavation makes it difficult to recreate cemetery organization but based on Korpisaari's maps, I suggest the possibility that tombs were orientated in east-west alignments.

5.4.2 Coastal Collapse Burials

Mortuary data exist for the Ilo-Tumilaca/Cabuza group from the coastal site of El Algodonal, which dates to AD 960-1039 (Owen, 1993). During the collapse of state authority in Moquegua, refugees fled both up-valley and to the coast (Owen, 2005). The coastal groups are referred to as Ilo-Tumilaca and were the subject of Owen's doctoral work. Increasing differentiation between the material culture of Tumilaca groups is most notable between upper valley and coastal Tumilaca. During his investigations at El Algodonal, Owen excavated thirty-four burials (Owen, 1993). Owen's map suggests the possibility for east-west orientations like those at Tiraska. There is evidence for some graves being opened before the Huaynaputina eruption in AD 1600. Half of the burials were simple pits and half were roughly circular, stone lined graves. Tombs had been capped with large capstones. Stone lined graves varied from those with slabs set vertically to others with small stones set horizontally.

Corpses were tightly flexed, and buried wearing wool shirts. Bodies were held in place with twisted fiber rope, some had quids of coca leaves in their mouths, one had plant fibers in its nose (Owen, 1993). Coastal conditions ensured excellent preservation and the elaborate braided hairstyles may have been created after death (Owen, 1993). Several individuals had blue or green thread around the head, some with cane fragments inserted. Individuals were in seated position, facing east. Heads faced downwards.

Owen reports considerable variation in grave inclusions. A typical burial contained two decorated ceramic vessels, with a basket, cloth bag with coca leaves, sandals, head and mandible of a camelid, a guinea pig, a wooden spoon (with camelid profiles cut into the handle), raw wool, yuca roots, corn cobs, pacay, beans, fibers and cotton seeds (Owen, 1993). All textiles in the graves were wool but some cotton fragments were recovered from nearby middens.

Owen found few differences between burials. Only males were buried with wood, bone and cane artifacts or with shell, feathers, and birds. Overall, non-significant differences in artifact frequency favored males (Owen, 1993). Some artifacts were buried equally with both sexes (including *keros* – buried with males only at Chen Chen). Owen draws on the Saxe Binford model to conclude that “in Ilo-Tumilaca/Cabuza society there were not rigidly differentiated male and female roles, but rather a tendency for males to have greater access to goods and/or varied social roles than females” (Owen, 1993: 449). He also argues that greater grave wealth in adults indicates that social roles were achieved by adults, although one ‘rich’ burial of a 3 to 5 year old suggests exceptions to this.

5.4.3 Moquegua Valley

Until this project, no collapse phase cemetery had been systematically investigated in the Moquegua Valley. There was one cemetery at the Tumilaca site of Omo M11, although it had suffered extensive looting (Goldstein, 1989a). At this site, outer stone rings circled some burials. Tombs contained seated, flexed individuals facing east, buried in woven woolen textiles (a *manta* and a *frazada*). One handled pitchers and *tazones* were recovered from the graves, as well as spoons. No food offerings were found (Goldstein, 1989a). At M10, cemetery N was designated a Tumilaca phase burial ground, and behaviors were identical to those at M11. Visual

inspection of the looted cemetery at the site of 309 in the Upper Valley indicates that similar stone lined cists were utilized there.

5.5 The Sites

Building on existing literature on Tiwanaku burials, I adopt a comparative and diachronic approach, examining similarities and differences in mortuary behavior and the assertion of identity during the height of state presence in the Moquegua Valley and the period following state collapse. Data from two sites, Chen Chen and Tumilaca la Chimba, are compared (Figure 7). One site dates to state presence and the other site was established following state decline. Chapters Six and Seven include more detailed descriptions and research histories for each of the sites, so I provide only brief introductions here.

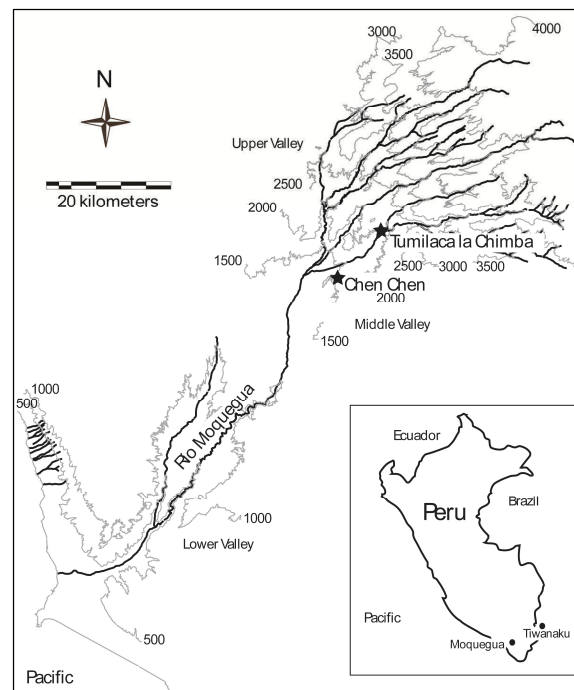


Figure 7. The Moquegua Valley showing the location of Chen Chen and Tumilaca la Chimba.

Located where the modern city of Moquegua is today, Chen Chen was the largest Tiwanaku site in the valley. In addition to the cemeteries, Chen Chen had extensive residential sectors, agricultural fields, and substantial storage facilities (Bandy, et al., 1996; Goldstein, 1995a, 2005; Pari Flores, 1995; Williams, 1997, 1998). AMS radio-carbon dates for Chen Chen fall between AD 710 and 1030 (Goldstein, 2005). The mortuary population was biologically related to populations in the Tiwanaku heartland and included immigrants from the altiplano (Blom, 1999; Knudson, 2004). Inhabitants of Chen Chen mirrored altiplano heartland daily and ritual practices, constructing and using public and private spaces and material culture very similar to that found in the Titicaca Basin. The site represents a major state installation that likely played a significant role in the production and distribution of the agricultural goods sought by the Tiwanaku state in Moquegua. Not only was the site home to individuals who demonstrated their affiliation with the heartland, but some of them had actually migrated to the Moquegua Valley from the altiplano.

The second site, Tumilaca la Chimba, was established following the abandonment of state administrative centers, including Chen Chen. Located 15km up-valley from Chen Chen, Tumilaca la Chimba is much smaller and includes four cemetery sectors on a ridge overlooking the residential sector of the site. Part of the Tumilaca occupation is super-imposed by a Late Intermediate Period (Estuquiña) village. The Tumilaca occupation appears to lack large, public, ritual space and central administrative or storage facilities, in common with other post-collapse sites in the valley (Goldstein, 2005). Romulo Pari Flores (1980) completed small scale excavations in one of the four cemetery sectors. The visible architecture was mapped and small surface collections were made by Programa Contisuyo researchers in the 1980s, although little excavation was undertaken in the residential sectors (Bawden, 1989, 1993; Bermann, et al.,

1989). Before this project there were no radiocarbon dates for Tumilaca la Chimba, but comparison with the ceramic chronology for the site and neighboring Tumilaca sites provided support for the hypothesis that the site pertains to the period of state disintegration (Sims, 2006). Tumilaca la Chimba, then, appears to represent one of the smaller, defensible communities established by refugees fleeing destroyed state centers in the middle valley.

5.6 The Structure of the Study

In more recent examples, state collapse led to an increased salience of factional affiliations (Besteman, 1996; Bowman, 1993; Coulson, 1993; Mohamoud, 2006). In this study, mortuary data from Chen Chen and Tumilaca la Chimba was analyzed to determine whether Tiwanaku political disintegration led to a similar shift in the relative significance of different identities. In examining this issue, I divided identity into four principal types; extra-community, community, intra-community corporate, and intra-corporate. The term community refers to the geographically based community created through shared settlement in a town or village.²⁹ These identity types are structured around ‘community’ because this study is focused on two settlements and identity is conceptualized as operating at the level of the site, but as also rooted in social ties beyond the geographical limits of the settlement (extra-community identity) and dividing the community (intra-community corporate and intra-corporate identities).

- Extra-community identities are the far-reaching identity modalities in which inhabitants at a site were situated. For the Tiwanaku, I include identities based on membership in the overarching state entity (realm), as well as identities based on wide-scale regional

²⁹ As discussed in Chapter Two, communities are not necessarily bounded (Anderson, 1991; Yaeger and Canuto, 2000). The modality types utilized here are not necessarily appropriate for other cases, and are built in part on considerable evidence for nested identities in existing literature on the Tiwanaku state (Goldstein, 2005; Janusek, 1999, 2002, 2004a).

difference (Lowland versus Highland, altiplano versus coast), and more narrow regional difference (for example the Moquegua versus Azapa Valleys).

- Community identities are common affiliations shared by an entire site based community, for example Tiwanaku versus Lukurmata in the altiplano, and Chen Chen versus Omo M10 in Moquegua.
- Intra-community corporate identities are affiliations shared by groups who differentiated themselves from one another within the same spatial community. The presence of corporate social groups within Tiwanaku communities has been the subject of considerable investigation (Blom, 1999; Goldstein, 2005; Janusek, 2004a), and neighborhood or *ayllu* groups would be included in this modality type.
- Intra-corporate identities intersect these higher order levels of identity. They include identities based on gender and age.³⁰ Potentially, identities rooted in occupation and class may be Intra-Corporate Identities. However, given the evidence that corporate social groups were in part differentiated by crafting activities (Janusek, 2002), occupation may in some instances be an Intra-Community Corporate Identity.

Accessing these different types of identity in mortuary data required a comprehensive analysis of funerary contexts. The bio-archaeological research on human remains from Tiwanaku burials has provided important insights, particularly regarding migration patterns, but there has been comparatively little focus on the intersection between biological and cultural data in Tiwanaku tombs, especially in a large sample. In order to examine identity in all its potential guises and expressions, this study sought to consider every stage in the funerary process and

³⁰ These identities are often termed ‘individual’ identities but for reasons discussed in Chapter Two, I avoid the phrase ‘individual.’

every type of data present in each tomb. Appendix B details the specific excavation and laboratory methodologies utilized. For each of the 202 tombs described in Appendices C and E, attempt was made to gather data on the location of the burial, tomb construction, on the human remains interred in the tomb, on the way mourners had prepared and interred those remains, on the cultural materials buried with the dead, and on post-interment activities.³¹

This produced a multiplicity of biological and cultural evidence. By examining correlations between the many different elements of mortuary data, I sought to extrapolate indications for the different identity types defined above. Although my conception of burials is heavily influenced by critiques of the Saxe/Binford program, scholars working within that framework utilized methodologies which are integral to all cemetery studies, regardless of their overarching theoretical paradigm. One of these is the analysis of large samples of burials. While the 202 tombs studied in this project are only a fraction of the Tiwanaku graves in Moquegua, their analysis still represents the largest comprehensive study of Tiwanaku burials in the valley. I have attempted to test the statistical significance of correlations in mortuary behaviors at the two sites, principally using Chi-squares and Fisher's Exact Tests. It should be noted that the nature of burial data means that some discussion is based on qualitative analysis alone.

In gathering and analyzing the data from Chen Chen and Tumilaca la Chimba, I sought to answer four principal research questions:

- Following political decline, to what extent did mourners at Tumilaca la Chimba assert their Tiwanaku heritage, and were descendents of the Tiwanaku enclaves in Moquegua

³¹ It was not possible to collect all lines of data for every single burial in the study, and I have attempted to be transparent about exactly what could and could not be gathered (see Chapters Six and Seven, and Appendices C and E).

embedded in extra-community identity networks that paralleled those during the height of the state?

- To what extent did inhabitants at post-collapse sites assert a community identity that was rooted in their immediate Chen Chen ancestry?
- To what degree did intra-community social categorizations (Intra-Community Corporate and Intra-Corporate identities) present at the height of the state remain appropriate for members of communities established in the wake of state collapse?
- Did the relative salience of different modalities of identity shift with the disruption wrought by regional political fragmentation?

In Chapters Six and Seven I examine the extent to which the different identity types can be extrapolated from funerary data, and in Chapter Eight, I consider each of these questions in turn and reflect upon the lasting impact of Tiwanaku state collapse in the Moquegua Valley.

6. CHEN CHEN

6.1 The Site of Chen Chen

Also referred to as M1, Chen Chen (Figure 8) is located northeast of the modern city of Moquegua in the middle valley. Now almost completely destroyed by urban development and natural disaster, the site covered approximately 30 ha during the Middle Horizon and varied in elevation from 1474 to 1530 masl. The site was subject to a series of excavations beginning in the 1960s through the early 2000s.

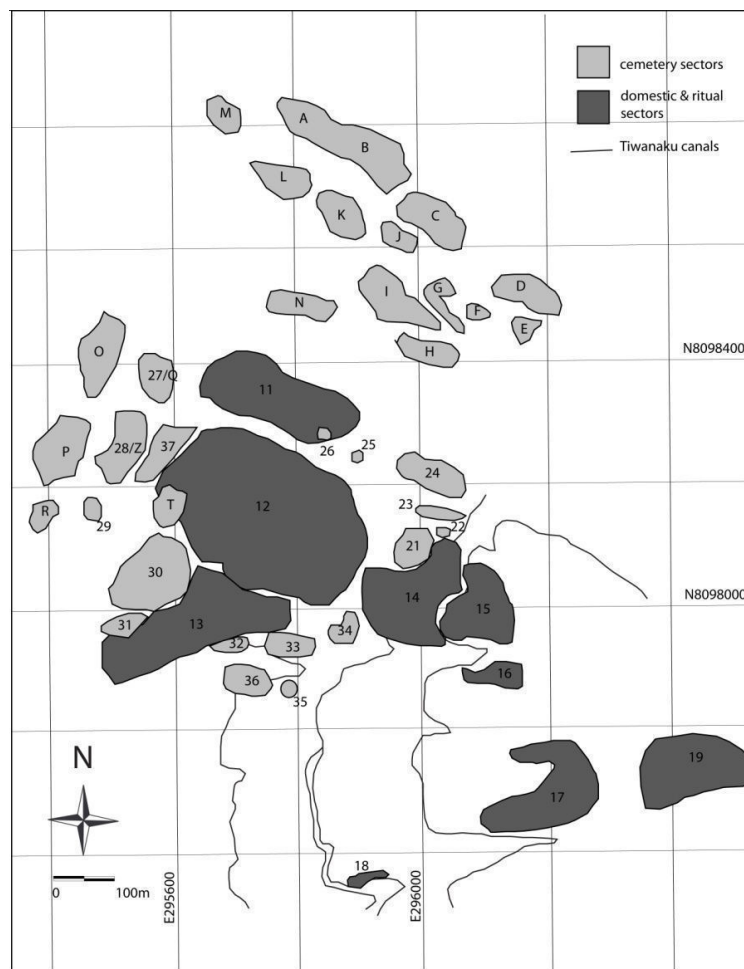


Figure 8. The Chen Chen site (redrawn from Goldstein 2005).

Chen Chen was first documented in the mid 1960s during brief research by the Misión Peruano-Alemana (Disselhoff, 1968). These investigations included surface collections, test pits and the excavation of 27 burials. Chen Chen style ceramics were recovered, and uncalibrated radiocarbon dates of AD 910 +/- 65 and AD 1020 +/- 65 were obtained (Geyh, 1967; Ravines, 1969). In 1983, members of Programa Contisuyo surveyed the site, documenting domestic areas, cemeteries, agricultural fields, irrigation systems and geo-glyphs (Goldstein, 1989a).

Much of the investigation at Chen Chen since then has focused on the cemetery sectors that covered 10 ha of the site and contained as many as 12,856 tombs (Owen, 1997b). The largest mortuary excavation project was directed by Bertha Vargas in 1987 and 1988 in anticipation of the development of 12 ha of the site for housing. Three of these hectares contained burials, and the project excavated a total of 4,291 tombs, 334 of which were intact, and divided the excavation area into sectors labeled A through L (Vargas, 1994). Vargas documented three principal tomb forms; stone lined cists, unlined pits, and mixed (tombs with stone lining only on the upper portion of the tomb). Most tombs were single interments, with individuals in a seated, flexed position facing east. Fiber rope wrapped around the individual held the corpse in place, and individuals were accompanied by a wide range of grave inclusions, in particular ceramic vessels, wooden *keros*, spoons, boxes, baskets. A few neonates or fetal individuals were buried in urns (Vargas, 1994).

In 1995 a rescue project was begun by Programa Contisuyo personnel in response to threats posed to Chen Chen by the development of the Pasto Grande canal. Bruce Owen directed excavations in ten mortuary sectors, and 132 burials were recovered. Owen reports very similar patterns of mortuary behavior to those described by Vargas (Owen, 1997b). Destruction wrought by the 2001 earthquake necessitated the construction of new housing in Moquegua, and in 2002

rescue excavations were directed by Romulo Pari Flores prior to development. Excavations were conducted in eleven of the cemetery sectors. 1,101 tombs were excavated, of which 11% were intact. The draft report of these excavations describes mortuary behaviors similar to Vargas and Owen (Pari Flores, et al., 2002). Finally, in 2008, Patricia Palacios excavated in sectors 28 and 29. Burials in sector 28 were very similar to those reported by earlier projects. However, patterns in sector 29 were distinct, including individuals buried on their sides, and the deposition of utilitarian, rather than decorated, ceramics, and the inclusion of metal artifacts (Palacios, 2008).

The general patterns of mortuary behavior described in Vargas' brief report remain the point of reference for all subsequent discussion of the Chen Chen cemeteries (Blom, 1999; Buikstra, 1995; Garcia Marquez, 1990; Goldstein, 2005). Yet, despite the extensive and intensive excavation of cemetery sectors at Chen Chen, analysis of recovered materials has been limited and largely restricted to the human remains focused on proving that people as well as material styles were moving from the altiplano to the Moquegua Valley during the Middle Horizon (Blom, 1999; Knudson, 2004). Blom's (1999) analysis of demographic patterns at the site indicated that Chen Chen was home to families, and was not merely a military camp. Her analysis of cranial modification on individuals buried at Chen Chen raised the possibility that the site was occupied by individuals derived from a particular segment of the heartland population (those who practiced fronto-occipital modification rather than annular) (Blom, 1999).

The only comprehensive analysis of cultural materials from the Chen Chen graves excavated by Vargas is in a *licenciado* thesis that concentrates on the presence of Wari style ceramics in the graves (Garcia Marquez, 1990). Of the 334 intact graves excavated, seven contained only ceramic material that was recognizably Wari in style or form. An additional seven graves contained one 'Wari' vessel and one 'Tiwanaku' vessel. All of the Wari vessels

were *Qosqopa* style. Garcia-Marquez suggests that these vessels were obtained through trade, and that items including textiles and wooden objects were also exchanged (Garcia Marquez, 1990). The relationship between Wari and Tiwanaku remains a contentious issue. However, investigations since Garcia-Marquez's study have unearthed considerable evidence for Tiwanaku influence around, and even within, the center of the Wari enclave in Moquegua, on Cerro Baúl (Moseley, et al., 1991; Owen and Goldstein, 2001; Williams, 2002, 2008; Williams and Nash, 2004).

The rescue project initiated in response to the development of the Pasto Grande Canal in 1995 also included survey, mapping and excavation in the residential sectors and the agricultural systems. Ten residential sectors covered a total of 20 ha at Chen Chen (Goldstein, 2005). At the core of the site was an 11.5 ha area of permanent occupation, focused on sectors 11 and 12, distinguished by 'rock-piling;' irregular stone mounds and pits excavated before AD 1600. These rock-piles are variously interpreted as a consequence of deliberate destruction during state decline (Moseley, et al., 1991), or as the collapse and weathering of architecture (Goldstein, 2005). Excavation of residential areas revealed the house plans that had been obscured on the surface. Residences were organized into autonomous patio groups, within which space was differentiated by activity. Walls and roofs were constructed of perishable materials, and rooms connected with open-air patios (Goldstein, 1995a). The density and depth of cultural deposits, as well as evidence for multiple re-flooring episodes suggests denser and more permanent occupation at Chen Chen than at earlier Omo style sites (Goldstein, 2005).

Household artifact assemblages indicate a complete range of domestic activities (Bandy, et al., 1996). Households in all sectors at the site used Chen Chen style pottery, and distinctions appear to have been related to function and status (Goldstein, 2005). Lithic production,

specifically of stone hoe blades, took place within Chen Chen households, which also had access to both wool and cotton textiles (Bandy, et al., 1996). The rock-pile areas are also characterized by a dense concentration of stone-lined storage pits. Constructed in standardized shapes and sizes, and arranged in regular groups, there may have been as many as 7500 storage pits (Bandy, et al., 1996), and were likely used for storing agricultural products grown in the site's extensive field system. Later rescue excavations in sector 12 conducted by Romulo Pari Flores, in response to the planned construction of a water treatment plant, revealed similar evidence of storage and agricultural processing, in a high concentration of grinding tools and open-mouthed storage vessels (Pari Flores, 1997).

In addition to the core habitation area, 4 ha of suburbs, containing at least 93 dwellings were identified above the highest of the three canals associated with the site (Bandy, et al., 1996; Goldstein, 2005). Concentrated in sector 17, but also extending into sectors 12, 16, 18, and 19, these structures are interpreted as impermanent settlements, due to the presence of ceramics suited to water storage and stone flakes, but the absence of postholes, hearths, pits or grinding stones (Bandy, et al., 1996). Noting their proximity to caravan routes, Goldstein (2005) suggests that these outer residential sectors housed transient populations of traders or laborers.

Household ritual was evident in domestic structures, but there also appear to have been two sectors (14 and 15) containing plazas and structures specifically designated for ritual activity. Excavation of a small trapezoidal structure in sector 14 revealed a high concentration of miniature vessels and *spondylus* beads (Bandy, et al., 1996). A structure in sector 15 contained a juvenile camelid burial in the southeast corner, and sealed offerings of *tupus* (two with zoomorphic or anthropomorphic carvings) and other artifacts. There was little evidence for domestic activities in these two sectors, and instead the artifact assemblage is similar to that from

Tiwanaku ritual contexts in Moquegua and in the altiplano heartland (Bandy, et al., 1996; Goldstein, 2005).

Chen Chen has been interpreted as a center of agricultural administration established as the state exercised increasingly tight control on its provincial enclaves after AD 800 (Goldstein, 2005; Janusek, 2008). Agricultural production is evident in the presence of farming tools (chipped stone hoes), grinding implements (large, rocking *batanes*), and massive storage facilities (Bandy, et al., 1996; Goldstein, 2005; Williams, 2002). Chen Chen was well suited for exploiting the highly productive middle valley, and the site included extensive agricultural fields and irrigation systems (Williams, 2002). Covering 160 ha, sectors 51-67 are associated with farming. Canals, fields and irrigation furrows were visible during the 1995 investigations (Williams, 2002). Three major canals transported water from the Tumilaca River. Trenches excavated in each of these canals, coupled with the relative superposition evidence of canals and cemetery/residential sectors, indicated that the lowest canal was the earliest (Williams, 1998). The middle canal was then constructed, and finally, the highest. Partly the consequence of Wari hydraulic construction up-valley, this shift of canals upslope contributed to a decrease in both canal capacity and in the extent of irrigable land (93 to 70 to 15 ha), and thus a decline in agricultural production (Williams, 1998, 2002).

Published radiocarbon dates for Chen Chen fall within the Tiwanaku V period, specifically early Tiwanaku V (AD 800-1000) (Goldstein, 2005; Janusek, 2003b; Williams, 2002), the period during which the state was consolidated into a “more tightly centralized political economy” (Janusek, 2008: 23). Chen Chen served as a major administrative center in the province, producing, processing and storing agricultural products, such as maize, which could not be grown in the heartland. Home to a large population, including immigrants from the

altiplano, Chen Chen also fulfilled the daily and ritual functions of a major settlement. Permanent residents at Chen Chen engaged in a full suite of domestic activities, while their temporary neighbors in the suburbs were likely central to ongoing interaction between Moquegua and the heartland, mediated along the caravan routes. Ritual and domestic practices were similar to those utilized in the Tiwanaku homeland as inhabitants of the site enacted altiplano and ancestral life ways in their provincial home.

6.2 Data Sets

As indicated in the above review, there have been several extensive investigations in the cemeteries at Chen Chen since the mid-1980s. Thousands of burials were excavated during these projects. Brief reviews of mortuary behavior at the site provide an overarching sense of funerary practices during late Tiwanaku V in the Moquegua Valley. Analysis of the skeletal remains from Vargas' excavations has been instrumental in demonstrating the movement of people, as well as material styles from the altiplano to Moquegua. However, despite the considerable quantity of excavated mortuary data from Chen Chen, to date there has been no detailed integration of biological and cultural evidence. The sample of pre-collapse burial contexts discussed here is drawn from two sets of excavation in the cemeteries at Chen Chen,³² those conducted by Pari Flores in 2002 and by Owen in 1995.³³

The 2002 project directed by Pari Flores was conducted in two seasons; the first from February until April, and the second from June until August. A total area of 3525m², divided into 5 by 5 meter units, was excavated and 1101 tombs recovered in 11 sectors (13, 21, 22, 23, 30, 31,

³² Nearly all existing discussion on Chen Chen cemeteries is based on the 1987/88 rescue project conducted by Vargas. Vargas' sample is not further analyzed in this project.

³³ I thank both Romulo Pari Flores and Bruce Owen for their generosity in granting permission to conduct unrestricted analysis of the respective collections.

32, 33, 34, 35 and 36).³⁴ Tombs were defined as TDT³⁵ ('completely disturbed tomb'), TDP ('partially disturbed tomb'), ICT ('intact with capstone') or IST ('intact without capstone') (Pari Flores, et al., 2002). This project focused on the 93 burials deemed intact during excavations (ICT or IST). These were located in nine of the sectors.

Between July and August 1995, Owen directed excavations were conducted in 10 cemetery sectors (27, 28, 30, 31, 32, 33, 34, 36, 37 and 38) (Owen, 1997a). The project sought to sample different areas of each cemetery, but also to avoid areas with high densities of disturbed tombs. Excavation trenches were intentionally placed so that they crossed irrigation canals, and this contributed to the determination that cemeteries and particular canals were not contemporaneous (Owen, 1997b; Williams, 1998). Trenches measured 8 by 4 meters. They were excavated in 2 by 2 meter squares until tombs became visible, at which point individual tombs were excavated and recorded separately (Owen, 1997b).

132 burials were recovered during the 1995 project. As with the 2002 material, I sought to analyze only the intact burials. Terminology utilized in the 1995 rescue excavations made this problematic. The field report includes the following categories of burial preservation; '*cista con restos aparentemente intactos*' ('cist with remains apparently intact'), '*cista con restos muy disturbados*' ('cist with very disturbed remains'), '*cista vacía*' ('empty cist'), '*hoyo con restos de un entierro*' ('pit with remains of a burial'), and '*hoyo vacío*' ('empty pit'). *Cistas* are stone lined

³⁴ The 2002 project used modern neighborhood designations in its nomenclature; Hipólito Palao, Alto Moquegua, Esamo and Cesar Vizcarra. These do not correspond directly with sector designations, as frequently multiple sectors are included in one neighborhood, and several sectors stretch across more than one neighborhood. I only use sector numbers in order to ensure consistency with earlier publications and with the 1995 collection.

³⁵ The draft report of the 2002 excavations records the presence of volcanic ash in some disturbed tombs, indicating that they were opened before the eruption of the Huaynaputina Volcano in the February of AD 1600.

tombs and *hoyos* are similar in shape and size but lack stone construction. Because the descriptions of *cistas* and *hoyos* are not equivalent, it is difficult to determine from the report which *hoyos* excavators deemed intact and which were disturbed. Field forms were not available for the 1995 project, compounding this problem. Therefore, while this project analyzed materials from the ‘cists with remains apparently intact’ (24) and ‘pits with the remains of a burial’ (21) producing a total sample of 45 graves, the lack of clarity over whether all graves actually were intact before excavation meant their limited inclusion in analysis of some aspects of funerary behavior at Chen Chen. Table II lists the analyzed contexts.

TABLE II
ANALYZED TOMBS FROM CHEN CHEN

Tomb No.	Sector	Tomb Type	Sex	Age Category
1012	22	SLC	Unknown	Child
1056	22	SLC	Unknown	Sub-adult
1119	22	SLC	Unknown	Child
1134	22	Pit	Female	Young Adult
776	22	Pit	Unknown	Adolescent
781	22	Pit	Unknown	Child
1581	27	Pit	Female	Adult
1580	27	Pit	Male	Young Adult
1579	27	SLC	Unknown	Juvenile
1490	28	Pit	Unknown	Sub-adult
1491	28	Pit	Unknown	Child
1492	28	SLC	Unknown Unknown	Infant Child
1551	28	Pit	Unknown Unknown Unknown Unknown	Child Juvenile Adult Child
122	30	SLC	Unknown	Sub-adult
103	30	SLC	Unknown	Juvenile
152	30	SLC	Female	Mid Adult 2
143	30	SLC	Unknown	Sub-adult
163	30	SLC	Unknown	Child
176	30	SLC	Probable Male	Mid Adult
168	30	SLC	Unknown	Child
204	30	SLC	Unknown	Child
185	30	Pit	Unknown	Infant
181	30	SLC	Unknown	Adult
237	30	SLC	Unknown	Sub-adult
239	30	Boot-tomb	Female	Young Adult
268	30	SLC	Unknown	Infant
292	30	SLC	NA	NA
300	30	SLC	Unknown	Fetal
1731	30	Pit	Unknown	Child
1680	30	Pit	Unknown	Child
1318	30	Pit	Unknown	Sub-adult
1646	30	SLC	Unknown	Child
1710	30	Pit	Female	Young Adult
1645	30	Pit	Unknown	Child
1758	30	Pit	Female	Old Adult
1705	30	Pit	Unknown	Child

TABLE II
ANALYZED TOMBS FROM CHEN CHEN

Tomb No.	Sector	Tomb Type	Sex	Age Category
1709	30	Pit	Unknown	Old Adult
1730	30	Pit	Unknown	Infant
1314	30	Pit	Unknown	Child
1698	30	Pit	Unknown Unknown	Juvenile Adult
1308	30	SLC	Unknown	Juvenile
1311	30	SLC	Unknown	Child
1313	30	SLC	Unknown	Infant
1315	30	SLC	Unknown Female	Juvenile Old Adult
1319	30	SLC	Female	Mid Adult
1278	30	SLC	Male	Mid Adult
1281	30	SLC	Male	Mid Adult
1287	30	SLC	Unknown Unknown Unknown	Infant Mid Adult Child
1702	30	SLC	Unknown	Child
1704	30	SLC	Unknown	Infant
1759	30	SLC	Unknown	Infant
1762	30	SLC	Female	Mid Adult
1763	30	SLC	Unknown	Neonate
1014	32	SLC	Unknown	Child
1041	33	Pit	Female	Mid-Adult
1072	33	SLC	Unknown	Juvenile
1039	33	Pit	Unknown	Infant
810	34	SLC	Male	Old Adult
782	34	Pit	Female	Old Adult
783	34	Pit	Female	Old Adult
791	34	Pit	Unknown	Child
787	34	Pit	Unknown	Child
790	34	Pit	Female	Adult
793	34	SLC	Unknown	Adult
802	34	Pit	Unknown	Child
809	34	Pit	Unknown	Child
830	34	SLC	Unknown	Adult
831	34	SLC	NA	NA
847	34	Pit	Unknown	Unknown
846	34	Pit	Unknown	Infant
869	34	SLC	Unknown	Child
870	34	SLC	Unknown	Child

TABLE II
ANALYZED TOMBS FROM CHEN CHEN

Tomb No.	Sector	Tomb Type	Sex	Age Category
854	34	SLC	Unknown	Unknown
858	34	SLC	Unknown	Infant
864	34	SLC	Unknown	Child
877	34	SLC	Unknown	Unknown
886	34	SLC	Unknown	Adult
887	34	SLC	Unknown	Adult
910	34	SLC	Male	Mid Adult
926	34	SLC	Unknown	Child
928	34	SLC	Male Female	Mid Adult 2 Old Adult
919	34	SLC	Unknown	Child
920	34	SLC	Unknown	Infant
943	34	SLC	Male	Mid Adult
935	34	SLC	Unknown	Child
969	34	Pit	Unknown	Juvenile
961	34	SLC	Unknown	Child
963	34	Pit	Unknown	Child
971	34	Pit	Unknown	Child
988	34	SLC	Unknown	Infant
989	34	SLC	Male	Mid Adult
1002	34	SLC	Unknown	Child
1100	34	Pit	Unknown	Adult
1072	34	Pit	Unknown	Fetal
832	34	Pit	Unknown	Adult
849	34	SLC	Unknown	Infant
861	34	SLC	Male	Old Adult
1188	34	Pit	Female	Old Adult
1220	34	SLC	Unknown	Juvenile
1223	34	SLC	Unknown	Child
1189	34	SLC	Female	Mid Adult
1198	34	SLC	Unknown	Juvenile
450	35	SLC	Unknown	Child
457	35	SLC	NA	NA
451	35	SLC	Unknown	Juvenile
458	35	SLC	Unknown	Infant
459	35	SLC	Unknown	Adolescent
513	35	SLC	Unknown	Adult
539	35	SLC	Unknown	Child
605	35	SLC	Unknown	Child
606	35	SLC	Unknown	Child

TABLE II
ANALYZED TOMBS FROM CHEN CHEN

Tomb No.	Sector	Tomb Type	Sex	Age Category
641	35	SLC	Unknown	Child
452	36	SLC	Unknown	Child
656	36	Pit	Unknown	Adult
537	36	SLC	Unknown	Adult
538	36	SLC	Unknown	Neonate
530	36	SLC	Unknown	Child
583	36	SLC	Unknown	Juvenile
584	36	SLC	Female	Old Adult
562	36	SLC	Unknown	Child
548	36	SLC	Unknown	Child
582	36	SLC	Unknown	Child
631	36	SLC	Unknown	Child
585	36	SLC	Unknown	Adult
589	36	SLC	Unknown	Child
607	36	SLC	Unknown	Child
608	36	SLC	Unknown	Fetal
609	36	SLC	Unknown	Child
663	36	SLC	Unknown	Juvenile
666	36	SLC	Unknown	Adult
655	36	SLC	Unknown	Adult
753	36	SLC	Unknown	Juvenile
755	36	SLC	Unknown	Adult
1104	36	Pit	Female	Mid Adult
1134	36	Pit	Unknown	Child
1098	36	SLC	Unknown	Child
1099	36	SLC	Unknown	Infant

6.3 Mortuary Data from Chen Chen

The Chen Chen sample analyzed in this project demonstrates patterns very similar to those reported by other researchers at the site (Palacios, 2008; Vargas, 1994). Appendix C describes each of the 138 Chen Chen burials in detail, including the position of each tomb relative to others, a description of the architecture and size of each tomb, the age and sex of human remains, evidence for pathologies or stress markers, and the cultural material included in each grave. Written descriptions are supplemented by drawings of materials. Appendix D is Palma Malaga and Godoy Allende's report on the bio-archaeological analysis of human remains in the Chen Chen sample. The following is an overview of the data described in those appendices.

6.3.1 Tomb Architecture

Of the 138 tombs described, 97 (70%) were stone lined cists³⁶ and 40 (30%) unlined pits. In addition, there was one boot-tomb (2002-239). Tomb shape was available for 105 tombs, and all of these (excluding the boot tomb) were roughly circular. Capstones were common but not found on all intact tombs. Of the 99 tombs securely recorded as intact,³⁷ the presence or absence of a capstone was recorded in only 75 cases. Approximately half (48%) of intact tombs did not have caps. Of the 39 that did have a cap, multiple stones were used to cover the grave in ten cases and a single stone was used in 29 cases. The mouths of tombs were frequently prepared in some way. Of the 93 for which this data was recorded, 75 (81%) of tombs had treated mouths.

³⁶ The draft report from the 2002 excavations reports the use of grinding stones in some tomb walls, but there were no examples of this in the sample analyzed here.

³⁷ As discussed, differences in project nomenclature made identifying pit tombs as intact or disturbed in the 1995 sample difficult. Further, as noted where relevant, there were several instances in the 2002 sample where the excavator and draft report author differed as to whether a tomb was intact or not.

Even those tombs without a cap had often received investment in mouth construction, with 64% (23) of intact cap-less tombs having a prepared mouth. 66 of the 75 prepared mouths were made of stones and mortar, and 9 were constructed only of stone. There is no mention of any additional visible grave architecture for any of the 138 Chen Chen burials. Floor shape was recorded for 90 tombs and all of these were described as circular. Whether a floor was prepared or not was recorded in 86 cases, 44 (51%) of these did have prepared floors. Of the 44 tombs with prepared floors, 27 had a single flat stone, six had several flat stones, one had stones, nine were made of packed earth and 2 were made of clay.³⁸

6.3.2 Human Remains

Although most burials were single interments, there were a few cases of more than one individual in a single tomb. There were also several tombs with small percentages of skeletons other than the primary individual inventoried with the tomb (2002-458, 2002-451, 2002-606, 2002-781). This produced a total number of individuals analyzed by Palma Malaga and Godoy Allende of 129 (86 sub-adults and 43 adults).³⁹ Both sexes and all age ranges⁴⁰ were represented in the sample, including three fetal skeletons and two neonates (Figure 9). There was peak in mortality in the category 'child' that fits with expectations based on published demographic models (Waldron, 1994). Of the adults there were 16 females, 3 probable females, 8 males, 4

³⁸ As for all of the excavation data, descriptions of tomb architecture were subject to the interpretations and particular vocabulary of the excavator. I think that 'packed earth' and 'clay' may mean the same treatment.

³⁹ The human remains from a total 32 graves in the Pari collection could not be located for analysis. Excavators often recorded the broad age range of the individual on the field form, but this rough estimate should not be considered equivalent with the osteological determinations and as such were removed from certain analyses, particularly regarding age based identities.

⁴⁰ It should be noted that the age groups used in Palma-Malaga and Godoy-Allende's report (Appendix D) differ slightly from those utilized in this discussion, which is that used by Starbird in her analysis of the Tumilaca la Chimba sample.

probable males and 12 individuals of undetermined sex. The presence or absence of cranial modification could be observed in 49 individuals and 71.4% of these had cranial modification, compared with 81.3% in the Chen Chen sample excavated by Vargas (Blom, 1999). All examples of cranial modification were tabular cranial modification. Pathologies included *porotic hyperostosis*, *periostitis*, healed fractures, dental loss, wear and caries. Only one case of *cribra orbitalia* was recorded, and no tuberculosis.

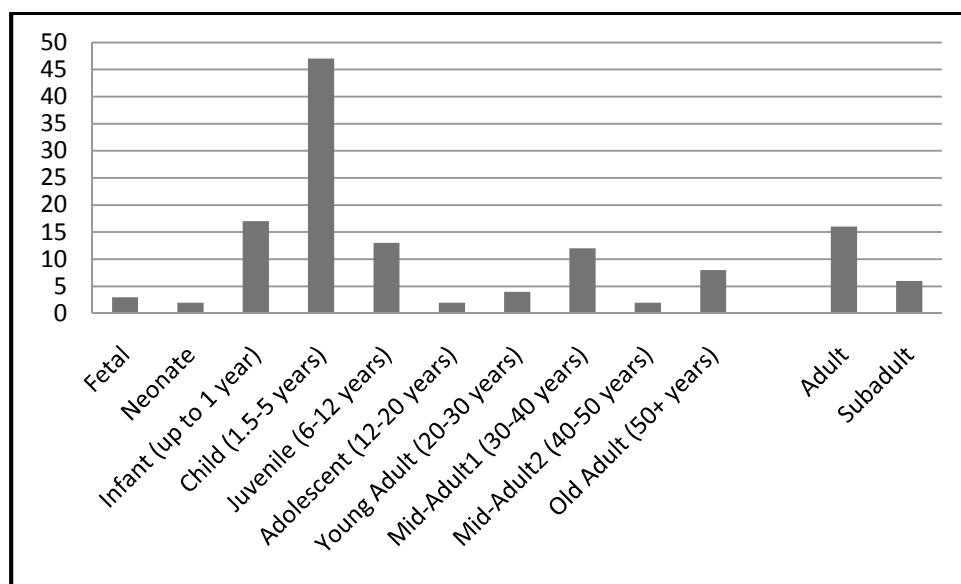


Figure 9. Frequency of age bands in the Chen Chen sample.

The non-metric congenital trait caudal shift was prevalent in the sample. There were three possible examples of interpersonal violence, in the form of broken ribs and blunt force trauma to the head. Activity related stresses were evident in 11 individuals. All were adults and although the specific activity cannot be determined (Stirland, 1991), evidence of repetitive muscle use was apparent in the arms, hands and legs.

6.3.3 Body Treatment

Although the vast majority of tombs contained only one individual, there were six exceptions to this and three tombs had no human remains at all (Table III).

TABLE III

NUMBER OF INDIVIDUAL IN TOMBS AT CHEN CHEN

No. of Individuals	Frequency
0	3 (2.17%)
1	129 (93.48%)
2	3 (2.17%)
3	2 (1.45%)
4	1 (0.72%)

Body position was recorded in 50 cases, and all of these individuals were in a flexed position. In the 37 tombs for which body arrangement was recorded, all individuals were seated. Orientation was recorded in 60 cases, and 55 of these were orientated in an easterly direction (Table IV).

TABLE IV

ORIENTATION OF BODIES AT CHEN CHEN

Orientation	Frequency
East	42 (70.00%)
Northeast	8 (13.33%)
Southeast	5 (8.33%)
North	4 (6.66%)
South	1 (1.66%)

6.3.4 Textiles

Evidence from mummified individuals suggests that the dead were wrapped in a fine woven shawl (*manta*), over which was placed a thicker blanket (*frazada*). The form of 53 textile specimens could be determined. 33 were *mantas*, and 20 were *frazadas*, but an additional eight specimens could not be identified definitively as either. All recorded textiles were wool. Warp-faced weaves were considerably more common than interlocking weaves. Of the 65 samples for which weave type could be recorded, 58 (89.2%) were warp-faced, and seven were an interlocking warp weave. The wool used in *mantas* was finely spun, with a mean warp thread thickness of 7mm and a mean of 14.68 spins per cm. *Mantas* were also woven finely, with a mean of 13.48 thread count per cm in warps, and 6cm in wefts. Brown wool was used most frequently in blankets and shawls, accounting for the background color in 82 % of specimens. A total of 26 specimens had between one and four additional colors (some of these were natural wool colors, some were dyed blues, greens, yellows or reds). Several examples of elaborated textiles were recovered, including a raised weave and the use of *chichilla*⁴¹ borders. Corpses were held in position using braided or twisted fiber rope. Fiber rope was recovered from 45 burials. In 30 of these the rope was braided, in two it was twisted and in the rest the rope was too fragmentary to determine.

6.3.5 Ceramics

Ceramic material was recovered from 56 of the 99 burials securely identified as intact (57%). 131 vessels or sherds could be identified from these burials as a particular form (Figure 10). *Tazones* were most frequently represented (42%), followed by *keros* (20%), pitchers (18%),

⁴¹ *Chichilla* is an Aymara term for a technique in which two textile pieces are simultaneously woven and sewn together producing a seam with a braided appearance. Carmen Jorge Flores, personal communication, 26th May 2008.

cups (8%), bottles (4%), *cantaros* (2%), *incensarios* (2%), *ollas* (1.5%), *sahumadors* (1.5%), miniatures (0.8%) and *cuencos* (0.8%).



Figure 10. Ceramic vessels (*kero*, one-handed pitcher, *tazon*) from the Chen Chen sample.

Tazones, in particular, were remarkably consistent in size, with an average rim diameter of 14.5cm and an average height of 8.2cm. Ceramic vessels do not appear to have been made for the tomb or even particularly well cared for before interment. Most ceramics showed signs of wear, several were damaged and others had been repaired (Figure 11). Several vessels had been modified from earlier forms (including a vase made of a *kero*, and a *tazon* made of a *sahumador*). There was one example of a Wari cup decorated in *Qosqopa* style (Figure 12). Motifs on Tiwanaku style vessels included the following themes; anthropomorphic, avian,

camelid, condor, feline, geometric, insects,⁴² S, and trophy head. Red slips with black, orange and white paint were most commonly used (Figure 13).

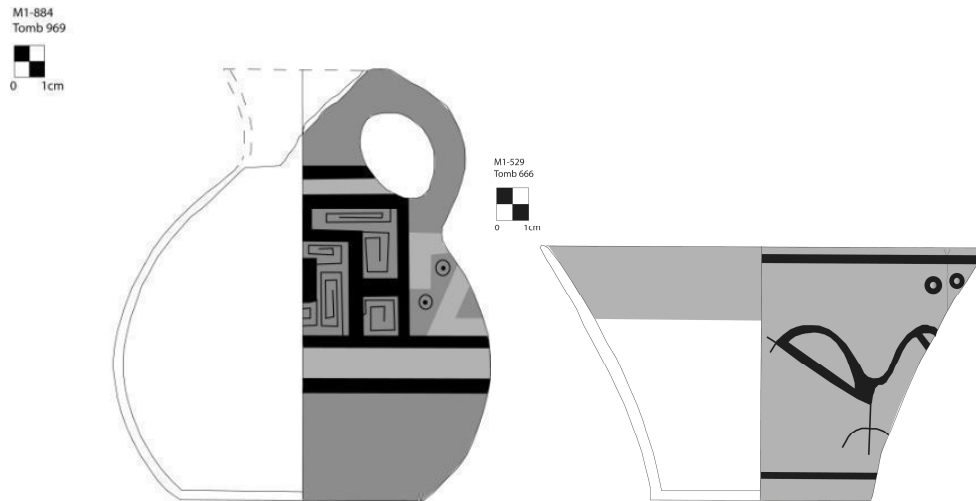


Figure 11. Vessels showing evidence of breakage and of repair.

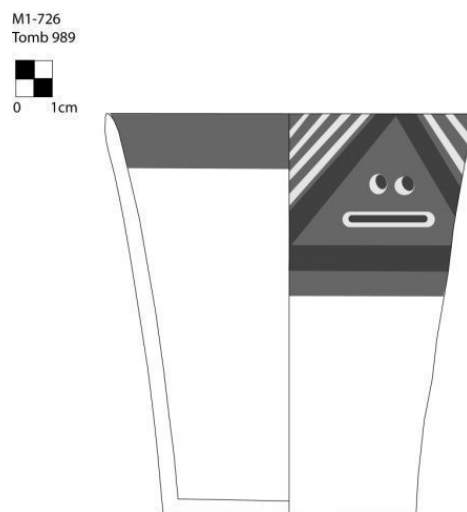


Figure 12. Wari cup recovered from burial at Chen Chen.

⁴² Goldstein (1985) illustrates one example of what I have called an insect, and refers to it as ‘crab-like.’

M1-624
Tomb 830



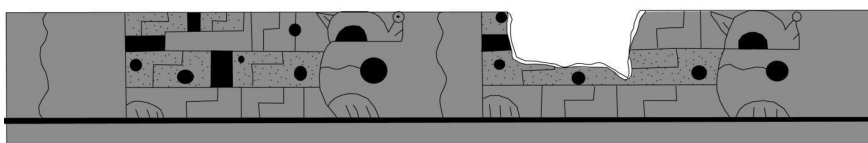
0 2cm



M1-354
Tomb 122



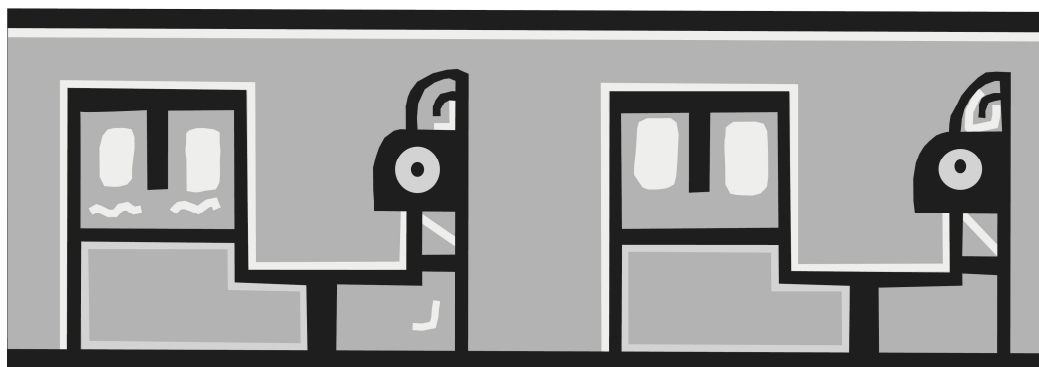
0 2cm



M1-518
Tomb 641



0 1cm



M1-474
Tomb 539



0 2cm

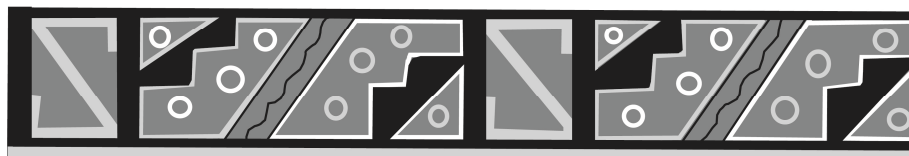


Figure 13. Examples of avian, feline, condor and geometric motifs.

There were two anthropomorphic modeled vessels, one depicting a crouched male wearing a striped tunic, and the other a female with braided hair (Figure 14). In addition, plain-ware *ollas* and pitchers, with evidence of wear and soot were recovered from some tombs.

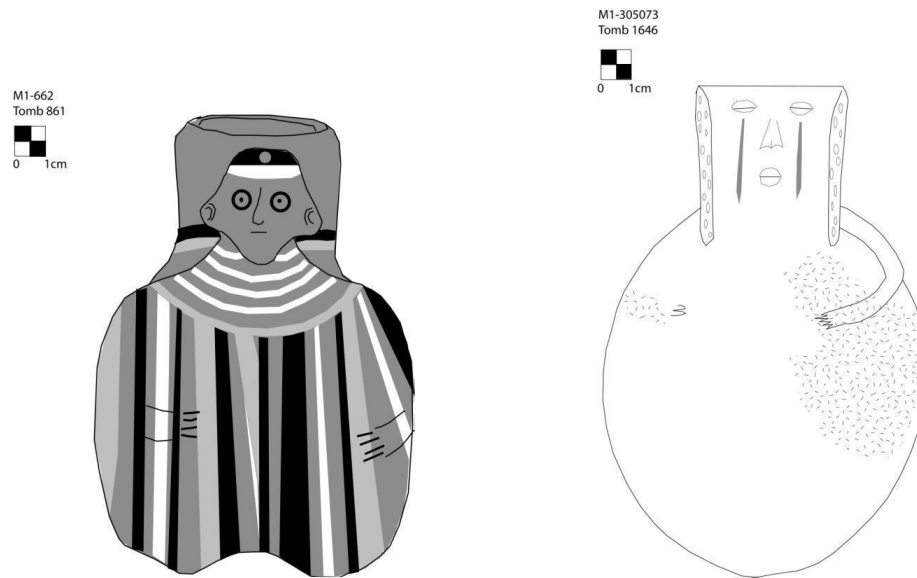


Figure 14. Anthropomorphic vessels in the Chen Chen sample.

One vessel appeared to represent a hybrid Chen Chen/ Omo style vessel, with a polished black-ware interior and a red-slipped exterior decorated with stair-step motifs (Figure 15). Ceramics in the sample indicate the utilization of a set of common forms and motifs. Several vessels, particularly *tazones*, are very similar to each other. Further, two vessels recovered from spatially separate tombs, are identical in all but size. Tomb 870, in sector 34, contained a smaller version of an otherwise identical *kero* recovered from tomb 1281 in sector 30 (Figure 16).

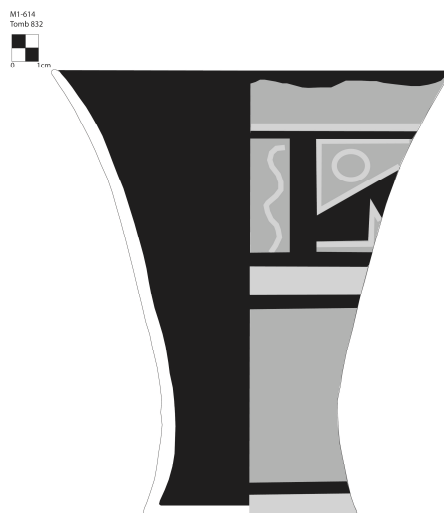


Figure 15. Hybrid Chen Chen/ Omo style *kero*.

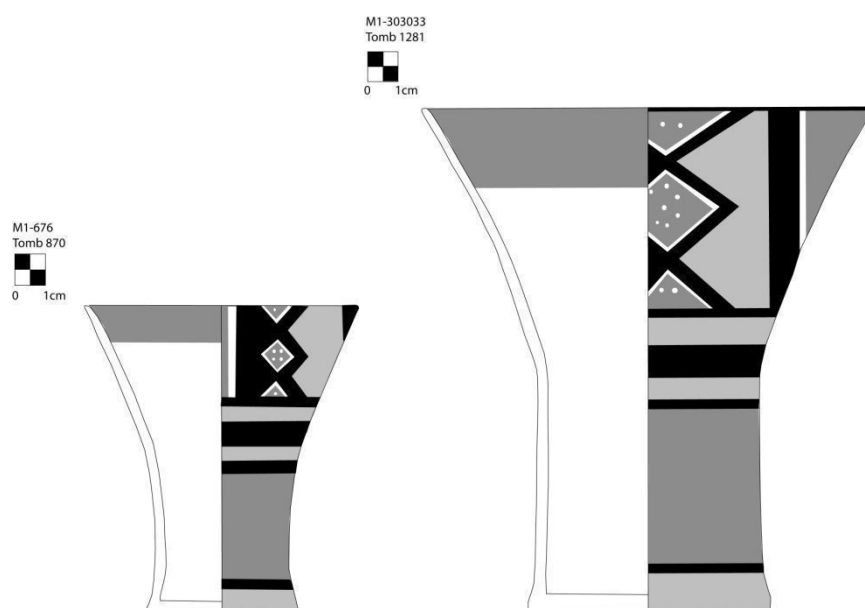


Figure 16. *Keros* found in tombs 870 (sector 34) and 1281 (sector 30).

In addition to visual analysis, chemical analysis using p-XRF (portable X-Ray fluorescence) and LA-ICP-MS (laser ablation inductively coupled plasma mass spectrometry) was conducted on a sub-set of the analyzed ceramic material.⁴³ Appendix B details the equipment and protocols utilized. 192 vessels were analyzed using p-XRF.⁴⁴ Bi-plots of specific elements demonstrated that the majority of these vessels grouped together chemically (Figure 17).

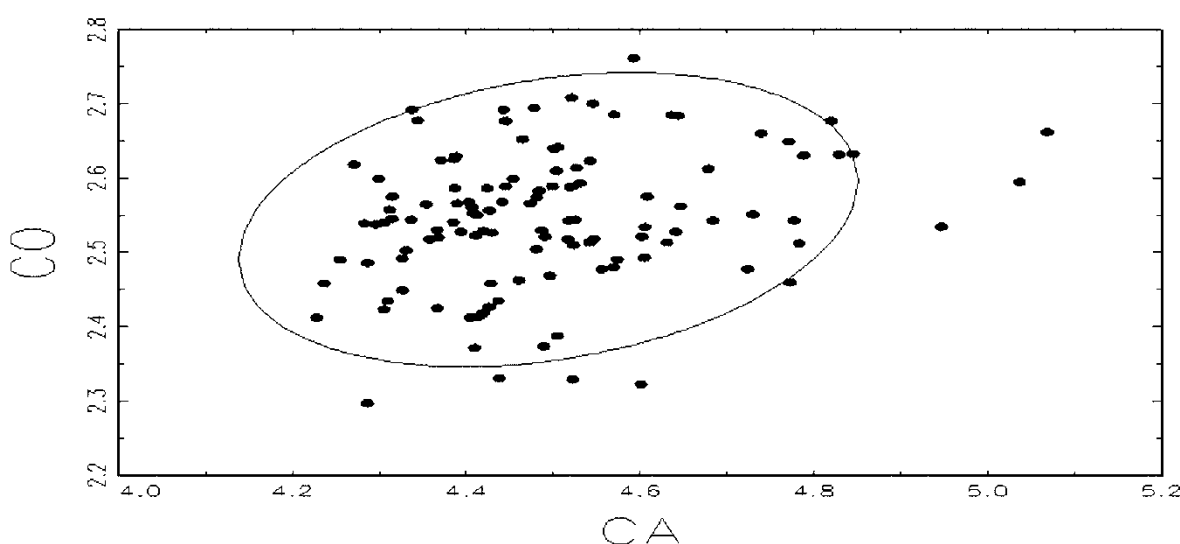


Figure 17. Bivariate plot of logged (base 10) Calcium and Cobalt concentrations of ceramic sherds from Chen Chen derived from p-XRF analysis. Ellipses delimit 90% confidence boundaries.

⁴³ p-XRF analysis could be conducted in Peru, but LA-ICP-MS required the export of materials to the US and is considerably more expensive. Therefore, a far smaller sample and only sherds were analyzed using LA-ICP-MS, which gathers compositional data on more elements and has lower detection limits than p-XRF (see Appendix B).

⁴⁴ This includes all of the intact vessels from the analyzed tombs, but also an additional sample of *tazones* from the Pari collection.

A smaller sample of 46 ceramic sherds from the analyzed tombs at Chen Chen was subject to LA-ICP-MS analysis. Using the GAUSS statistical program, these chemical data were then compared with existing LA-ICP-MS data on clay sources in the Moquegua Valley (Sharratt, et al., 2009). Alluvial clays are widely available in the Moquegua valley. Five chemically distinct groups (Moquegua, Tumilaca, Torata, Otorá 1 and Otorá 2) have been identified, and the difference in chemical signature is explained by the distinct geological formations from which clays eroded (Figure 18).

Clays pertaining to the Moquegua clay group are found in the Middle Valley, including in the vicinity of Chen Chen. Comparison of the Chen Chen ceramic sherds with the five clay groups indicates that the chemical signature of the majority of analyzed sherds overlaps with Moquegua Valley clays (Figure 19).

There is some overlap between the Chen Chen ceramic sherds and Otorá 1 clays. However, during LA-ICP-MS analysis of the clay, these clays did not discriminate well from the Moquegua clays. Further, the Chen Chen ceramics do separate from the Otorá 1 clays on particular elements (Figure 20)

Although the vast majority of analyzed sherds were likely produced using Moquegua Valley clays and were thus the result of crafting activities within the colony, there were four Chen Chen sherds that do not group with the overall Chen Chen ceramic group. Two of these have chemical compositions inconsistent with any of the Moquegua clays, and may represent imports from elsewhere in the Tiwanaku realm. These sherds are from different vessels, but from the same tomb (30-1278) which contained the skeleton of an adult male. The other two sherds were distinct for their anomalously high Zn concentrations. Group membership probabilities calculated from principal components indicated that these two ceramics have a reasonably high

probability of belonging to the Moquegua Tiwanaku ceramic group, and instead of representing imports, their high Zn levels may be due to local variations in ceramic production. These sherds came from a stone lined cist (30-1287) containing the remains of three individuals.

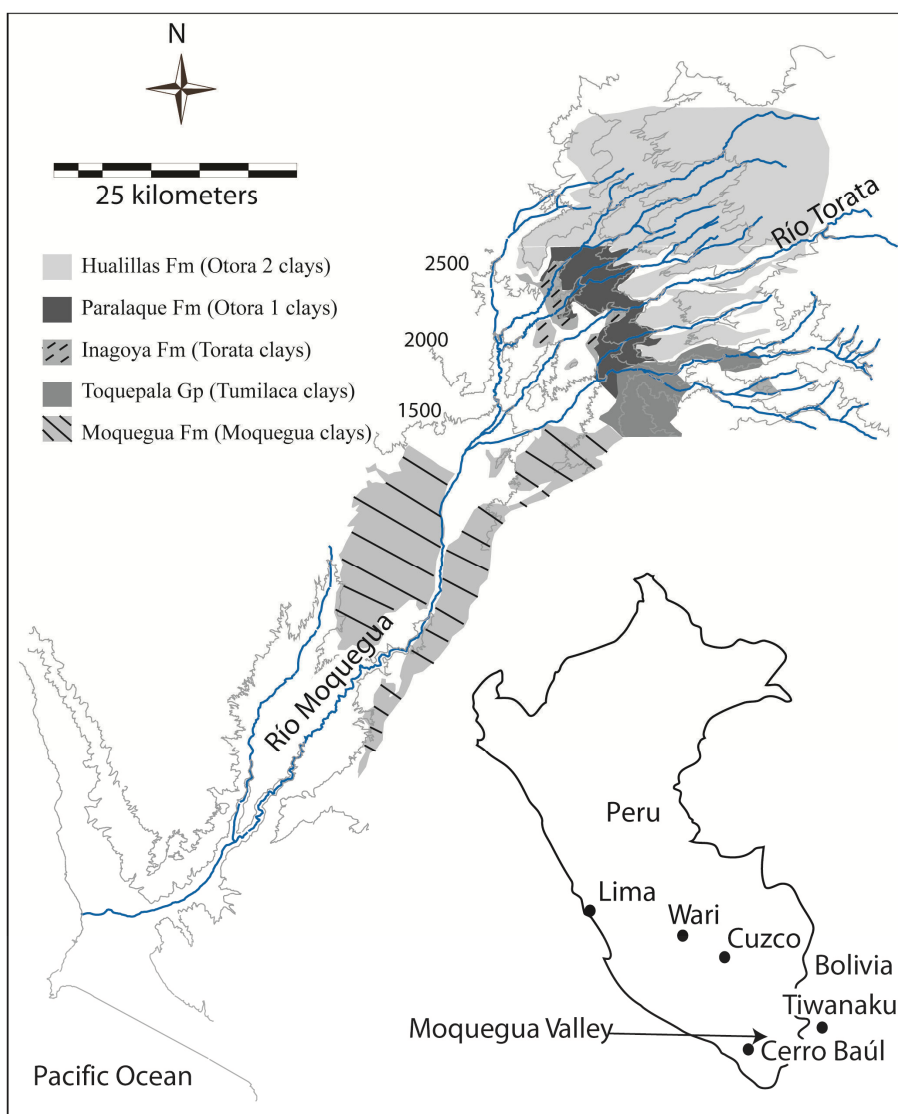


Figure 18. Geological formations and clay groups identified during a survey of the Moquegua Valley.

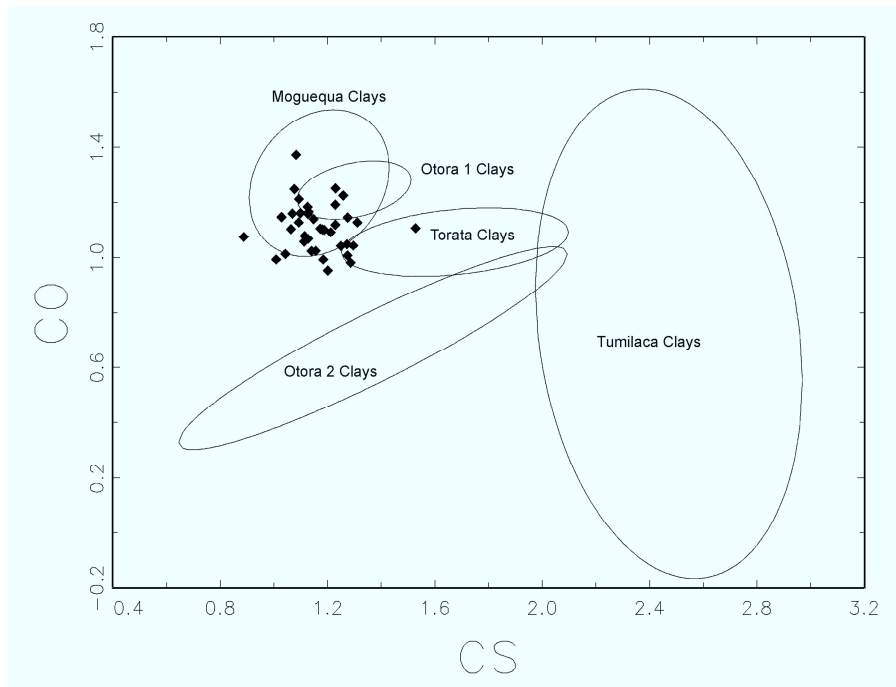


Figure 19. Bivariate plot of logged (base 10) Cobalt and Cesium concentrations of ceramic sherds from Chen Chen and the five identified clay groups. Ellipses delimit 90% confidence boundaries.

Although scholars have suggested for some time that there were ceramic imports in Moquegua during Tiwanaku presence there (Goldstein, 2005), these chemical data, despite representing a tiny fraction of the ceramic material from Chen Chen and other state period Tiwanaku sites in the valley, are the first definite evidence for the presence of non-local ceramics in the Tiwanaku colony in Moquegua. Certainly, the assemblage was largely made using locally available clays, but there is evidence for the presence of non-local ceramics.

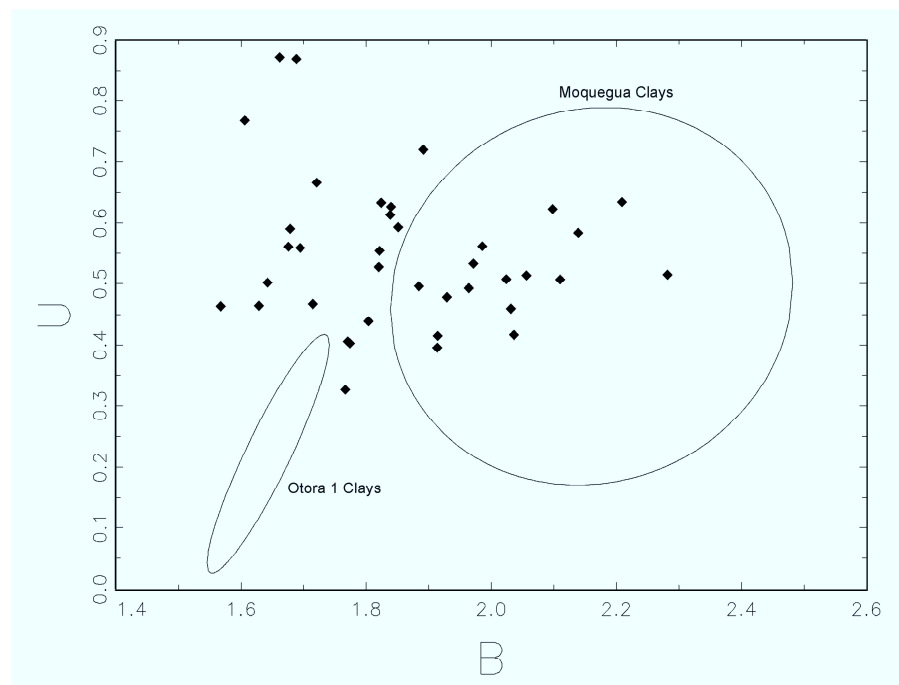


Figure 20. Bivariate plot of logged (base 10) Uranium and Boron concentrations of ceramic sherds from Chen Chen and the Moquegua and Otoro 1 clay groups. Ellipses delimit 90% confidence boundaries.

6.3.6 Other Grave Inclusions

After ceramic vessels, wooden⁴⁵ spoons (both plain and carved, frequently with a camelid design), were most commonly recovered (found in 25% of graves) (Figure 21). Fiber baskets, wooden boxes,⁴⁶ and gourd vessels were also represented, as well as combs and cane flutes (that

⁴⁵ Species identifications were not made on wooden objects, as it requires removing a sliver of wood from the object so that the profile can be examined under a microscope, and as such is a destructive analysis. However, one of the spoons was tentatively identified as a light wood from the tropical lowlands (Whitehead, personal communication, 9th August 2008).

⁴⁶ A wooden tray (perhaps for snuff) was recovered from a sector 30 tomb that was not included in the sample because it was disturbed. The tray was the shape of a crocodile with an elaborately carved head. Although not common at Chen Chen, they are well known from burials in San Pedro de Atacama (Torres, 2004).

appear similar to panpipes).⁴⁷ Weaving instruments, including spindle whorls, needles and possibly bone tools were identified. One *spondylus* pendant was recovered, but no stone beads. Polished jasper was found in one tomb. The grave of a child contained what appears to be a model of an atlatl. It had been created by inserting a fragment of a human rib through a cane and holding it in place with red and blue woolen threads. Human hair was inserted into the end of the cane.⁴⁸ There was evidence for some food remains in wooden spoons and pigment in boxes and a corn cob was recovered from one tomb. Several examples of leather sandals were also found.

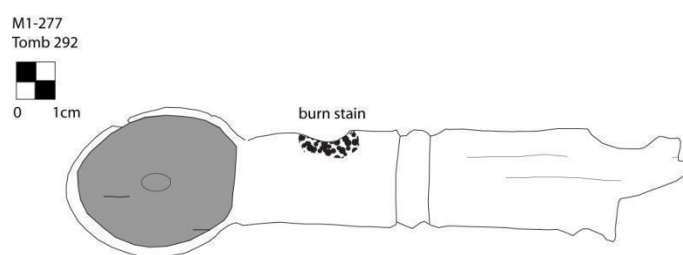


Figure 21. Wooden spoon with carving of a camelid.

⁴⁷ One of the tombs not included in the sample, because it was disturbed, contained an incomplete wooden *tazon*. It was comparable in size to the ceramic *tazones*, and on the rim was a carved appendage depicting a seated anthropomorphic figure. The individual is shown with a skullcap and braids.

⁴⁸ Recorded in the field notes and the museum's inventory as a 'ceremonial stick.' I think the interpretation of this object as a toy atlatl is more persuasive given its inclusion in a child's grave and the presence of miniatures elsewhere. The reason why a human rib (right) was included is open to speculation.

6.3.7 Radiocarbon Dates from Chen Chen

Ten radio-carbon samples were processed from the analyzed Chen Chen burials. Nine of these were threads from woolen textiles recovered from the graves. The tenth was a fragment of a gourd vessel interred in one tomb. The resulting dates fit well with existing published dates (Goldstein, 2005; Owen and Goldstein, 2001), although three of them suggest that the Tiwanaku occupation at Chen Chen was slightly earlier than thought. Dates recovered from different sectors support the hypothesis that the different cemeteries were in use simultaneously. Sector 30, for example, produced a calibrated date of AD 780-980 and another of AD 899-1151. Two dates published by Owen that were recovered from tombs analyzed in this study are also included in Table V.

TABLE V
CALIBRATED RADIOCARBON DATES FROM CHEN CHEN

AA #	Context	Material	d13C	14C Age BP	Calibrated Date (2 sigma)
AA89675	22-1119	Textile	-20.9%	1,075 +- 33	894-1020
AA89676	34-1002	Textile	-19.7%	1,017 +- 34	900-1152
AA89677	34-920	Textile	-19.2%	1,118 +- 34	783-1014
AA89678	27-1581	Textile	-18.8%	991 +-34	986-1155
AA89679	33-1039	Textile	-19.6%	1,127 +- 34	782-992
AA89680	30-1762	Textile	-20.0%	1,020 +- 34	899-1151
AA89681	28-1491	Textile	-20.4%	1,050 +-34	895-1030
AA89682	36-1104	Textile	-19.7%	1,292 +- 34	656-798
AA89683	30-1319	Textile	-17.8%	1,215 +- 34	690-891
AA89695	36-583	Gourd	-24.2%	1,211 +- 34	689-894
AA37175 (OWEN)	34-1220	Textile	-21.0%	1,092 +- 52	890-1000
AA37173 (OWEN)	30-1308	Textile	-21.9%	1,175 +- 32	780-930

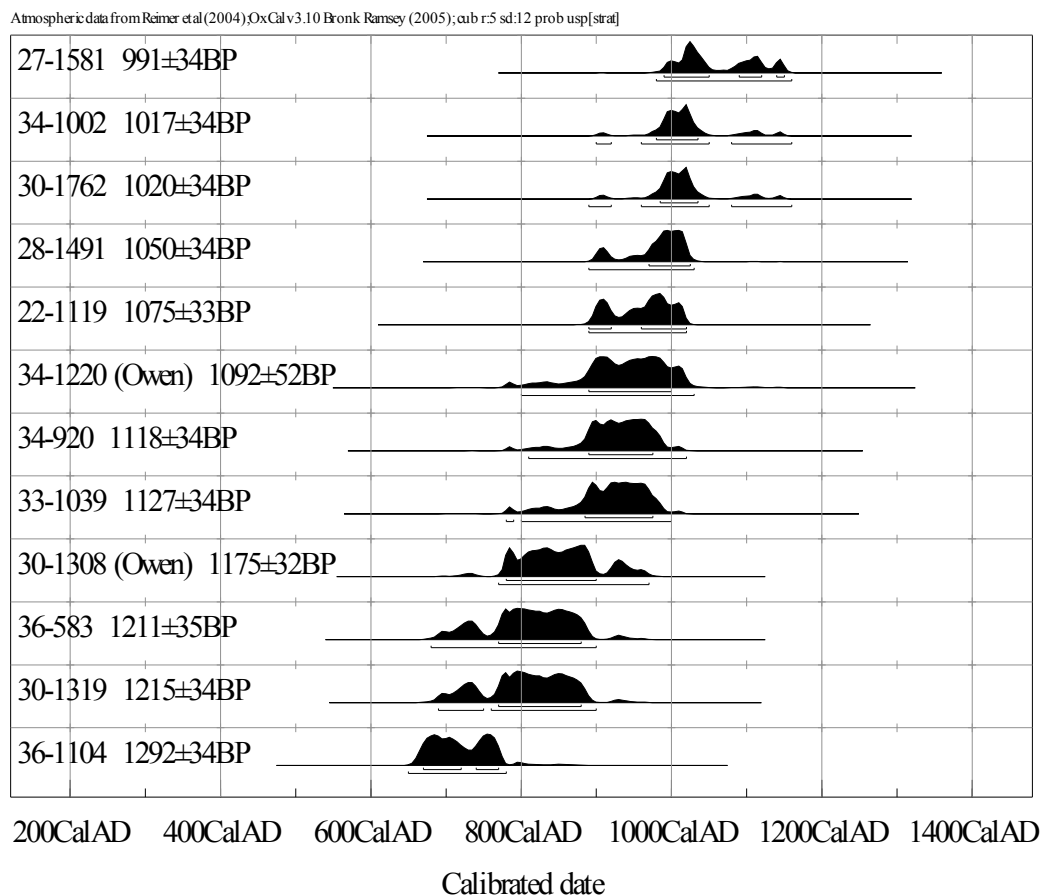


Figure 22. Plot of calibrated radiocarbon dates from Chen Chen showing tomb from which sample was recovered.

6.4 Identity at Chen Chen

Researchers have demonstrated that inhabitants of Tiwanaku sites in the altiplano and in Moquegua simultaneously asserted and maintained multiple, intersecting identities (Blom, 1999; Goldstein, 2005; Janusek, 2002, 2004a). For sake of clarity, I have divided identity into four broad identity types: extra-community, community, intra-community and intra-community corporate. Community identities are identities rooted in common inhabitation of a bounded

settlement.⁴⁹ At Chen Chen, a community identity is evident in the generalized patterns of funerary behavior evident across the site. Despite the existence of distinct cemetery sectors, commonalities are apparent in the way the dead were disposed of, in notions about how to treat the corpse, and in the accepted repertoire of tomb types and cultural materials interred with the dead. However, this corpus of data can also inform on identities that extended beyond Chen Chen as well as those that defined groups and individuals within the community.

6.4.1 Extra-Community Identities

Inhabitants of a community maintain identities that extend beyond the geographical boundaries of the site. I term these ‘extra-community identities.’ For the inhabitants of Tiwanaku affiliated sites in Moquegua, I include identities based on membership of the overarching state entity and identities based on broad geographical difference (lowland versus highland, altiplano versus coast) and on narrower geographical distinctions (such as the Moquegua versus Azapa valleys).

At Chen Chen, extra-community identities are evident in the mortuary behaviors that were also performed at other Tiwanaku sites. Beginning with the altiplano capital, it is difficult to directly compare the Chen Chen data with mortuary contexts from the site of Tiwanaku itself, given the absence of large scale cemetery information there and the considerable variation among the known burial contexts. However, it is apparent that at Tiwanaku, the dead were used in ways that they were not at Chen Chen. At the capital, the dead were important participants in a range of rituals; as sacrificial victims (at the Akapana), as elites to be revisited by the living (at

⁴⁹ Communities are not necessarily geographically bounded (Anderson, 1991; Yaeger and Canuto, 2000) and my use of the term here is in reference to a particular site. Although people also maintain identities that cross geographical boundaries, as inhabitants of Chen Chen did in their assertion of homeland identities, I maintain that the repeated interactions by people living in a bounded space do lead to the development of site based, community identities.

the Kalasasaya), as dedications during the construction of new buildings and new futures (at the Putuni) and as testaments to family or group cohesion (at Akapana East 1M).

At Chen Chen, the dead were accorded their own space; space that was visible from residential areas but that was also demarcated and organized. Within this space, mourners followed a set of guidelines, affording corpses particular treatments, placing them in certain positions and orientations, interring the dead in a limited range of tomb types and including with the dead a recognizable suite of cultural materials. Unlike in the capital city, there is little evidence for sacrifice, for burial under structures or even elaborate elite burials. Even when more ‘normative’ contexts at Tiwanaku (those in Akapana East 2 and Ch’iji Jawira) are compared with Chen Chen, parallels are few. Immigrants to Chen Chen brought with them a very specific repertoire of funerary behavior. Particular elements present at Tiwanaku are not evident at Chen Chen, among them the use of shaft and chamber tombs and the burial of extended individuals. While there are some similarities, such as the inclusion of ceramic vessels and the creation of circular pits, these similarities are extremely generic. If mourners at Chen Chen did assert their membership in extra-community identity networks, it was not through performance of funerary rituals specific to the state capital. However, evidence from other sites in the Tiwanaku heartland indicates that mourners at Chen Chen did replicate behaviors from elsewhere in the altiplano homeland.

Extrapolating from published data on Tiwanaku burials in the heartland valleys, lake peninsulas and islands, it appears that the rituals practiced by mourners at Chen Chen were most similar to those carried out at Tiwanaku sites on the shores of the lake and on the islands, particularly at Katilani Jawira, to the north of Copacabana, and Chucaripupata on the Island of the Sun. At these sites, particularities of funerary practice – tomb architecture, body position and

orientation and cultural grave inclusions are notably similar to those seen in the Chen Chen sample (Korpisaari, 2006; Seddon, 2004). However, there are stark differences between mortuary behaviors at Chen Chen and those in other parts of the heartland, particularly at Lukurmata in the Katari Valley and Khonkho Wankane and Iktomani in the Machaca Pampa. In addition, considerably more intra-site variation is evident in funerary practices at these sites than at Chen Chen or peninsula and island sites (Bermann, 1994; Janusek, 2005b; Janusek and Plaza Martinez, 2006; Korpisaari, 2006).

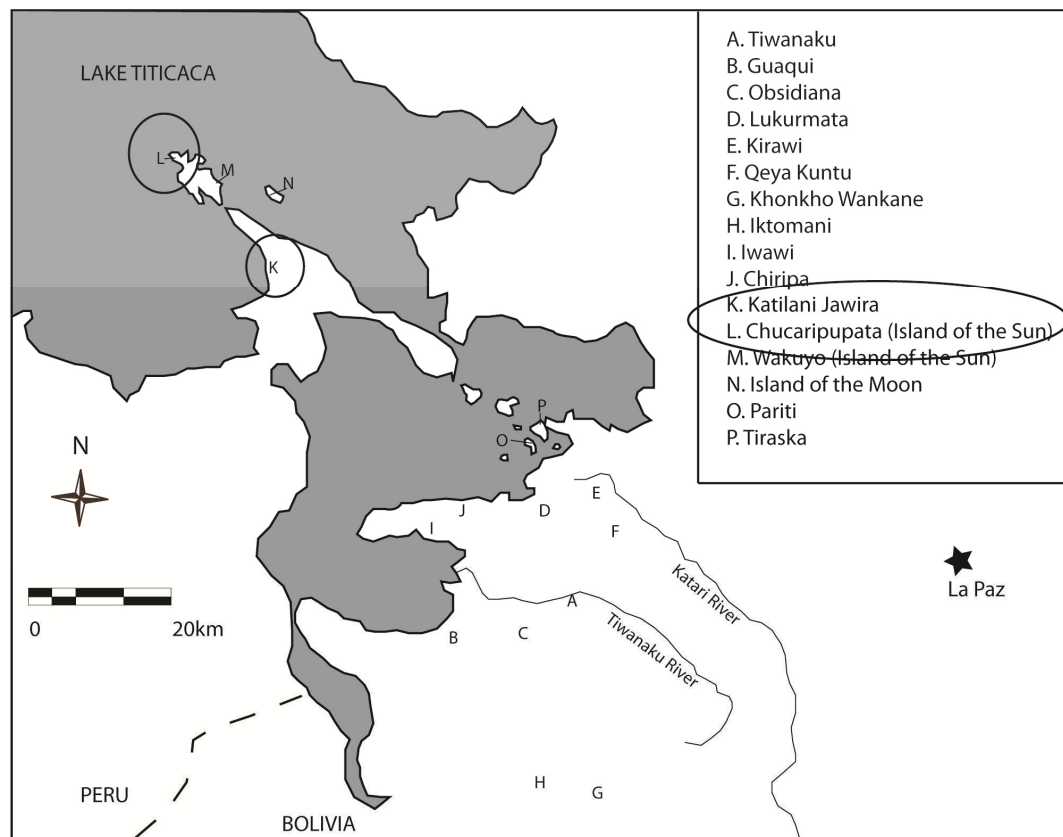


Figure 23. Altiplano burial sites, with Chucaripupati and Katilani Jawira circled (redrawn from Korpisaari 2006).

Through their treatment of the dead, inhabitants at Chen Chen replicated heartland practices, practices that indicate their maintenance of extra-community identities. However, these practices were not used to demonstrate an affiliation with the state capital itself but with particular regions within the Tiwanaku heartland. On the basis of similarities in ceramics, Goldstein (2005) has suggested that there were connections between residents of Omo style sites in Moquegua and the Copacabana peninsula and islands. Comparisons between the Chen Chen mortuary sample and published burial contexts indicated that there are also similarities between Chen Chen practices and this region of the heartland. It was a specific homeland identity that was demonstrated in funerary rituals, not a generic altiplano heritage and not an identity entrenched in the state capital.

Extra-community identities might also be rooted regional geography (coast versus altiplano) and local geography (such as Moquegua Valley versus Azapa Valley). Comparing the Chen Chen data with published burials from Northern Chile, it is evident that there are similarities between mortuary behavior at Chen Chen and Northern Chile, particularly in Azapa where the presence of Tiwanaku immigrants has been argued for more strongly than in San Pedro. However, there are also interesting distinctions. There are apparent similarities with Chen Chen at two burial grounds in Azapa. In the Azapa cemeteries, the dead were interred in small, organized cemeteries of stone lined cists. However, there are also similarities between one Azapa cemetery and behaviors at Omo style cemeteries in Moquegua, where recent investigations at Rio Muerto have uncovered above ground burial structures created by piling stones. These are similar to structures at Atoca-I, a Middle Horizon cemetery in Azapa which also had black-ware similar to Omo style ceramics (Goldstein, 1995b; Green, et al., 2007). More locally, in the Moquegua Valley, there are notable distinctions in the funerary behaviors between Omo and

Chen Chen style communities. While there are also similarities between them, they are no greater than those between these sites and those in Azapa or even the lake shore in the heartland.

Extra-community identity was asserted by mourners at Chen Chen, but it was rooted firmly in homeland identity, not in broad regional difference (hypothesized here as the western lowland communities) or narrow regional difference (hypothesized here as the Moquegua Valley). That homeland identity was specific, indicating an affiliation with the peninsulas and islands but not with the heartland valleys to the east. Although similarities are evident between Chen Chen practices and behaviors in Northern Chile, they are no stronger than those shared between Chen Chen and Chucaripupata or Katilani Jawira in the altiplano. Further, although it is now thought that Omo and Chen Chen occupations overlapped in Moquegua (Owen and Goldstein, 2001) and inhabitants of these neighboring communities undoubtedly interacted, when it came to asserting identity, mourners used funerals to demonstrate closer affiliations with particular homeland roots than with other Moqueguano Tiwanaku.

6.4.2 Intra-Community Corporate Identities

Intra-community corporate identities are the affiliations shared by groups within a community. In life, Tiwanaku corporate social groups were distinguished by neighborhood boundaries (Goldstein, 2005; Janusek, 2008). It has been suggested that different cemetery sectors at Chen Chen and Omo M10 represent different corporate social groups, possibly akin to micro-ayllus (Blom, 1999; Hoshower, et al., 1995). Central to this argument is the presence of individuals of both sexes and crossing the biological age range (Blom, 1999). The osteological data from the Owen and Pari-Flores samples confirm earlier findings. A range of ages were represented in all of the sectors apart from sector 32 where only one skeleton (a child) was

studied and sector 28 where all four analyzed individuals were sub-adults.⁵⁰ The sex could be determined for only a small number of individuals, and this limits the number of sexed individuals per sector. However, data from the sectors with larger samples (sectors 30 and 34) support the likelihood that both males and females were buried in the various cemetery sectors. Further, the 12 radiocarbon dates listed above indicate that the various cemetery sectors were contemporaneous, rather than temporally distinct, again supporting the idea that they were utilized by different intra-community social groups who co-existed in the Chen Chen community.

In the following, I examine the degree to which the generalized patterns described above differed between the nine cemetery sectors analyzed⁵¹ and I suggest that the considerable consistency evident indicates that mourners emphasized their membership of the entire colonial community and downplayed difference within Chen Chen.

Architectural patterns are consistent across the site. Stone lined cists and unlined pits⁵² were found in all analyzed sectors⁵³ and there was no statistically significant correlation between sector and tomb type.⁵⁴ Of the forty examples of stone lined cists, investment in stone

⁵⁰ As discussed, only intact burials were analyzed in this project. Had all excavated skeletal material been analyzed, I think it likely that all age groups would have been represented.

⁵¹ Chi-square and Fisher's Exact tests were used to test the significance of correlations between particular elements of funerary behavior and cemetery sectors. SPSS Version 18.03 was used in this analysis.

⁵² Boot tombs are typically associated with Formative Period Huaracane sites. Given its considerable deviation from Tiwanaku norms, I do not include the one boot tomb from the Chen Chen sample in this discussion of grave architecture.

⁵³ The sample from sector 35 only included stone lined cists, but pit tombs were evident in the looted tombs recovered by Pari's team in the sector.

⁵⁴ The one recorded example of a partially stone lined cist was in sector 30.

architecture was also consistent across the sectors, with no statistically significant correlation between sector and the number of stones used in cist construction. The repertoire of architectural construction was limited at Chen Chen and all combinations were utilized when interring deceased members of the different corporate groups.⁵⁵ Mourners burying their dead in each of the analyzed sectors adhered to community wide norms about tomb architecture and did not build monuments that distinguished their dead from others at Chen Chen.

Analysis of the human remains buried in the nine sectors does not suggest that corporate identity distinctions were inscribed onto the body. At Omo M10, cemetery sectors were distinguished by different cranial modification styles (Hoshower, et al., 1995). Given that cranial modification is performed on infants under one year old, Hoshower's findings suggest that membership in the social groups represented by cemetery sectors was assigned at birth and maintained through life.⁵⁶ This pattern was not evident in the Chen Chen Vargas sample (Blom, 1999), and is not apparent in the smaller sample of modified crania in the population analyzed in this project. However, the absence of a correlation between different cranial modification types and cemetery sector at Chen Chen suggests that there was greater fluidity to social groups and that an individual might be born into one group but through life move into another, whether through marriage or some other social process (Blom, 1999).

⁵⁵ There is a statistically significant correlation (at the 0.05 level) between tomb sector and the presence of absence of a capstone. However, this is explained by the statistically significant correlation between the type of tomb (stone lined cist or unlined pit) and the presence of a capstone. Capstones were never placed on unlined pits, and their particular frequency in different sectors produced a correlation between sector and capstone presence. Statistically significant correlations between sector and whether the mouth and floor of a tomb had received additional investment – evident in stone mouths and clay or stone floors – can also be attributed to the distribution (not itself statistically significant) of tomb types.

⁵⁶ Alternatively, the identity inscribed in infancy was referenced in death even if corporate group membership had shifted or been added to during the life course.

The treatment of human remains was remarkably consistent across the nine sectors. In all of the cemeteries, individuals were seated and flexed. The vast majority of individuals were facing east and the few that diverged from this norm were not confined to one cemetery. Textiles were recovered from seven of the nine analyzed sectors.⁵⁷ Textiles have long been an important medium of identity expression in the Andes, but most existing research on identity and Andean textiles has focused on form and decoration of dress (Ackerman, 1991; Boytner, 2004; Femenias, 1991). However, detailed analysis of textile production can also shed light on familial or group identities. Undertaken in domestic contexts, weaving and spinning techniques are passed on through generations leaving material signatures in textiles that potentially indicate familial affiliations. As with ceramics (Janusek, 2002), textile production likely took place within intra-community corporate groups. I would expect then that any production differences learned through socialization within a particular social group would be manifested in finished garments.

In the textiles recovered from mortuary contexts, however, there is a remarkable consistency across the sectors in both technique and style. All specimens were wool, regardless of sector. *Mantas* and *frazadas* were represented in all six of the sectors with identifiable textile forms. In all cloth specimens where spin could be analyzed, wool was spun ZS, regardless of sector. Despite the high frequency of warp-faced versus interlocking weaves, there was no statistically significant correlation between the type of weave and the cemetery sector from which a textile was recovered. There was also no statistically significant correlation between the

⁵⁷ Only one textile sample was recovered from sector 33. I do not think that the absence of textiles from the other two sectors indicates that they were never included in graves. More than most materials, textiles are subject to preservation conditions, to decisions made by excavators about whether to recover them and to curation practices. Decisions made in the field about the recovery of materials clearly impacted on the analysis conducted in this project. This is particularly unfortunate in the case of textiles, where considerable data on materials and techniques can be recovered even from very poorly preserved specimens.

primary color used (predominately natural browns, creams and camel colors, but also some blue and green) and the cemetery sector. Nor is there a statistically significant correlation between the sector and the number of additional colors used in a textile. Embellished textiles are not restricted to one particular sector. Thus, despite the likelihood that spinning and weaving were learned within a weaver's corporate social group, and despite the considerable ethnographic and archaeological evidence that textiles are a key medium of identity expression in the Andes (Boytner, 2004; Heckman, 2006; Rodman, 2000; Sharratt and Williams, 2009), in this Chen Chen mortuary sample, at least, textiles were not used to mark out one intra-community social group from another.

When the ceramic material from different sectors is compared, again there is notable consistency. The predominate vessel forms, *keros* and *tazones*, were recovered from all sectors. When Chi-squares were run on all forms,⁵⁸ there was no statistically significant correlation between sector and vessel form.⁵⁹ There is a statistically significant correlation between paste type and sector.⁶⁰ However, this is likely a result of the very few examples of three of the paste types (represented one, four and five times respectively in a sample of 167 ceramics). Slip colors are remarkably consistent across the entire sample, and variants of red and brown were used as the base color on slipped ceramics in all sectors. Regarding decoration, no statistically significant correlation exists between sector and the motif theme present on decorated vessels.

⁵⁸ Vessel form could be determined for 134 of the 168 ceramic pieces analyzed.

⁵⁹ This was the case when generalized forms were analyzed and when more detailed distinctions (for example, separating *keros* with a torus from those without) were taken into account.

⁶⁰ The paste typology utilized in this analysis was complex, but could be collapsed into fewer categories (for example, paste types 1.1, 1.2, and 1.3 can all be collapsed into the broader type 1). This was done during the statistical work on the data, as the paste typology included too many categories for conducting analysis. The statistical correlation is between sector and the collapsed paste types.

There are few differences in funerary behavior between the different cemetery sectors at the site as a whole. In the nine sectors analyzed for this project, mourners treated their dead in notably similar ways through the entire funerary process, from the construction of the tomb, through the preparation and placement of the body to the items included with the dead. However, during her excavations of sector 29, Palacios (2008) noted different mortuary treatments and suggested that this sector was reserved for deviant burials. Individuals in sector 29 (see Figure 8) were buried on their sides or backs.⁶¹ Few ceramic vessels were recovered from the sector but there was a notable presence of metal (gold, silver and copper) artifacts in the graves. Chrysacolla and lapis-lazuli beads were also recovered, as well as a leather collar. Woven woolen textiles were undecorated (Palacios, 2008). Sutter's analysis of non-metric dental traits indicated that those buried in sector 29 were not genetically different from the rest of the population and differences in funerary treatment were rooted in social, not biological, distinctions (Palacios, 2008; Sutter and Sharratt, 2010).

6.4.3 Intra-Corporate Identities

Intra-corporate identities are those that distinguish and affiliate individuals within corporate groups. The skeletal data recovered from the analysis of the human remains acts as a baseline for examining differential treatments that correlate with sex, age, and occupation, while multiple lines of cultural data are central to thinking about the presence of status related distinctions in mortuary treatment. Mortuary evidence for these categories during the Tiwanaku colonial period in Moquegua has received some discussion, and the sample analyzed here largely reveals patterns described in earlier literature (Blom, 1999; Goldstein, 2005).

⁶¹The only other burial like this known from Chen Chen is reported by Vargas (1994).

6.4.3.1 Sex

Although the number of sexed individuals from Chen Chen studied in this project is small, the sample does reveal some possible patterns in differential treatment of males and females. Regarding tomb type, both males and females were buried in stone lined cists and unlined pits.⁶² However, 91% of males were buried in stone lined cists, only 9% in unlined pits. Conversely, 62% of females were buried in unlined pits and only 31% in stone lined cists.⁶³

TABLE VI

TOMB TYPE PERCENTAGES ACCORDING TO SEX AT CHEN CHEN

Tomb Type	Male	Female
Stone Lined Cist	91%	31%
Unlined Pit	9%	62%

When age distribution is also considered, it is evident that a full age spectrum of females was buried in both tomb types, but the only example of a male in an unlined pit was a younger individual. Stone lined cists do require more labor and material than unlined pits. Not only were males more likely to be buried in these higher investment graves, but they were also more likely to be interred in a tomb with a prepared mouth (87.5% versus 71.4% of female tombs) and a

⁶² The boot tomb contained a female, aged at least 25 years old at death.

⁶³ The correlation between biological sex and tomb type is statistically significant at the 0.05 level in a Fisher's Exact test.

prepared floor (28.5% versus 14.2% in female tombs).⁶⁴ Thus, although the same forms and techniques were used for male and female graves, male tombs tended to have greater investment in mouths, walls and floors.⁶⁵

Textiles were analyzed from eight burials with sexed individuals. Only one of these was male, so identifying sex based distinctions is problematic. *Mantas* and *frazadas* were included in both the male and the female burials. Aside from two specimens in a female burial that had an interlocking weave, weaves were warp faced. Additional colors were included in textiles buried with both the male and the females.

Turning to grave inclusions, ceramics were recovered from male and female burials. *Tazones* are the most common ceramic form in the sample, and represented approximately half of the vessels found with each sex. Earlier scholars noted that at Omo M10 *keros* were never buried with females and this has been used to suggest that *chicha* drinking, with its political associations, was a male activity in Tiwanaku communities (Goldstein, 2005). However, in this Chen Chen sample, two females were buried with *kero* (Figure 24).⁶⁶ Similarly, two handled *ollas*, identified as a female restricted grave offering in Tiwanaku burials (Goldstein, 2005), were included with males also. Ceramic production is notably consistent in the Chen Chen sample overall, with one particular paste type and red slips dominating, and these variables are consistent between biological sex. Motifs on ceramics do not appear to be restricted to one sex or

⁶⁴ These are not statistically significant correlations.

⁶⁵ Little can be inferred about differential investment in construction based on the presence of a capstone because of the 17 tombs containing sexed individuals that could be firmly defined as intact, only two had capstones. One was on a female grave, the other on a male grave.

⁶⁶ One individual (Tomb 1189) was a probable female. The other (Tomb 783) was an older female. Given the tendency to identify older females as males (see Appendix D), the fact that this individual was nevertheless identified as female makes me confident in the osteological assessment.

another. Geometric motifs, including stair step motifs, variously interpreted as representative of mountains or terraced pyramids and undulating lines, arguably representing water (Burkholder, personal communication, 2010) are most common, and appear on ceramics in male and female graves. Images of trophy heads and felines were also on ceramics in tombs of both sexes.

Camelid,⁶⁷ condor and avian images were only recovered from male burials, although this is possibly a product of sample size as only one example of each of these was recovered from burials with sexed individuals. Two particularly distinctive vessels, the *Qosqopa* style Wari cup and the modeled anthropomorphic (male) vessel⁶⁸ were both found in male graves (aged 40-44 and an old adult respectively).

Sex based distinctions in ceramics at Chen Chen were even fewer than other scholars have suggested (Blom, 1999; Vargas, 1994). Further, they are arguably more limited than those at Omo style Tiwanaku sites in the Moquegua Valley (Goldstein, 2005) possibly suggesting that gender operated differently within different segments of the Tiwanaku population.

Other than ceramics, the grave inclusions in the analyzed sample do not contradict existing associations with male and female graves (Goldstein, 2005). Wooden spoons, decorated and plain, were found with males and females. The only *zamponas* (panpipes) found in an adult

⁶⁷ An association between males and camelids has been demonstrated in iconography from other Andean contexts, particularly in the Early Intermediate Period (Gero, 1992). However, Sergio Chavez argues for an association between women and camelids in the Yaya-Mama tradition (Chavez, 2002).

⁶⁸ This vessel demonstrates similarities with the vessels in the Tirasaka collection (Korpisaari and Parssinen, 2005). When analyzed using p-XRF, the vessel grouped chemically with the majority of vessels in the Chen Chen sample. However, this vessel was not subject to LA-ICP-MS analysis and the enhanced precision and greater number of analyzed elements might indicate that the vessel was non-local after all.

grave were with a male⁶⁹ while the only weaving/sewing instruments and gourd vessels found in adult graves were with females.

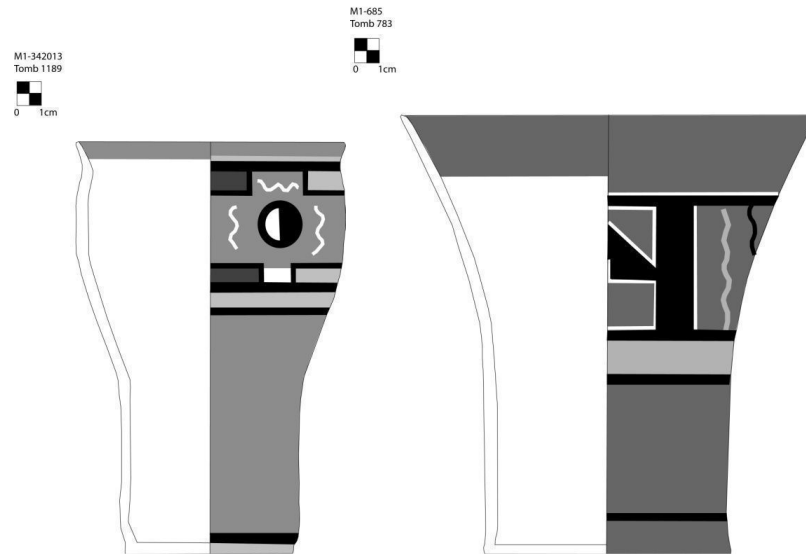


Figure 24. *Keros* recovered from female burials.

Regardless of biological sex, individuals at Chen Chen received very similar mortuary treatments. Undoubtedly, life experience was influenced by and mediated through an individual's biological sex, but sex is not a significant point of difference in death. This sample suggests that sex restricted inclusions were even fewer than previously thought. The only difference is in the relative investment in tomb construction that males and females received, with more labor and materials invested in male tombs overall. Perhaps this points to cultural conceptions about the relative social position of males and females. It is noteworthy that the only

⁶⁹ This was noted in the Vargas sample also (Blom 1999).

male in a lower investment tomb was a younger individual, while older as well as younger females were buried in unelaborated pit tombs. Arguably, age intersected with sex differently in males and females. As males matured, perhaps they had access to the social positions that warranted greater investment in mortuary monuments, while females maintained a consistent position within the community through life.

6.4.3.2 Age

Even fewer differences are evident in the funerary treatment of individuals of different ages. All age categories were buried in stone lined cists and unlined pits.⁷⁰ The relative ratios of tomb types for adults and sub-adults are comparable; 66% of adults were buried in stone lined cists and 72% of sub-adults. Investment in tomb mouths and floors is also comparable. 84% of adult and 79% of sub-adult tombs had prepared mouths. Sub-adults were more likely to be buried in tombs with a prepared floor (31 of 55 tombs where this data was recorded versus 9 of 26 adult tombs where this was recorded). The majority of prepared floors in sub-adult tombs (22) had a flat stone on which the individual sat.⁷¹ Within tombs, all age groups were treated in notably similar ways. The standard burial attire of a woolen *manta* and *frazada* was applicable even to neonates. Both warp-faced and interlocking weaves were present on textiles wrapped around all ages. Multi-colored garments were not restricted to adults, but found on children also. There is little evidence of less investment in textiles associated with adults or subadults – average weave counts (both warp and weft) and spin counts are almost identical regardless of age group.⁷²

⁷⁰ Even fetal and neonate individuals were recovered from stone lined cists.

⁷¹ This practice has parallels in contemporary Aymara funerary rituals in which babies under two years old are carried to the grave in a seat.

⁷² The only exception is infant garments which had slightly higher average weave and spin counts – indicating more finely spun and woven wool.

Grave inclusions also did not differ according to age. All ceramic forms, including keros, were found with adults and sub-adults, and motifs were not age restricted.⁷³ Wooden spoons were found with all age groups, apart from infants and fetal individuals⁷⁴ and could be decorated or plain regardless of age. The one possible distinction is in the presence of non-local ceramic material. The sherds which did not group with the rest of the Chen Chen ceramic material in LA-ICP-MS analysis were buried with an adult male. This may indicate that this individual had particular ties outside of Moquegua, ties that children and juveniles would not have yet established.⁷⁵

It is more difficult to determine if other grave inclusions were age restricted, as they appear in far fewer frequencies. However, sandals, panpipes, baskets and gourd vessels were associated with all ages,⁷⁶ needles only with adults (all females), boxes only with adults, flutes only with children and juveniles. The single examples of a comb and a spindlewhorl were each with an adult female.

Life experience undoubtedly differed with age, yet it represents an even less significant category of difference in funerary treatment at Chen Chen than sex. Contrary to cross-cultural examples, and even the contemporary Andes, younger individuals were not marked out in death

⁷³ Even images of trophy heads were found on ceramics accompanying children.

⁷⁴ Spoons show sign of wear – they were not made specifically to be put in the tomb. If, as has been suggested, they belonged to the interred individual, their absence from the graves of individuals under the age of 1 is not surprising, as these infants were presumably still breast feeding.

⁷⁵ Isotope data could determine whether this individual was an immigrant from the altiplano, again demonstrating the importance of integrated biological and cultural approaches to this mortuary sample.

⁷⁶ As noted above, gourd vessels were only found with adult females and panpipes only with adult males, so it is possible that these two artifacts were sex restricted.

by distinct mortuary treatments (at least none that are archaeologically recognizable) (Anderson and Parfitt, 1998; Scott, 1999). Instead, they were treated in the same way as their elders. The examples of neonates, fetal individuals and infants are particularly striking. Despite never having been old enough to participate as contributing members of the Chen Chen community, they were afforded every funerary recognition that adults were. Whatever an individual's age at death, the salient aspect of their identity was their membership of the Chen Chen community and more broadly their affiliation with the Tiwanaku homeland.

6.4.3.3 Status and Occupation

Goldstein (2005) argues that because there are few sex and aged based distinctions in Tiwanaku burials in Moquegua, what distinctions there are must be related to some form of vertical differentiation. Certainly, given the nature of the site, a colonial administrative center that was home to thousands, there were almost certainly leaders and distinguished individuals at Chen Chen. Ranking and differential social status undoubtedly existed in the community. However, these lines of difference were not highlighted in death.⁷⁷ Status distinctions have been identified in mortuary contexts by a number of features, including elaborate, exceptionally well constructed tombs and greater numbers of grave goods than other tombs (Binford, 1971; Brown, 1981).⁷⁸ The Chen Chen mortuary sample is interesting because of the absence of distinctively elaborate, well constructed or well endowed burials. No individuals are marked out by elaborate

⁷⁷ Goldstein (2005) notes that males from the Omo M10 burials, had consumed more maize products than females, and he argues that men had more control to politically significant foods and drinks. Carbon isotope data does not yet exist for the sample discussed here but might indicate status distinctions manifest in diet.

⁷⁸ As discussed in chapters Three and Five, the critiques to this approach are considerable, and I question its application to Andean data sets.

tomb architecture or by distinctive exotic or numerous grave inclusions.⁷⁹ The number of ceramic vessels was modest, varying between 0 and 4 vessels.⁸⁰

However, a higher number of ceramic vessels did not necessarily match well with greater investment in tomb architecture. In fact, a higher frequency of stone lined cists than unlined pits had no ceramic vessels. The single tomb with three vessels was a pit tomb in sector 34 and contained a female, aged 60+.⁸¹ The tomb with four vessels was a stone lined cist in sector 36 and contained a juvenile, aged approximately 8 years old at death.⁸²

TABLE VII

FREQUENCY OF TOMBS WITH 0-4 INTACT VESSELS AT CHEN CHEN

No. of intact ceramic vessels	Total Frequency	Frequency in Stone Lined Cists	Frequency in Unlined Pits
0	55 (45.83%)	26 (33.77%)	9 (40.91%)
1	31 (25.84%)	21 (27.27%)	9 (40.91%)
2	32 (26.67%)	29 (37.66%)	3 (13.64%)
3	1 (0.83%)	0 (0%)	1 (4.55%)
4	1 (0.83%)	1 (1.30%)	0 (0%)

⁷⁹ The one *spondylus* pendant was recovered from the grave of a child, and I recognize that in the Saxe-Binford program this 'high-status' child burial might be interpreted as evidence for hereditary ranking.

⁸⁰ This is based on 123 tombs, as the questionable tombs from the 1995 collection were removed.

⁸¹ This grave was also interesting because it was one of the two female burials with a *kero*.

⁸² Both of these tombs also contained wooden spoons.

Thus, a significant proportion of individuals were actually buried without intact vessels, although several of these had ceramic sherds. Further, there were individuals who were buried with no grave goods at all. Perhaps we can identify these as “the Tiwanaku colonies’ least advantaged individuals” (Goldstein, 2005: 257). However, I think it noteworthy that the presence or absence of grave inclusions does not match with tomb construction. Examples of both stone lined cists and unlined pits contained individuals without any grave goods.

Investment in textiles might also be an indicator of wealth, particularly given the longstanding cultural value of textile arts in the Andes. When textiles were analyzed, the presence of additional colors other than the principal color used in the warp and weft, was noted. 16 of the 26 specimens with additional colors were recovered from pit burials, suggesting that additional investment in tomb architecture did not correlate with additional wealth expression in textiles. Textiles with between one and three additional colors are well represented in both pits and stone lined cists although the only example of four additional colors came from a stone lined cist. Elaborated textiles, in the form of *chichilla* embellishments, were rare. Textiles with this embellishment also included multiple colors, but again do not correlate with tomb type or the presence of other distinctive grave inclusions. One example was in the grave of a female (aged 20-24) who was buried in a pit tomb with no other cultural inclusions, and the other was in a stone lined cist containing a child, a plain *olla* and a wooden spoon.

Occupational identities are generally determined on the basis of grave inclusions and sometimes skeletal evidence. There are few distinctive grave assemblages indicative of occupation. Needles, spindle whorls and weaving implements perhaps suggest textile production, and that they are only associated with adult females or unsexed juveniles supports the idea that textile production was a female activity (as it predominately is in the Andes today). Activity

related musculoskeletal stress markers were noted on 11 individuals, but the stress placed on the arms, legs and hands could be attributed to a range of activities. However, these individuals included nine adult women with strong muscle attachments, consistent with the repetitive movements performed in weaving, perhaps lending support to the idea that textile production was a predominately female activity although the difficulties of identifying spinning and weaving activities from skeletal markers alone make it impossible to confirm this (Toyne, 2002).

6.4.3.4 Idiosyncratic Funerary Treatments

There are several examples of tombs that are marked out by idiosyncratic grave inclusions. These do not necessarily indicate particular age, gender, status or occupational identities but perhaps suggest other aspects of the interred individual's social identity. These include the tomb of a female in her 30s which contained four coils of wool that had been spun SZ. SZ spinning is often associated with healing or witchcraft in the Andes. Specifically, in 19th-century Aymara communities, a ritual called "*cekarpayana*" or "left-handify" (in which a thread was spun backwards) was used to get rid of bad spirits (La Barre, 1948). The tomb was otherwise unremarkable; it was stone lined cist, containing a brown, woolen *frazada* and a basket. However, the individual had fractures on her skull, rib and one vertebra, which were in the process of remodeling. Although the individual was not exceptionally young, it does seem possible that the after-effects of these injuries contributed to her death and the inclusion of backwards spun threads is perhaps an indication of attempts to rid the individual of ill-health.

Another female burial is notable for its tomb architecture and the included ceramic vessel. Tomb 239 in sector 30 was a boot-tomb. This shape of tomb is typically associated with the later stages of the Huaracane (Formative) occupations in the Moquegua Valley (Goldstein, 2000b). However at Formative sites, boot tombs were marked out by large circular stone rings

(Costion, 2009), and there is no record of such an architectural feature for tomb 239. The tomb contained a distinctive, bulbous highly polished ceramic vessel, unlike anything else in the sample (Figure 25). This vessel does not appear to conform to Huaracane types, but nor is it noted in vessel typologies in either the Tiwanaku heartland or the Moquegua Valley (Burkholder, 1997; Goldstein, 1985; Janusek, 2003b).

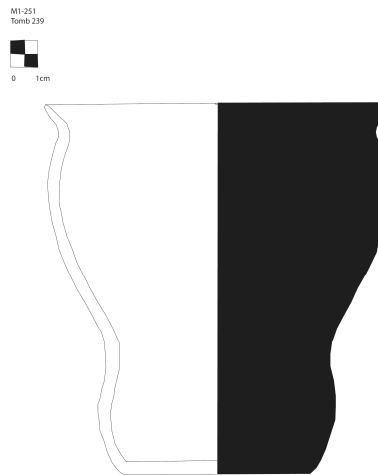


Figure 25. Bulbous, polished black-ware vessel recovered from a boot-tomb.

6.4.3.5 Wari Influences

Tomb 989 was notable for the inclusion of a Wari cup, with *Qosqopa* style motifs painted on it. The cup was recovered from an intact stone lined cist in sector 34. The tomb also contained the skeleton of a male aged 40-44 years old, a red slipped *tazon* with geometric motifs and a broken wooden spoon. Of the 334 intact tombs excavated by Vargas, Garcia-Marquez (1990) documented seven graves containing only Wari ceramics and a single grave which contained

both Wari and Tiwanaku style vessels.⁸³ He identified all as Qosqopa style and one (in Tomb I 337) is very similar to the cup in Tomb 989, with an identical face motif. The vessels described by Garcia-Marquez were recovered from tombs of infants, children, adolescents and adults. The vessel most similar to that in Tomb 989 was buried with a female estimated to be approximately 22 years old at death. Thus, although the example in this sample was with an adult male, Wari affiliated grave inclusions were not age or sex restricted in the wider sample. Of the eight tombs (including Tomb 989) with Wari and Tiwanaku vessels, half were pits and half were stone lined cists. However, 85.7% (compared with 70% in the analyzed sample) of the tombs Garcia-Marquez identified as containing only Wari material were stone lined cists.

Given the overwhelming display of Tiwanaku identity in Chen Chen mortuary behavior, the indication of Wari influence is interesting. However, the proximity of Wari sites, as well as evidence for Tiwanaku presence at the Wari colony at Cerro Baúl makes it likely that there was some social exchange between inhabitants of Chen Chen and their Wari neighbors. Whether this exchanged involved people or just goods remains unclear. Garcia-Marquez (1990) argues that Wari vessels at Chen Chen were obtained in trade, a suggestion Goldstein (2005) makes for the obsidian at Omo sites from sources deep within the Wari heartland. The high percentage of stone lined cists in the sample of tombs with only Wari vessels raises the possibility that access to such vessels was a privilege of a particular sector of society.

⁸³ Garcia-Marquez includes sketches of the vessels. Based on these sketches alone, the identification of several of these vessels as Wari could be challenged, as they resemble the cups and flowerpots defined by Goldstein (1985) in his description of Tiwanaku ceramics from Moquegua. Some of Garcia-Marquez's determinations are on the basis of a Wari paste, although the distinction between Wari and Tiwanaku pastes is not detailed.

6.4.3.6 Intra-Corporate funerary groups

Above, I focus on identities that emerge by studying the treatment of individuals. However, the existence of multiple interments raises the possibility of other types of intra-corporate identity. For whatever reason, certain individuals were buried in a tomb with others. Multiple interments were not common at Chen Chen – in the total sample of 138 burials, there were five definite examples of multiple burial. The composition of these groups was not the same in all cases. Of the paired burials, one was of two children (18 months and five years), one was of an adult and a child (an adult of undetermined sex and a nine year old) and one consisted of an adult male and an adult female. The group of three was an adult of undetermined sex, a three or four year old and an 18 month old. The group of four comprised an adult female, two three year olds and a six year old.

TABLE VIII

MUTIPLE INTERMENTS IN THE CHEN CHEN SAMPLE

Tomb No.	Sector	Human Remains
1492	28	Infant Child
1698	30	Juvenile Adult
928	34	Mid Adult 2 (Male) Old Adult (Female)
1287	30	Infant Mid Adult Child
1551	28	Child Child Juvenile Adult

None of these groups represents death in childbirth, perhaps an expected reason for multiple interments. Instead, they are small collectives within the overarching corporate group who were intentionally placed together by mourners. Why these individuals were buried together is open to speculation.⁸⁴ But what these six burials do demonstrate is the way in which mourners at Chen Chen represented social or perhaps familial groups in death. This practice was not restricted to just one sector, but was evident in sectors 28, 30 and 34, suggesting that across the community, mourners responded to certain mortuary situations by burying individuals together.

6.5 Summary

The 138 burials analyzed from Chen Chen largely support earlier overviews of funerary behavior at the site (Blom, 1999; Vargas, 1994). Mourners at the site practiced mortuary rituals that were derived from altiplano traditions. They used funerals to demonstrate their ongoing ideological affinity with the Tiwanaku heartland. I suggest, however, that homeland identity was rooted in specific geography. Although Chen Chen is thought to have been a colonial center that served administrative state functions, its inhabitants did not replicate funerary practices evident at the state capital. Instead, funerary behaviors at Chen Chen indicate an affinity with practices at Tiwanaku sites on the islands in Lake Titicaca and the Copacabana peninsula. Absent is evidence for replication of funerary practices enacted at sites in the Katari and Tiwanaku valleys. Absent also is evidence that mourners at Chen Chen used funerals to demonstrate affiliations with other colonial communities on the western slopes. Indeed, funerary behavior serves to distinguish Chen Chen mourners from other Moquegua Valley Tiwanaku communities (Baitzel, 2008; Goldstein, 2005; Green, et al., 2007). Extra-community identity at Chen Chen was rooted in a

⁸⁴ Whether they were interred at the same time cannot be determined from the field notes.

specific homeland identity and served as the basis for community wide ritual practices that united inhabitants of this colonial town.

Within the community, little difference is evident in the treatment of the dead. The presence of spatially segregated cemeteries, and the demographic profile of those cemeteries, supports the idea that they represent intra-community corporate groupings (Blom, 1999).

Tiwanaku social groups are evident in neighborhood structure in the highlands, and there is a longstanding practice of burying distinct groups within a community in separate areas of a cemetery (Buechler and Buechler, 1971). However, beyond the spatial segregation, there is little difference in funerary behaviors in the distinct cemetery sectors at Chen Chen. The dead from various intra-community groups were treated according to community wide norms; they were buried in the same kinds of tombs, they were dressed in the same funerary garments and they were accompanied by the same kinds of grave inclusions. There is one distinct cemetery.

Although not analyzed here, sector 29 was notable for the ways in which bodies were placed (on their backs and sides) and for the items accompanying individuals – frequently undecorated ceramics and metal objects. It has been suggested that this cemetery was for deviant individuals who, for whatever reason, did not merit normative burial (Palacios, 2008). If so, then the Chen Chen community removed its deviant individuals from their corporate social group and segregated them in death in sector 29.

Within the Chen Chen cemeteries, there are few apparent distinctions that correlate with sex. More investment is evident in the construction of male tombs versus female tombs, but within tombs, individuals were treated in similar ways. Age and occupation also received little attention. There are few obvious status based distinctions, no tombs stand out as exceptionally well built or furnished. Despite Chen Chen's role as an administrative center in an increasingly

centralized and hierarchical state, the rank and status of individuals were not highlighted in death. Instead, mourners performed funerary rituals that asserted commonality, and demonstrated a community identity that was deeply rooted in its ancestral roots. For the inhabitants of Chen Chen, death was a moment to reaffirm social bonds that emphasized the united front of this Tiwanaku community. Difference, whether group or individual, was downplayed, commonality was highlighted and each funeral was a tool in the process of reaffirming shared community identity.

7. TUMILACA LA CHIMBA

7.1 The Site of Tumilaca la Chimba

Tumilaca la Chimba⁸⁵ is situated 15km up valley from the city of Moquegua. Located in the Tumilaca River Drainage, the site is at an altitude of 1900 masl, well into the boundaries of the upper valley region of the Osmore Drainage. Tumilaca la Chimba is on a bluff overlooking the Tumilaca River and is bordered to the east and west by steep ravine *quebradas*. The location of the site is perfect for exploiting the agricultural potential of the valley bottom lands beneath the bluff (Bawden, 1993). Surface ceramics from the site led to the identification of Tumilaca phase cemeteries and residential sectors (Bawden, 1989). Four cemeteries are located on the slopes of a ridge that climbs from the flat bluff to the summit of Cerro La Chimba. Three cemeteries are on the east side of the ridge and one is on the west side.

The Tumilaca phase structures are visible on the surface as low stone walls – likely the foundation for higher walls made of perishable materials, which have been interpreted as domestic buildings (Bawden, 1989). Surface architecture indicates considerable similarity with earlier Tiwanaku residential architecture in the Moquegua Valley (Bawden, 1993). Tumilaca phase residential units at the site comprise sets of interconnected small rooms arranged along terraces (Bawden, 1989, 1993), which are often associated with external patio spaces. The units contain evidence for cooking activities with hearths, food refuse, and cooking vessels, as well as stone lined storage pits. Functional differences are evident between the internal spaces (Bawden, 1993). In contrast with Chen Chen, no evidence for large scale storage or non-residential architecture has been identified. The residential architecture at Tumilaca la Chimba appears very

⁸⁵ Tumilaca is taken from the name of the river tributary that runs to the east of the site. La Chimba (sometimes spelled La Chimpa) is a Quechua phrase translated as “place from across”, “the other side”, or “other bank of the river.”

similar to that identified at other Tumilaca sites in the vicinity, in particular Santa Rita la Chica, Cerro San Miguel and with Tumilaca phase occupations on the slopes of Cerro Baúl (Owen and Goldstein, 2001; Sims, 2006; Williams and Ruales, 2002). There is no evidence for occupation of the site before the Tumilaca inhabitation. Tumilaca la Chimba, then, represents one of several sites established after Tiwanaku state collapse in Moquegua.

Late Intermediate Period (LIP), or Estuquiña, structures at Tumilaca la Chimba superimpose some of the Tumilaca residences (Figure 26). Previous investigators have suggested that the Estuquiña occupation extended beyond the Tumilaca occupation to the east (Bawden, 1989). Surface collections conducted across the site in 2007 (Appendix I) indicate that the Tumilaca residential sector actually did stretch as far east as the Estuquiña sector, if not further. Evidence of terracing on the slope of Cerro La Chimba suggests that its Tumilaca inhabitants may also have utilized areas of the site that it had been thought were unused by either Tumilaca or Estuquiña populations.

The surviving walls of the Estuquiña structures are considerably larger than those from the Tumilaca phase. Approximately thirty-five LIP rooms have been identified, arranged in two clusters (Bawden, 1993). These structures also contain evidence for household activities, specifically cooking, although in contrast with the Tumilaca phase rooms, there appears to be no functional difference between the rooms (Bawden, 1993). Pottery retrieved from these rooms is distinct from Tiwanaku/Tumilaca styles, consisting of shallow bowls, and ‘boot-pots’ (Bawden, 1989) and have been associated with LIP occupations throughout the Moquegua Valley (Burgi, et al., 1989; Lozada Cerna, 1987; Stanish, 1985). A plaza, measuring approximately 50m by 50m, is associated with the LIP component (Bawden, 1993). No LIP cemetery has been identified at Tumilaca la Chimba, although several Estuquiña tombs, including ‘proto-*chullpas*’

(Williams, 1990), are situated throughout the site, in both LIP structures, and in the Tumilaca phase residential sector. These tombs are on average larger in diameter than those in the Tumilaca cemeteries. Although stone lined, as many of the Tumilaca tombs are, the construction of Estuquiña tomb walls is more haphazard; smaller, irregular stones were utilized and extensively filled in with mortar.

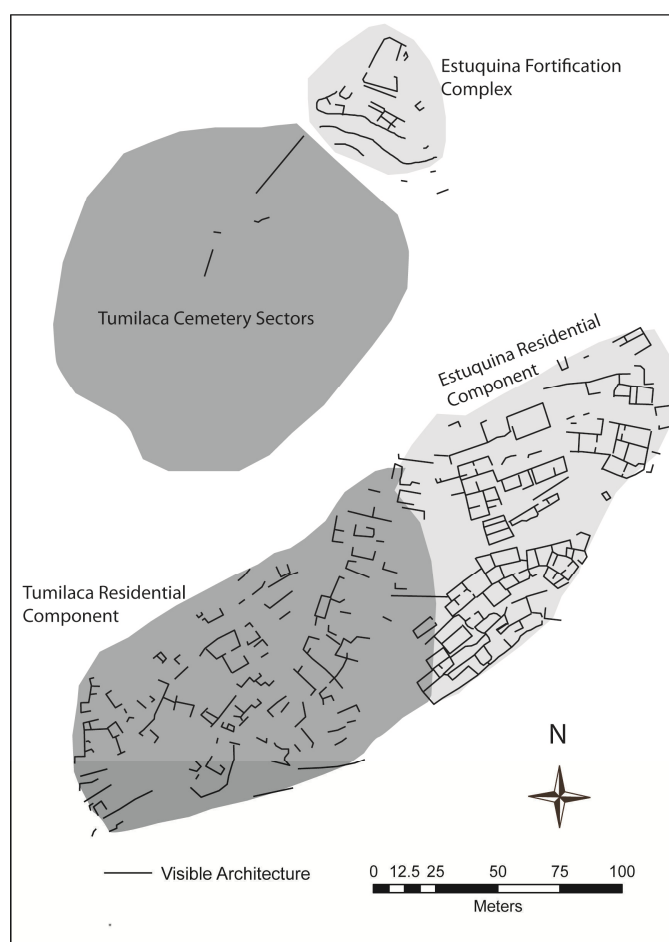


Figure 26. Location of Proposed Tumilaca and Estuquiña components at Tumilaca la Chimba.

The final architectural component of the site is a fortification complex located on the summit of Cerro La Chimba. The complex is comprised of a series of defensive walls, which surround a set of rooms. Architecturally, the stone walls are similar to those in the Estuquiña residential sector. This, taken with the pattern of Late Intermediate Period fortifications in the region, has supported the idea that the fortification complex post-dates the Tumilaca occupation of the site.⁸⁶

No radiocarbon dates existed for Tumilaca la Chimba before this project. Dating of the various architectural and cemetery components had relied on architecture and ceramics, and similarity with other sites in the vicinity, some of which have been radiocarbon dated.⁸⁷ Occupation at Tumilaca la Chimba appears to be limited to the late Middle Horizon and the Late Intermediate Period. Today, a small community of subsistence farmers lives approximately 1km from Tumilaca la Chimba.⁸⁸ Farming is largely concentrated beneath and to the south of the bluff, along the river. Recent attempts to farm more closely to the site have contributed to destruction of certain contexts. Ongoing looting, particularly in the cemetery sectors, has also greatly damaged the integrity of the site. The cemeteries are littered with human skeletal remains and pottery sherds, and open, emptied tombs are evident in all four of the cemetery sectors. The

⁸⁶ The construction in the 1980s of an electrical tower on the summit of the hill removed surface ceramics and destroyed the integrity of archaeological deposits in the middle of the fortification complex.

⁸⁷ Materials from Tumilaca houses at Santa Rita la Chica, located two *quebradas* down-valley, date between AD 860 and 1220.

⁸⁸ Until land reforms in 1968, this part of the Moquegua Valley was part of a large *hacienda* owned by Jose Castro. One of the *hacienda* houses was located on the path to the archaeological site. Before functioning as part of the *hacienda*, the building was a church. It is now ruined and stands on the edge of one of the modern small holdings. Some of the families currently living in the area were employed by the *hacienda* (personal communication, Maria Huatta, current resident of Tumilaca, 25th June 2010).

site has been looted since at least before the 1980s, as the earliest researchers at the site report considerable evidence of '*huaquero*' activity (Pari Flores, 1980). Unfortunately, the site remains attractive to looters today.⁸⁹

7.2 History of Research at Tumulaca la Chimba

The first archaeological investigations at Tumulaca la Chimba were carried out in 1980 by Romulo Pari Flores, and the results were presented in his Bachelor's thesis, at the Universidad Catolica 'Santa Maria,' Arequipa. Pari's excavations were concentrated in the cemetery sectors. The exact location of his excavations is unclear from the thesis, although he reports that the excavated area covered approximately 300m². However, his trenches remain visible today, and indicate that his excavations were limited to one cemetery.⁹⁰ Pari's team recovered ceramics in a surface collection of the excavation area, but these materials do not appear to have been subject to laboratory analysis (Pari Flores, 1980). A total of 14 intact tombs were excavated, and a further 31 looted tombs were located within the limits of excavation. Tombs were generally no more than 35cm below the surface. All intact tombs comprised a cap-stone of one or more stone slabs, held in place with mortar. Tombs are referred to as cists, more or less circular in shape. Tomb walls were constructed from irregular stones, held in place with mortar. Tomb floors were of natural earth (Pari Flores, 1980). Pari makes no mention of deviations from the stone lined cist tomb.

⁸⁹ Personal communication, Justa Falcon Queya. Resident of the hamlet adjacent to the site, part of the larger community of Tumulaca, Department of Moquegua, Peru, 15th June 2007.

⁹⁰ This cemetery was Unit 45 in the 2006/7 excavations.

Discussion of grave inclusions is limited to detailed descriptions and drawings of the intact ceramic vessels. These included *keros*, *cuencos*, *jarras*, *jarritos* and *jarros*.⁹¹ Vessels were red slipped and decorated with a range of anthropomorphic, zoomorphic and geometric motifs (Pari Flores, 1980). Pari's drawings suggest considerable similarity with the Tumilaca ceramics described from other sites in the valley (Goldstein, 1985, 2005; Owen and Goldstein, 2001). Pari's excavation and analysis led him to conclude that inhabitants of Tumilaca la Chimba were influenced by or had connections with Tiwanaku and/or altiplano populations. Unfortunately, although intact ceramic vessels were recovered and described from the tombs at Tumilaca la Chimba, no other material is reported on. Skeletal remains were not recovered from the tombs⁹² and there is no mention of textile, lithic, or botanic materials.⁹³ The current location of the excavated vessels is unknown.

Following the inception of Programa Contisuyo, Contisuyo investigators visited the site in the early 1980s. At this point the site was designated U4 in the programa's nomenclature.⁹⁴ The site was divided into three units. Unit A contains the Tumilaca residences. Unit B includes the Late Intermediate Period residences. Unit C refers to the fortification complex on the summit of Cerro La Chimba (Bawden, 1989). In 1982, surface collections were made, and this material is currently curated in the Museo Contisuyo. The collected ceramics are stylistically Tumilaca and very similar to those recovered during the 2006/7 investigations. The first map of the entire site was produced during the 1982 research. The map of surface architecture, coupled with small

⁹¹ The single example of a *jarro* appears to be a small, squat undecorated one-handled vessel.

⁹² Personal Communication, Romulo Pari Flores 2008.

⁹³ In 2007, attempts were made to relocate Pari's excavated contexts in the visible trenches, in an effort to recover skeletal remains and associate them with the described ceramic vessels. This proved impossible, due to errors in the original maps of the 1980 excavations.

⁹⁴ U refers to Upper Valley.

scale excavations in 1983 in the area of the site where Estuquiña residential architecture superimposes Tumilaca residential structures formed the basis of Bawden's work on ethnic replacement at the site (Bawden, 1993). Programa Contisuyo researchers also excavated several trenches in the cemetery sectors (Moseley, personal communication, 2007). These trenches are still visible today. They were located on the edge of the cemetery sector now referred to as Unit 44, and appear to have uncovered no tombs. Inventoried ceramics from these investigations are limited to surface material. In 1996, as part of his survey of the Upper Valley, Bruce Owen visited the site, and assigned it the survey ID numbers 486-492 (Owen, 1996).

The fieldwork that forms the basis of this thesis was initiated in response to threats to the site. Inhabitants of the small homesteads near Tumilaca la Chimba practice subsistence agriculture on the valley bottom, and agriculture in the upper valley is still largely dependent on irrigation. In 2004, as part of agrarian expansion projects by local farmers, archaeological contexts at Tumilaca la Chimba were damaged by the construction of an irrigation canal. Subsequent use of this canal inundated parts of the site with irrigation waters. The cemetery sectors were particularly badly damaged. Intervention by the local INC stopped ongoing use of the canal,⁹⁵ and rescue excavations were begun at the site in 2006. These excavations were continued in 2007, and the materials analysis was completed in 2008.

7.3 Excavation Nomenclature

The 2006 and 2007 excavations at Tumilaca la Chimba were conducted under the auspices of Proyecto Arqueológico Cerro Baúl. Therefore, nomenclature used in the following discussion is derived from the larger project. When the site of Cerro Baúl was delimited,

⁹⁵ The 2004 canal is no longer in use, but a reservoir and a new canal were built on the edge of the site in 2009, near the Estuquiña residential sector, further damaging archaeological contexts. The INC again intervened, but the interplay between agrarian activity and preservation of the local patrimony remains a problematic issue in the Moquegua Valley.

Tumilaca la Chimba was included within the site limits. As such, it is considered a sector of the site of Cerro Baúl, and was designated Sector M.

The order of nomenclature beneath sector is “Unit”. Each unit in Proyecto Arqueológico Cerro Baúl is assigned a unique number regardless of sector. At Tumilaca la Chimba, each cemetery was designated a Unit. The cemeteries on the east side of the ridge are Units 44, 45, and 46. The single cemetery on the west side is Unit 47 (Figure 27). Based on visual evidence, the limits of each cemetery were mapped using GPS, and they differ considerably in spatial extent. Unit 44 is 620m², Unit 45 is 860m², Unit 46 is 660m², and Unit 47 is 1130m². Ground penetrating radar in 2007 confirmed that the four cemetery sectors are spatially discrete.⁹⁶

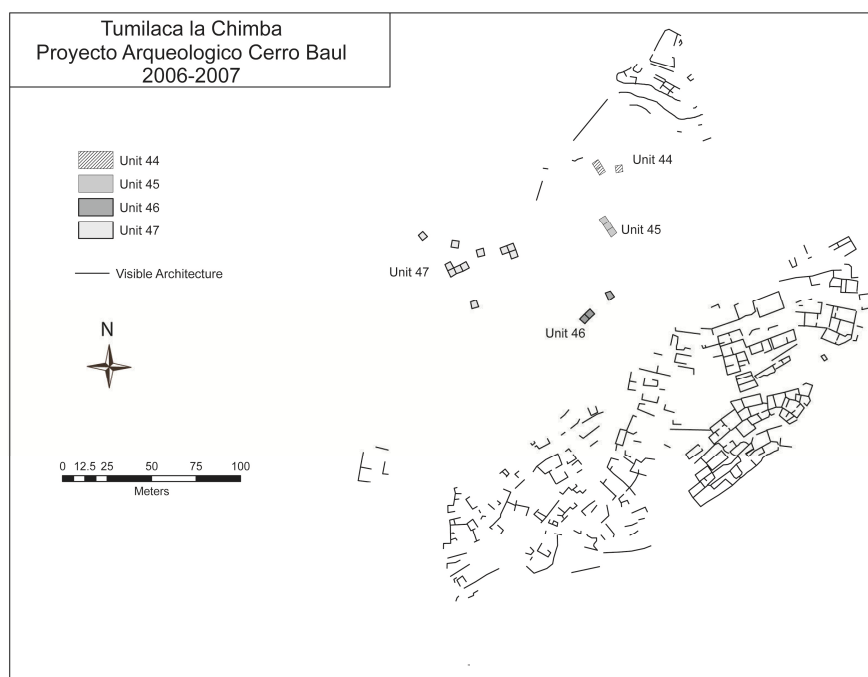


Figure 27. Location of excavated units 2006-2007.

⁹⁶ A Mala Geoscience X3M ground penetrating radar instrument was used to identify evidence of subsurface voids. The instrument has a 500 MHz antenna, and parallel profiles were run 1m apart on the edges of the four cemetery sectors.

Within each unit, excavation areas were labeled A, B, C, D and so forth. Excavation areas measured 4 x 4 meters. Within each unit (i.e. regardless of area), tombs were labeled 1, 2, 3, and so forth. Horizontal excavation nomenclature also corresponds with that of Proyecto Arqueológico Cerro Baúl. Units were excavated in natural layers, labeled in beginning with S for surface, and then in alphabetical order (A, B, C, etc.).

7.4 Sampling the Cemeteries

The only cemetery excavations at Tumilaca la Chimba prior to this project had concentrated exclusively on Unit 45 (Pari Flores, 1980). Given the potential significance of spatial arrangement in examining intra-community corporate identities, sampling all four of the cemeteries was vital. The aim of locating and excavating intact burials as much as possible also guided sampling decisions. Intact contexts are often found on the edges of looted cemeteries in southern Peru, and so an attempt was made to excavate at the edges as well as the center of cemetery sectors (Lozada, personal communication, 2006).

In 2006, excavations were concentrated in the cemetery on the western slope of the ridge, Unit 47, the largest of the four cemeteries at the site. 11 excavation areas were excavated (176 m²) and a total of 27 burial contexts recovered. In 2007, all three cemeteries on the eastern slope of the ridge were sampled (Units 44-46). Three excavation units were placed in each of the cemeteries, and 48m² excavated in each. Six burial contexts were recovered in Unit 44, 16 in Unit 45 and 15 in Unit 46.⁹⁷

A total of 64 burial contexts were excavated at Tumilaca la Chimba from the four spatially distinct cemetery sectors. Of these 64 contexts, one was subsequently deemed not a

⁹⁷Excavations were conducted and materials analyzed according to the protocols detailed in Appendix B. Appendix H details the small excavation in the residential sector and Appendix I reports on the surface collection conducted across the site.

tomb (46-7) and another was a questionable tomb (45-16). Removing these two contexts, 29% of excavated tombs were intact.⁹⁸

⁹⁸ The frequency of intact tombs varied across the site. 34% of tombs on the eastern slope were intact. Only 22% of excavated tombs on the western slope (Unit 47) were intact.

TABLE IX

EXCAVATED BURIAL CONTEXTS FROM TUMILACA LA CHIMBA

Tomb No.	Sector	Tomb Type	Tomb Shape	Outer Ring?	Sex	Age Category
44-1	44	SLC	Circular	Yes	Male	Mid Adult 2
44-2	44	SLC	Circular	Yes	Unknown	Infant
44-3	44	SLC	Circular	Yes	Unknown	Adult
44-4	44	SLC	Circular	Yes	Unknown	Adult
44-5	44	SLC	Circular	Yes	Male	Old Adult
44-6	44	SLC	Circular	Yes	NA	NA
45-1	45	SLC	Circular	No	Probable Female	Adolescent
45-2	45	PSLC	Circular	Yes	NA	NA
45-3	45	SLC	Circular	No	Unknown	Child
45-4	45	SLC	Circular	No	Unknown	Child
45-5	45	SLC	Circular	No	Unknown	Child
45-6	45	SLC	Circular	No	Unknown	Mid Adult 2
45-7	45	SLC	Circular	No	Unknown	Child
45-8	45	SLC	Circular	No	Unknown	Infant
45-9	45	Pit	Circular	Yes	Unknown	Child
45-10	45	PSLC	Circular	No	NA	NA
45-11	45	SLC	Circular	No	Unknown	Child
45-12	45	SLC	Circular	No	Unknown	Juvenile
45-13	45	SLC	Circular	Yes	Unknown	Child
45-14	45	SLC	Circular	No	Unknown	Juvenile
45-15	45	SLC	Circular	Yes	Unknown	Adolescent
45-16	45	NA	NA	NA	Male	Mid Adult 1
46-1	46	SLC	Circular	Yes	Probable Male	Mid Adult 1
46-2	46	SLC	Circular	Yes	NA	NA
46-3	46	PSLC	Oval	No	Probable Male	Mid Adult 2
46-4	46	PSLC	Oval	No	Probable Male	Young Adult
46-5	46	SLC	Circular	No	Unknown	Child
46-6	46	Pit	Circular	No	Unknown	Juvenile
46-7	46	NA	NA	NA	NA	NA
46-8	46	Pit	Circular	No	Unknown	Adolescent
46-9	46	Pit	Circular	No	Unknown	Child
46-10	46	Pit	Oval	Yes	Male	Old Adult
46-11	46	Pit	Circular	Yes	Unknown	Infant
46-12	46	Pit	Circular	Yes	Unknown	Fetal
46-13	46	Pit	Circular	Yes	Unknown	Child
46-14	46	PSLC	Circular	No	Male	Adolescent
46-15	46	PSLC	Circular	No	Female	Adolescent
47-1	47	PSLC	Circular	No	Unknown	Child
47-2	47	SLC	Circular	No	Unknown	Child

TABLE IX

EXCAVATED BURIAL CONTEXTS FROM TUMILACA LA CHIMBA

Tomb No.	Sector	Tomb Type	Tomb Shape	Outer Ring?	Sex	Age Category
47-3	47	Pit	Circular	Yes	NA	NA
47-4	47	PSLC	Circular	Yes	Unknown	Adolescent
47-5	47	Pit	Circular	Yes	NA	NA
47-6	47	SLC	Circular	Yes	Unknown	Adolescent
47-7	47	SLC	Circular	Yes	Unknown	Child
47-8	47	Pit	Circular	Yes	Unknown	Child
47-9	47	SLC	Circular	No	Unknown	Infant
47-10	47	Pit	Circular	No	Probable Female	Young Adult
47-11	47	PSLC	Circular	No	Unknown	Child
47-12	47	SLC	Circular	No	NA	NA
47-13	47	Pit	Circular	No	Unknown	Child
47-14	47	SLC	Circular	Yes	Unknown	Juvenile
47-15	47	SLC	Circular	No	Unknown	Fetal
47-16	47	PSLC	Circular	No	Male	Old Adult
47-17	47	SLC	Circular	No	NA	NA
47-18	47	SLC	Circular	Yes	Unknown	Juvenile
47-19	47	PSLC	Circular	No	Unknown	Child
47-20	47	Pit	Circular	No	Male	Young Adult
47-21	47	SLC	Circular	Yes	Unknown	Child
47-22	47	PSLC	Circular	Yes	Female	Young Adult
47-23	47	SLC	Circular	No	Unknown	Infant
47-24	47	PSLC	Circular	Yes	Unknown	Child
47-25	47	PSLC	Circular	No	Female	Young Adult
47-26	47	Pit	Circular	No	NA	NA
47-27	47	SLC	Circular	Yes	Unknown	Adolescent.

7.5 Mortuary Data from Tumilaca la Chimba

Appendix E describes cemetery excavations and materials analyses in detail. The following is an overview of the funerary data collected from Tumilaca la Chimba.

7.5.1 Cemetery Organization

Tombs were grouped in cemeteries (units), but within cemeteries they appear to have been arranged in lines oriented east-west.⁹⁹ Cardinal directions were repeatedly taken into account in mortuary behavior at the site, evident in the placement of burials, and in the placement of bodies and grave inclusions within burials (see below).

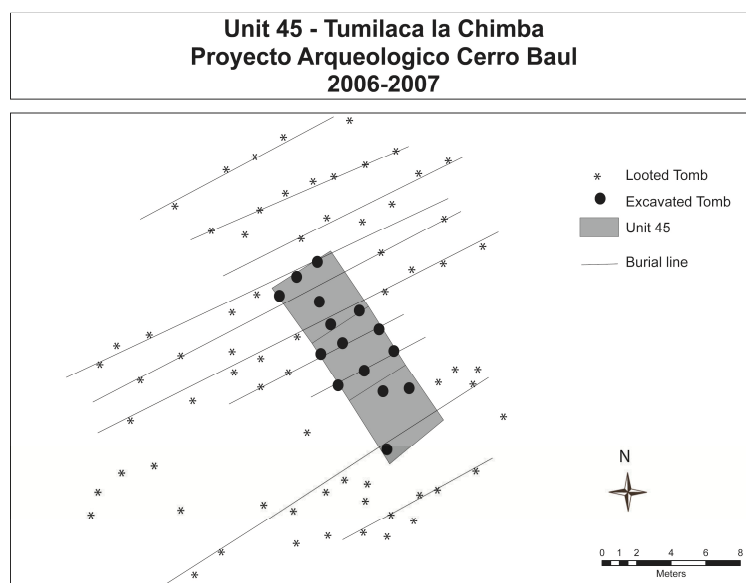


Figure 28. Burial lines aligned east-west, Unit 45, Tumilaca la Chimba.

⁹⁹ Unfortunately, the alignment of burials was not recognized until the end of excavations at Tumilaca la Chimba. As with previous researchers (and looters) at the site, we oriented excavation trenches along the natural slope of the hill. The east-west burial lines cut across the natural alignment. I think it possible that these lines represent some form of intra-corporate social grouping, perhaps family lineages. However, we did not sample enough of any one line to fully examine the relationships between different burials in them.

7.5.2 Tomb Architecture

All tombs were subterranean, and were classified based on the construction of their walls. Of the 62 contexts, securely identified as burials, 24 were unlined pits, 23 were stone lined cists (Figure 29) and 15 were partially stone lined pits.

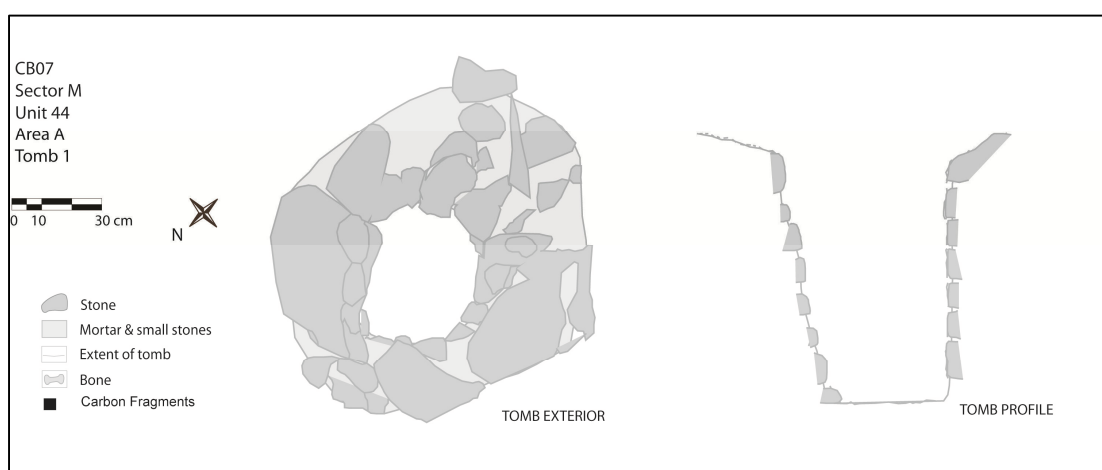


Figure 29. Stone-lined grave, Tumilaca la Chimba.

Although stone caps were common, found on 74% of intact graves, there were several examples of intact tombs without capstones. Stone rings were found around 37% of tombs.¹⁰⁰ These consisted of an outer circle of stones, averaging 3m in diameter and 0.5m in height, around the tomb (Figure 30).

¹⁰⁰ Outer stone rings were possibly present on an additional two tombs.

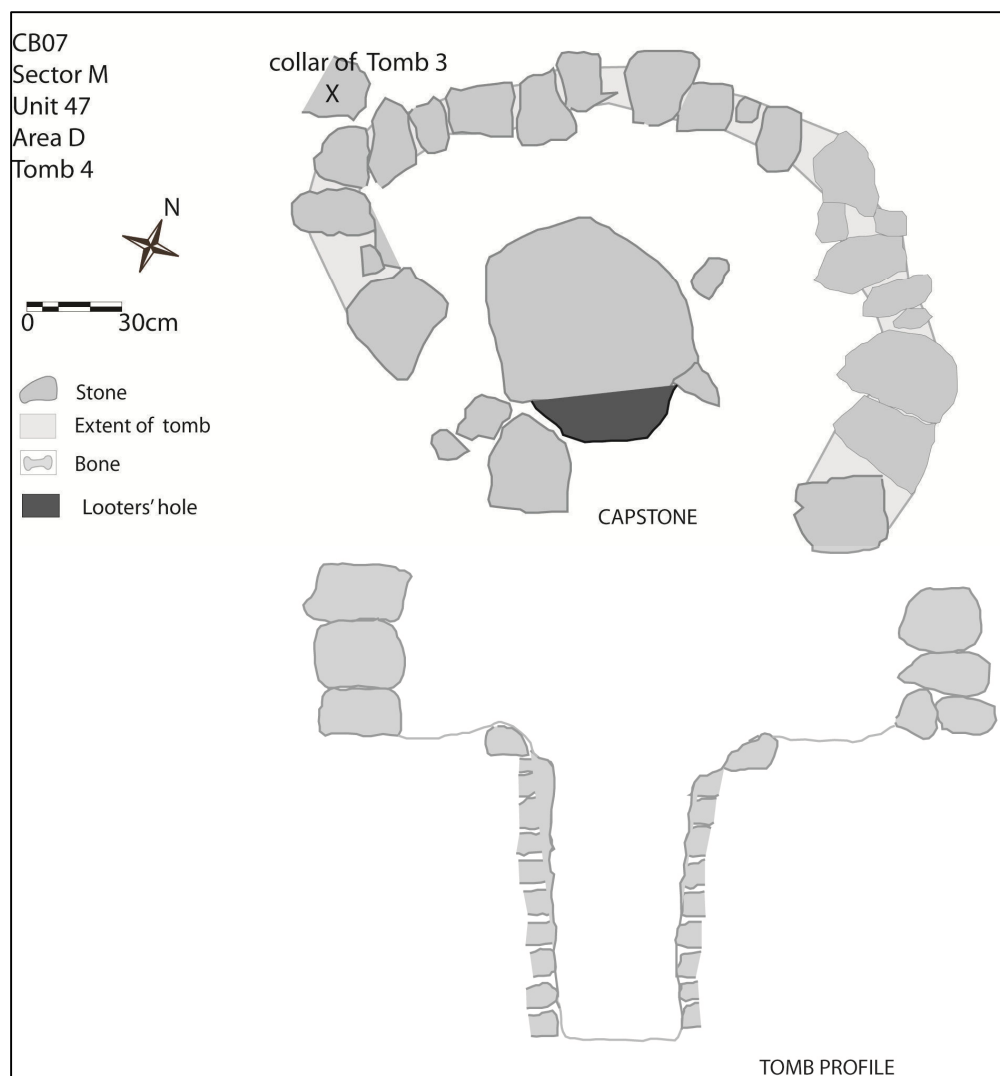


Figure 30. Example of tomb with outer stone ring, Tumilaca la Chimba.

Although the majority of tombs (87%) were roughly circular in shape, there were five that were oval shaped and three that were in-between oval and circular. Data was recorded on tomb mouth preparation for 60 tombs. 46 of these were prepared (17 were made of stones, and 29 of stones and mortar). 84% of floors were circular in shape, but there were also seven oval floors (two of which were in tombs with circular mouths), two were in-between circular and

oval, and one was recorded as oblong (45-2). Data on floor preparation was recorded for 61 tombs and 38% of these were prepared.

7.5.3 Human Remains

From the 64 contexts, a total of 53 skeletal individuals were sufficiently well preserved to be aged, sexed and analyzed for pathology.¹⁰¹ Both sexes and a broad age range (fetal to 50+) were represented. Sex was determined for all but four of the adult specimens, nine were identified male and six female.

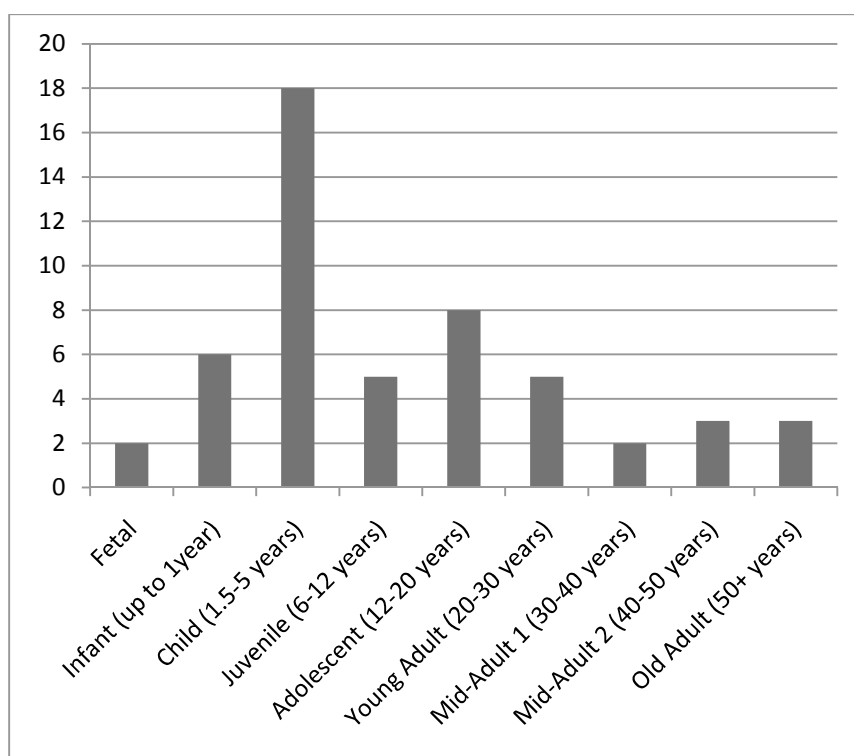


Figure 31. Frequency of age bands in the Tumilaca la Chimba sample.

¹⁰¹ Unlike at Chen Chen, where more arid environmental conditions contributed to the preservation of corpses, there were no mummified remains.

Both tabular (19 examples) and circumferential (3 examples) cranial modification was identified in the sample. Pathologies included *cribra orbitalia*, *porotic hyperostosis*, and some rare examples of tuberculosis. A sternal foramen was present in two individuals in Unit 47.¹⁰² There were several examples of robust muscle attachments in adult skeletons. Starbird's report (Appendix F) describes the skeletal analysis in more detail.

7.5.4 Body Treatment

All burials were single interments. Primary interments predominated, although there were two cases of possible secondary mortuary treatment (47-8 and 47-18). Body position was determined for 46 individuals. 42 were flexed and four were semi-flexed. Body arrangement was available for 45 individuals. 40 were seated, three were lying on their backs and two were on their sides. Body orientation was also determined for 45 individuals. 36 were facing east, two were facing northeast, four were facing southeast, and three (the individuals lying on their backs) were oriented face up, but with their feet pointing east.

7.5.5 Textiles

Preservation at Tumilaca la Chimba is not as good as at Chen Chen. No mummified individuals were recovered, and textiles were far more fragmentary. A total of 29 textile specimens were analyzed, although some of these were represented only by loose threads. *Mantas* (finely woven shawls) were evident in the sample. *Manta* warp threads averaged 9.58mm, and weft threads averaged 13.38mm. *Manta* warps had an average 7.88 threads per cm.

¹⁰² Sternal foramina are non-metric genetic traits. Two individuals represent 3.77% of the Tumilaca la Chimba sample. Both were in individuals buried in Unit 47 and these two examples represent 9.52% of the excavated Unit 47 sample. Forensic studies of the prevalence of sternum foramina indicate they occur in populations in frequencies between 4.5% and 7.7% (Cooper, et al., 1988; Yekeler, et al., 2006). Thus, although their identification in the sample was noted, and although their unique presence in the Unit 47 sample might support the argument that the cemetery sectors represent groups of related individuals, they are not unexpectedly frequent.

Several threads were identified by modern weavers as “*semi-torcido*.”¹⁰³ These threads are finely spun, but only loosely plied. This reduces the time and effort required to produce a workable thread. Contemporary weavers use “*semi-torcido*” threads only as a weft in warp-faced weaves as they will not be visible. No definite *frazadas* (thickly woven blankets) were identified in the Tumilaca la Chimba sample, but given preservation, I do not think this is proof that they were never included. Six textile specimens were identified as cotton.¹⁰⁴ Of the 19 samples for which weave could be identified, nine were warp faced and ten were an interlocking weave. Two specimens had additional colors (one and two additional colors respectively), both were in Unit 45. There were no examples of raised weave, *chichilla* or other embellishments on textiles. Corpses were held in position by braided or twisted fiber rope. Rope was recovered from 16 graves. Of the eight ropes that could be identified as twisted or braided, four were twisted (one Z, three S) and four braided.¹⁰⁵

7.5.6 Ceramics

Ceramic material, both complete vessels and fragments, was recovered from graves (Figure 32). 33% of intact graves contained ceramic vessels. Only 12 complete vessels were recovered from graves during the 2006 and 2007 excavations. However, the ceramic fragments recovered as well as the vessels drawn in Pari’s thesis (1980) offer supplementary material. Although similar forms (*keros*, *tazones*, pitchers) were buried with the Tumilaca dead, and

¹⁰³ Ysidora Yony Nina Jorge and Carmen Jorge Flores, personal communication, 9th June 2008.

¹⁰⁴ Determinations of textiles as cotton is supported by Goldstein’s determination of cotton fibers in the macrobotanical analysis of fine screen samples from the tombs (Appendix G).

¹⁰⁵ Braided rope that has fallen apart results in two twisted strands, and possibly this difference in frequency is a result of that. However, this issue was taken into account during analysis, and identifications as twisted or braided were only made when certain.

although many of the designs were similar (geometric motifs, birds) there are absences compared with the Chen Chen ceramic material. Largely these are in line with those reported by earlier researchers, specifically staff gods, but also felines and condors (Bermann, et al., 1989; Goldstein, 1985; Owen and Goldstein, 2001).

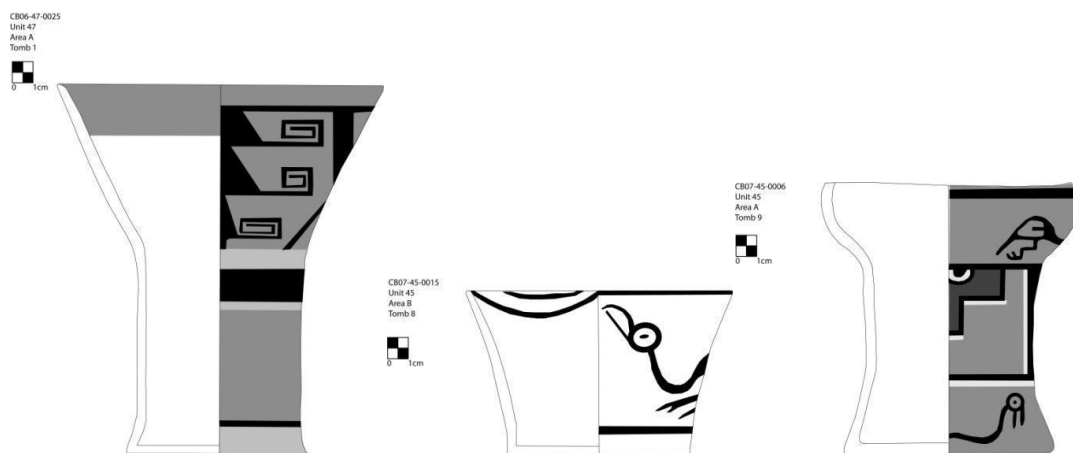


Figure 32. Ceramic vessels recovered from burials at Tumilaca la Chimba.

There was a modeled snake on a large *kero* in tomb 46-10 (Figure 33). This was identified as likely a depiction of the Red Tailed Boa Constrictor, native to lowland Bolivia and Peru (Costa, personal communication 2010). Pari-Flores (1980) depicts a very similar vessel recovered from a burial he excavated at Tumilaca la Chimba. Possible snakes are painted on some Chen Chen *tazones*, but none that could be identified as a particular species.

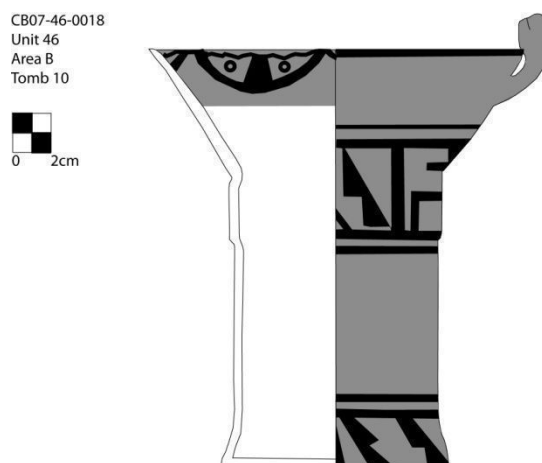


Figure 33. *Kero* with modeled snake-head, tomb 46-10, Tumilaca la Chimba.

As with the Chen Chen material, ceramics from Tumilaca la Chimba were analyzed using p-XRF, and a smaller sample was exported to the US and analyzed using LA-ICP-MS. The paste of 78 sherds was analyzed using p-XRF. Statistical analysis (again using GAUSS) run on the p-XRF data indicated that the majority of analyzed ceramic material from Tumilaca la Chimba groups together chemically (Figure 34). However, there appears to be more variation in the core chemical group than at Chen Chen. Greater chemical variability was apparent in the LA-ICP-MS data as well as the p-XRF data.

The lower detection limits, wider range of analyzed elements and the existence of comparable LA-ICP-MS data on local clay sources were important in examining clay procurement strategies at Tumilaca la Chimba. 47 ceramic sherds from Tumilaca la Chimba were analyzed using LA-ICP-MS.¹⁰⁶ As with the Chen Chen material, ceramics at Tumilaca la Chimba were produced using clays from the Moquegua clay group (Figure 35). Despite the presence of clays in the Tumilaca drainage, potters at Tumilaca la Chimba did not use Tumilaca

¹⁰⁶ These included sherds from both the excavated mortuary and domestic contexts.

group clays, but instead continued to procure raw clays that fall into the same chemical group as those used at Chen Chen (Figure 36).

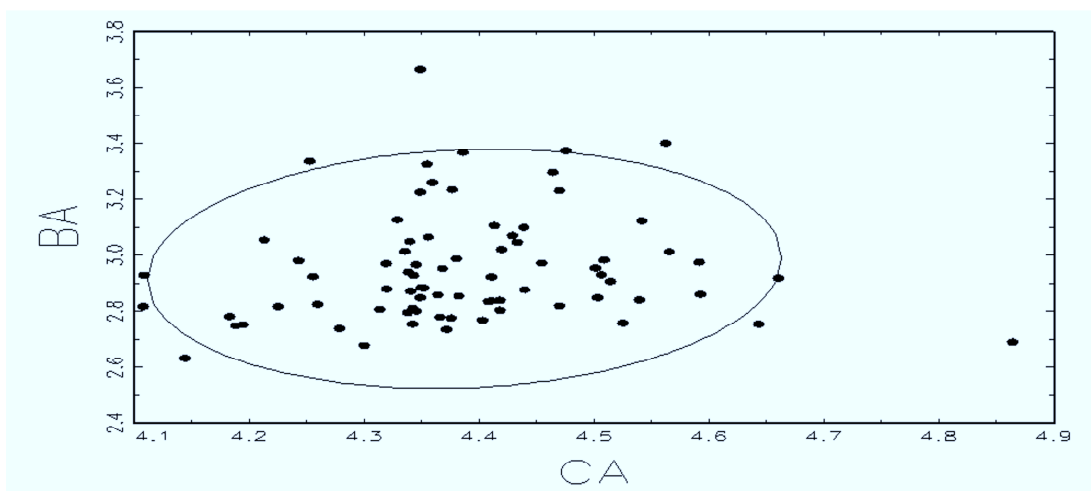


Figure 34. Bivariate plot of logged (base 10) Barium and Calcium concentrations of ceramic sherds from Tumilaca la Chimba derived through p-XRF analysis. Ellipses delimit 90% confidence boundaries.

There is some overlap between the Tumilaca la Chimba ceramic sherds and Otorá 1 clays. However, during LA-ICP-MS analysis of the clay, these clays did not discriminate well from the Moquegua clays. Further, the Tumilaca la Chimba ceramics do separate from the Otorá 1 clays on particular elements (Figure 37)

Although likely made from clays from the same clay group as Chen Chen ceramics, the Tumilaca la Chimba sherds are more chemically diverse. They also have higher concentrations of Si, but lower Li concentrations than ceramic material, and this is possibly the result of using volcanic ash as a temper (Golitzko, personal communication 2010).

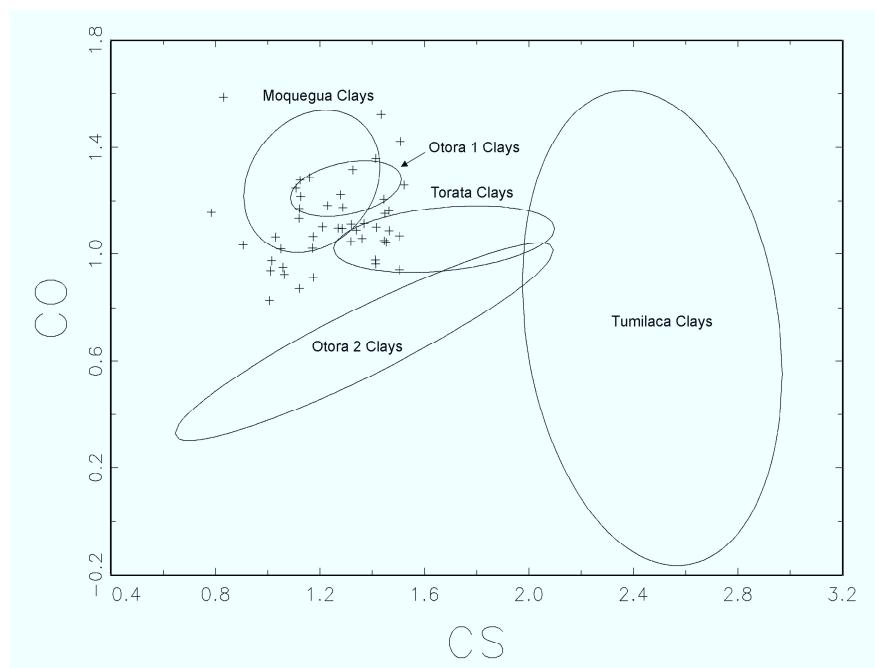


Figure 35. Bivariate plot of logged (base 10) Cobalt and Cesium concentrations of ceramic sherds from Tumilaca la Chimba and the five identified clay groups. Ellipses delimit 90% confidence boundaries.

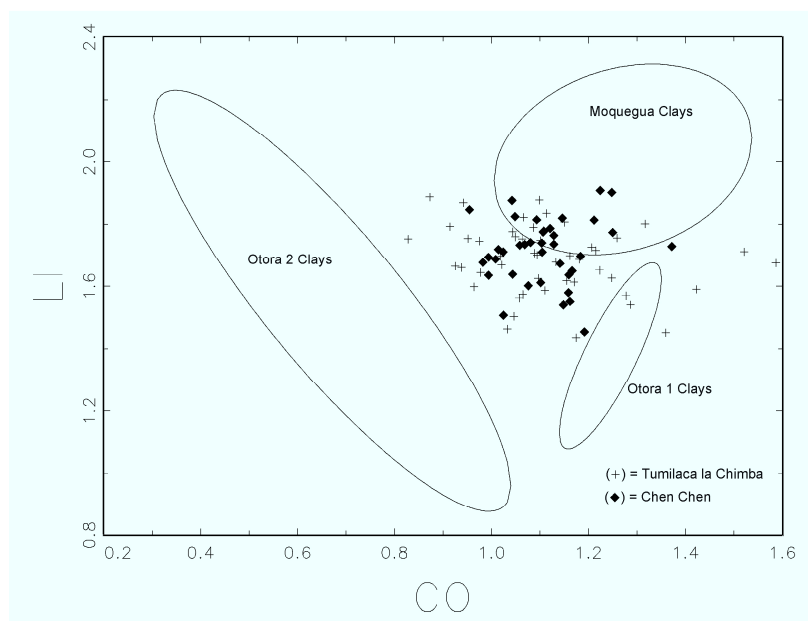


Figure 36. Bivariate plot of logged (base 10) Lithium and Cobalt concentrations of ceramic sherds from Chen Chen and Tumilaca la Chimba and the Moquegua, Otor 1 and Otor 2 clay groups. Ellipses delimit 90% confidence boundaries.

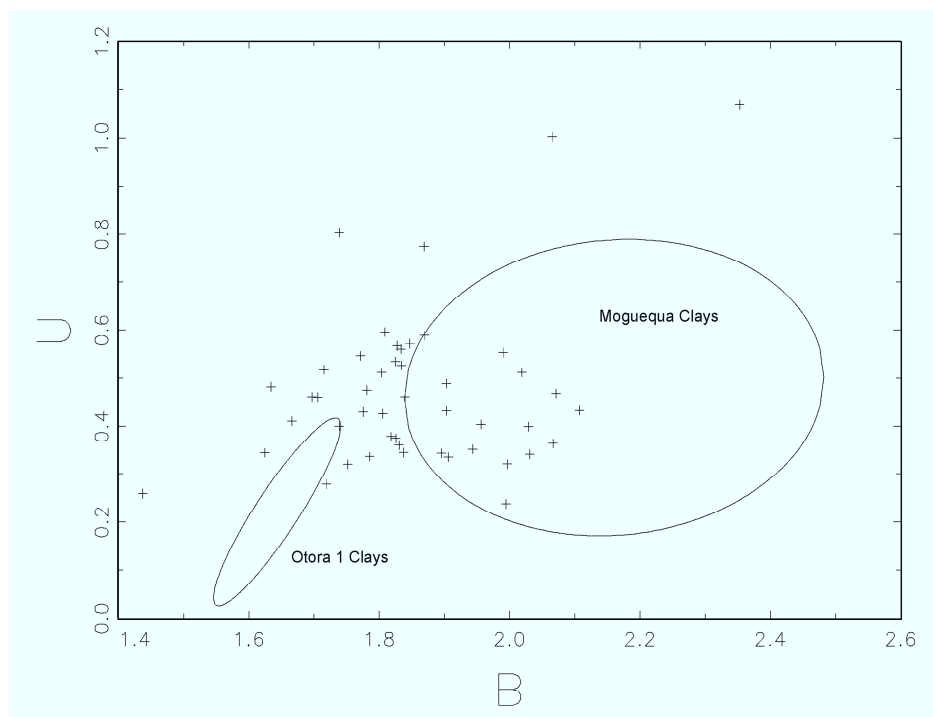


Figure 37. Bivariate plot of logged (base 10) Uranium and Boron concentrations of ceramic sherds from Tumilaca la Chimba and the Moquegua and Otorá 1 clay groups. Ellipses delimit 90% confidence boundaries.

7.5.7 Other Grave Inclusions

Spoons were recovered from several graves, as were possible weaving tools, baskets and gourds. Jewelry, as sodalite pendants or chrysocolla beads, was recovered at Tumilaca la Chimba but not at Chen Chen apart from in Sector 29. Camelid feet were recovered from three graves and a camelid atlas was found in a fetal burial.

Lithic material was rare in the cemeteries, although some flakes were found, as well as some obsidian.. Most obsidian was recovered from the surface, but there were examples included in graves. A total of 14 obsidian samples were analyzed using p-XRF. Of these only one was recovered from inside a grave (Tomb 45-13). The other samples were all found in level

S/A (the combined surface and initial sub-surface layer), of either specific tombs or larger excavation areas. Sourcing work on Andean obsidian has identified that three chemically distinct sources provided the majority of obsidian in southern Peru; the Alca, Chivay and Quispisisa sources. Comparison of the XRF readings for the Tumilaca la Chimba obsidian with published averages for these sources indicate that material from at least two of these obsidian sources (Glascocks, et al., 2007). In line with existing research on obsidian in the Upper Moquegua Valley, the elements Mn, Sr and Rb were considered the most appropriate for discriminating the obsidian sources that flakes and points recovered from Tumilaca la Chimba came from. Of 14 analyzed obsidian pieces, five were assigned to the Alca source,¹⁰⁷ seven likely came from the Quispisisa source, and the other two were unassigned (Table X).¹⁰⁸

¹⁰⁷ Barium (Ba) ppm levels were low for the probable alca sources, compared with published data. They ranged between 609 and 766 ppm, instead of 952 – 1018 ppm for the three Alca sources reported by Glascock et al. However, Glascock et al. report an INAA reading for Ba and not an XRF reading. Other researchers in Moquegua using the same instrument, a portable XRF Innov-X Alpha Series instrument owned by the Field Museum, have reported similarly low Ba readings (Williams, et al., i.p.).

¹⁰⁸ The absence of lithic flakes in the Chen Chen sample is perhaps a result of different excavation protocols. However, the absence of obsidian and its presence at Tumilaca la Chimba is striking. I expect that even if other lithic material were not identified or recovered in the field, obsidian would have been.

TABLE X
PROVENANCE OF OBSIDIAN PIECES ANALYZED WITH p-XRF

Specimen No.	Probable Source	Context
CB07-44-0035	Unassigned	Unit 44 – Area C – Level S/A
CB07-46-0089	Alca	Unit 46 – Area A – Level S/A
CB07-45-0102	Quispisisa	Unit 45 – Area C – Level S/A
CB07-45-0102b	Quispisisa	Unit 45 – Area C – Level S/A
CB07-45-0105	Quispisisa	Unit 45 – Area A – Level S/A
CB07-45-0114	Alca	Unit 45 – Area B – Level S/A
CB07-45-0114b	Quispisisa	Unit 45 – Area B – Level S/A
CB07-45-0114c	Alca	Unit 45 – Area B – Level S/A
CB07-45-0114d	Unassigned	Unit 45 – Area B – Level S/A
CB07-45-0114e	Quispisisa	Unit 45 – Area B – Level S/A
CB07-45-0114f	Quispisisa	Unit 45 – Area B – Level S/A
CB07-45-0124	Alca	Unit 45 – Area B - Tomb 10 – Level S/A
CB07-45-0128	Alca	Unit 45 – Area B – Tomb 12 – Level S/A
CB07-45-0133	Quispisisa	Unit 45 – Area C – Tomb 13 – Level B

7.5.8 Macro-botanic Data

D. Goldstein's study of fine-screen soil samples taken from the graves represents a rare attempt to integrate paleo-botanic analysis in a Moquegua Valley mortuary study (Appendix G).¹⁰⁹ Although plant remains were sparse, their analysis revealed the presence of specific flowers (including *Sonchus* sp., *Schkuria* sp., and Asteraceae) and edible plants associated with particular burials, as well as the reduced presence of certain species typically recovered in large

¹⁰⁹ Lizette Muñoz Rojas' forthcoming *licenciado* thesis with PUCP, Lima, on paleo-botanic samples from Rio Muerto will provide comparative data from an Omo style Tiwanaku cemetery in Moquegua.

quantities from Middle Horizon contexts.¹¹⁰ Additional data on faunal and entomological remains recovered from the fine screen samples also contributes to the reconstruction of funerary behavior at the site. The relatively low number of fly pupae in the Unit 44 samples may indicate that some corpses were dried or de-fleshed before burial (D. Goldstein, Appendix G).

Alternatively, Goldstein also comments that the presence of beetle and ant exoskeletons may indicate that burials in Unit 44 did not take place during periods of fly seasonality. High incidents of charcoal in particular burial areas suggest that burning practices were utilized in funerary rituals in specific areas of the cemeteries.

7.5.9 Radiocarbon Dates from Tumulaca la Chimba

Fourteen radiocarbon dates were analyzed from the 2006/7 excavations, including one from the excavated domestic structure.¹¹¹ Three of these were determined from threads from woolen textiles recovered from graves. Four were fragments of wooden spoons, one was taken from a corn cob recovered from the floor of a tomb, and three were carbon. Two of the carbon deposits were within the tomb, and the third was from a hearth associated with the excavated residential context. These support the argument that the site dates to terminal Tiwanaku occupations in Moquegua. Further, dates recovered from the different sectors indicate that the four cemeteries were being used contemporaneously.¹¹²

¹¹⁰ *Z. mays* (maize) is represented in low frequencies in both the cemetery and the residential fine screen samples.

¹¹¹ One of the samples sent for radiocarbon dating produced a date so late (AD 1495-1953) that it was undoubtedly contaminated. Two others produced dates that are as early as Formative occupations in Moquegua. These two dates came from fiber rope, and I question whether their exceptionally early results (AD 601-890 and AD 359-657) were a product of the material dated. These three questionable dates are not listed in Table XI.

¹¹² All radiocarbon dates were analyzed at the AMS Facility at the University of Arizona, and were calibrated using the online Ox-Cal program with the IntCal 09 calibration curve.

TABLE XI
CALIBRATED RADIOCARBON DATES FROM TUMILACA LA CHIMBA

AA #	Context	Material	d13C	14C Age BP	Calibrated Date (2 sigma)
AA89672	45-12	Textile	-18.0‰	1,030 ± 53	890-1155
AA89673	46-1	Textile	-19.5‰	949 ± 33	1021-1160
AA89674	47-20	Textile	-13.7‰	832 ± 83	1026-1288
AA89686	47-21	Wood	-21.5‰	978 ± 34	995-1155
AA89687	47-16	Wood	-18.5‰	1,114 ± 34	828-1016
AA89688	44-1	Wood	-22.2‰	1,063 ± 34	895-1024
AA89689	45-15	Corn Cob	-10.5‰	735 ± 34	1220-1297
AA89690	45-13	Wood	-21.6‰	999 ± 34	977-1155
AA89693	46-9	Carbon	-22.8‰	997 ± 34	980-1155
AA89694	46-8	Carbon	-24.7‰	980 ± 34	993-1155
AA89695	48 (domestic)	Carbon	-25.6‰	950 ± 34	1020-1161

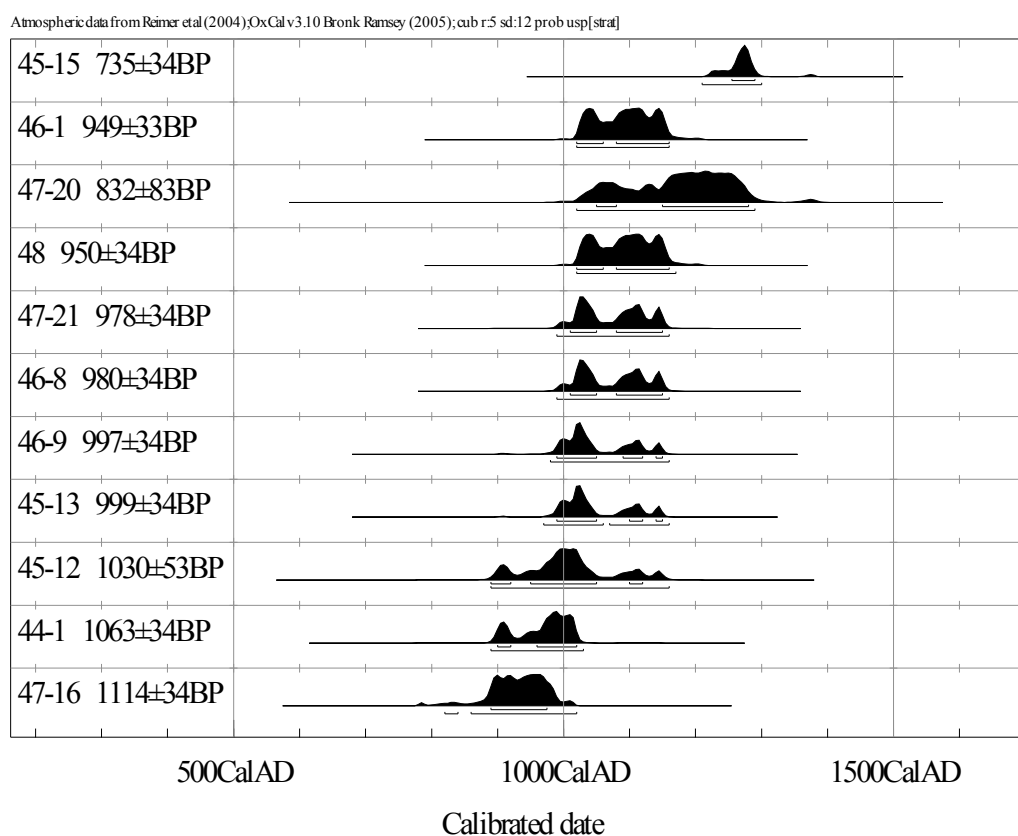


Figure 38. Plot of calibrated dates from Tumilaca la Chimba showing tomb from which sample was taken (48 refers to the domestic unit excavated in 2007).

7.6 Extra-Community Identities at Tumilaca la Chimba

By situating the Chen Chen data in the context of existing literature on contemporaneous Tiwanaku burials, I argued that during the height of state presence in Moquegua, mourners asserted particular extra-community identities rooted in affiliations extending far beyond the immediate site based community. There is considerably less data against which to compare the post-collapse burials from Tumilaca la Chimba. For the altiplano, Korpisaari's (2006) excavation of thirty-two burials at Tiraska provides the best comparative funerary data set. On the coast, Bruce Owen's excavations at El Algodonal provided data from thirty-four Ilo-Tumilaca/Cabuza graves (Owen, 1993). Aside from Pari's work at Tumilaca la Chimba itself, the only contemporaneous material from the Moquegua Valley is from looted burials cleaned out by Programa Contisuyo members at Omo M11 (Goldstein, 1989a).

Although limited, this literature does provide a framework for thinking about the extent to which mourners at Tumilaca la Chimba continued to demonstrate membership of identity networks that extended beyond their community or whether state fragmentation precipitated an internalized focus and a rejection of broader ideas about how to treat the dead.

There are notable parallels in funerary behavior at Tumilaca la Chimba and Tiraska (Korpisaari, 2006), the one Late Tiwanaku altiplano site for which there are considerable data. Parallels exist in tomb architecture, body position and cultural inclusions. I suggest that there are also similarities in spatial layout, with tombs oriented in east-west alignments as at Tumilaca la Chimba.¹¹³

¹¹³ Although not stated by Korpisaari (2006), and although limited excavation makes it difficult to recreate cemetery organization at Tiraska, based on Korpisaari's maps, I think that east-west alignments can be identified at Tiraska.

Similarities in funerary behavior between post-collapse sites in Moquegua and contemporaneous sites in the heartland do not prove ongoing interactions between the former colony and the altiplano, or that inhabitants at Tumilaca la Chimba were intentionally performing rituals that their lake shore cousins were. However, it is apparent that descendants of Tiwanaku state members continued to utilize ancestral funerary practices both at home and abroad.

Closer to the upper Moquegua Valley is El Algodonal, and there are notable similarities in funerary behavior between Tumilaca la Chimba and this coastal Tumilaca site. As at Tumilaca la Chimba, the dead were buried in stone lined graves and unlined pits, covered with large capstones. Again, I propose that an east-west alignment, like that at Tumilaca la Chimba and possibly Tiraska, structured the layout of tombs at El Algodonal. Treatment of the corpse was very similar to Tumilaca la Chimba, with individuals wrapped in woolen textiles and fiber ropes and placed in a flexed position. Corpses were accompanied by ceramic vessels, baskets, sandals, spoons and faunal remains.

Similarities between Tumilaca la Chimba and El Algodonal are not surprising. Radio-carbon dates from El Algodonal date the Tumilaca style occupation to ca. AD 960-1039 (Owen, 1993). Both sites likely represent communities of refugees from state centers in the middle Moquegua Valley. These communities brought with them life-ways and death-ways that their ancestors had in turn brought from the state heartland. Extra-community affiliations following the demise of the state were in part a product of political fragmentation. Groups that had been brought together within state period communities had now scattered, but as they continued to utilize ancestral rituals, so they materialized the new extra-community networks that developed out of population dispersal. Yet, there are also differences in mortuary practices between the two sites. Most conspicuously, the outer stone rings that are a feature of many burials at Tumilaca la

Chimba were not constructed at El Algodonal. Stanish (1985) argues that the rings indicate increasing status competition. If this is so then, arguably, communities that remained closer to previous centers of state power became engaged in more contentious socio-political relationships than their coastal contemporaries.

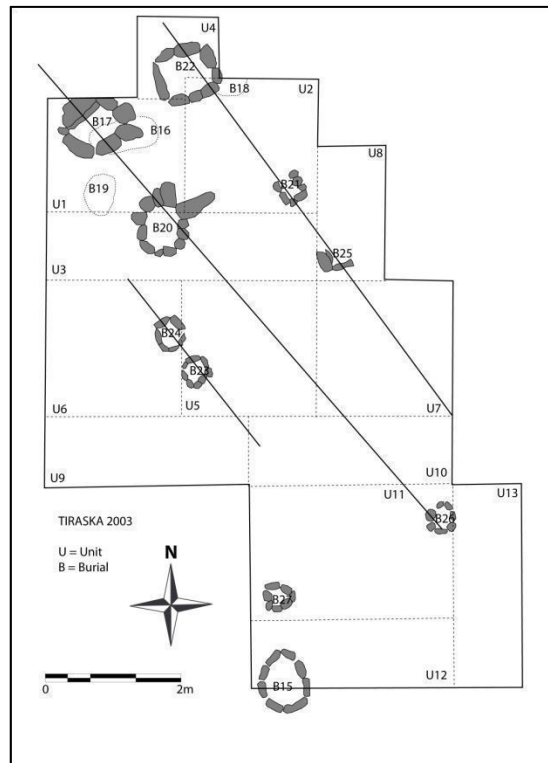


Figure 39. Map of Tiraska showing possible east-west alignments (redrawn from Korpisaari 2006).

Common notions about how to treat the dead are also evident between Tumilaca la Chimba and other post-collapse sites within the Moquegua Valley. Tombs at Omo M11 and in the Tumilaca cemetery at Omo M10 did have outer stone rings like those at Tumilaca la Chimba, and similarities are also apparent in body treatment and position, and cultural inclusions (Goldstein, 1989a).

Mourners at Tumilaca la Chimba maintained ancestral heartland Tiwanaku funerary rituals. These rituals were also practiced by other post-collapse communities, in the altiplano and along the coast. However, developments in funerary behavior, specific to the Moquegua Valley, are apparent at Tumilaca la Chimba. There, mourners began to construct additional stone rings around tombs. While these rings have also been seen at M11 and at cemetery N at M10, they are not reported for the post-collapse cemeteries at Tiraska, in the heartland, or for El Algodonal, on the coast. Although mourners at Tumilaca la Chimba continued to use mortuary rituals that indicate identities rooted in broader networks, they also began to behave in ways particular to their immediate locality. This marks a shift from the earlier period, when funerary practices distinguished Chen Chen cemeteries from Omo cemeteries but were not differentiated between valleys.

7.7 Community Identity at Tumilaca la Chimba

The hypothesis that inhabitants of the upper valley post-collapse Tumilaca communities represent refugees fleeing Tiwanaku towns in the middle valley was supported by similarities in material culture and residential architecture (Bermann, et al., 1989; Goldstein, 2005; Owen, 2005; Owen and Goldstein, 2001). Recently, Sutter's non-metric dental trait analysis demonstrated that those buried at Tumilaca la Chimba were more closely biologically related to individuals buried at Chen Chen than to local populations (Sutter and Sharratt, 2010). But to what extent did the biological descendents of Tiwanaku colonists assert a community identity that was ideologically entrenched in their Chen Chen ancestry?

Generalized patterns of funerary behavior at Tumilaca la Chimba are certainly very similar to those at Chen Chen but there are differences which only emerge when the data are analyzed in detail. Although the dead are organized in cemeteries at both sites, absent from

Tumilaca la Chimba is a 'deviant' cemetery akin to those found at Chen Chen and Omo M10. Perhaps this is just a result of the much smaller size of Tumilaca la Chimba, but some of the criteria by which those cemeteries had been defined 'deviant' are present in the Tumilaca cemeteries, in particular burial on the individual's side. Is it possible that 'deviance' was now incorporated into the group? Where before, certain individuals, for whatever reason, were ostracized in death and removed into a community wide non-normative cemetery, after state fragmentation each group took responsibility for them. One of the burials containing an individual buried on their side (47-20) is located on the very edge of the cemetery, so although not completely removed from others, it is spatially distinct.

Similar types of tombs were constructed at both sites. However, at Tumilaca la Chimba there appears to be less investment in the interior construction of tombs in the post-collapse sample, where 37.8% of tombs were stone lined, in contrast with 71.0% at Chen Chen. A lower percentage of tombs had prepared floors and prepared mouths than at the state period site. Despite this, mourners at Tumilaca la Chimba invested more in visible aspects of grave architecture. A greater proportion of intact tombs at Tumilaca la Chimba had capstones, 74% in contrast to 52% at Chen Chen. Further, post-collapse mourners also constructed outer rings around a third of tombs, and these rings represent a marked change from Chen Chen burials where no additional tomb architecture was noted during the 1995 or 2002 excavations.

Multiple interments are completely absent at Tumilaca la Chimba, although there is some evidence for revisiting of tombs, with at least two possibly secondary burials (47-8 and 47-18) and one burial with two capstones (45-9). However, within tombs, corpses were treated in very similar ways to those at Chen Chen and generally placed in their tombs in a seated, flexed position facing east, although some individuals were on their backs or sides. There is actually

less variation in orientation than at Chen Chen, where individuals faced north and south, as well as east. Although greater variability is generally evident at Tumilaca la Chimba (in grave architecture, body position and arrangement) orientation toward the east was more uniformly adhered to than in the earlier period. Bodies were wrapped in textiles and held in place using fiber ropes at both sites. The presence of cotton textiles at Tumilaca la Chimba is in marked contrast to Chen Chen, where all textiles were wool. It has been suggested that Tiwanaku in Moquegua buried their dead in woolen garments, even though cotton textiles have been found in domestic contexts, because they represented ideological connections with the heartland (Goldstein, 2005). In the post-collapse period, perhaps wool was a more limited commodity or perhaps the ideological significance of it was diminished. As well as more variation in material, there was also more even representation of different weave types.

Generally, in the post-collapse period textile arts appear to have gone into some decline. While weavers at Tumilaca la Chimba produced similar garments, there is no evidence for the decorative elements that were incorporated into textiles during the state period. On average, *mantas* decreased in fineness. A Mann Whitney U-test on differences in the thickness of warp threads rejected the null hypothesis at the 0.05 level.¹¹⁴ The presence of “*semi-torcido*” threads also indicates that less time and energy was spent on spinning. Thread counts in wefts are actually higher at Tumilaca la Chimba, a statistically significant difference from the Chen Chen weft thread count at the 0.001 level, and this may be explained by the higher frequency of interlocking weaves in which the weft is visible as well as the warp. Other cultural materials in the tombs at Tumilaca la Chimba are similar to those at Chen Chen, although they also indicate a lesser concentration on tomb interiors. There was a notable reduction in the frequency of intact

¹¹⁴ There was no statistically significant difference between weft threads at the two sites.

tombs that contained ceramic material (33% at Tumilaca la Chimba as opposed to 57% at Chen Chen).

Mourners at Tumilaca la Chimba certainly maintained Chen Chen funerary treatments. They enacted ancestral patterns of mortuary behavior, building similar tombs, preparing the corpse in the same way and interring comparable grave inclusions. The dead were organized in similar ways, and, as at Chen Chen, the entire biological spectrum of the community was afforded burial in all of the cemeteries. These general resemblances complement the correspondences other scholars have noted in residential architecture and daily practices (Bermann, et al., 1989; Owen, 2005), and indicate that ideologically the community at Tumilaca la Chimba had not rejected its Chen Chen or its ancestral Tiwanaku heritage.

However, initial similarities are also complicated by differences. There was decreasing investment in the interior of tombs and an increasing concern with creating visible monuments to the dead. Architecture, body treatment, and grave inclusions all suggest a greater acceptance of variation in funerary behavior than at Chen Chen. Oval tombs are included in the cemetery, and, although there was a stricter adherence to east orientation, bodies were placed on their backs and sides as well as seated. Parallels with Chen Chen grave inclusions are evident, but there was greater variability in the kinds of items interred, specifically cotton as well as woolen textiles, twisted ropes as well as braided, and a greater presence of interlocking weaves. The absence of Wari style vessels, black-ware ceramics, decorative motifs associated with state ideology and boot tombs (all rare but present in the Chen Chen sample) is expected given the date of the burials in relation to broader patterns in the culture history of the Moquegua Valley. However, the presence of jewelry, obsidian, camelid inclusions and particular ceramic designs indicates innovation as well as elimination. Community identity at Tumilaca la Chimba was very much

rooted in Chen Chen ancestry, but the subtle changes and refocusing of funerary behavior are indicative of the shifting socio-political environment.

7.8 Intra-Community Corporate Identities at Tumilaca la Chimba

When the sites are compared as collectives, it appears that there was greater variation acceptable within the post-collapse burial tradition. However, comparison between the different sectors at Tumilaca la Chimba is necessary for examining the assertion of intra-community corporate identities at the site. I argued that funerary practices at Chen Chen were consistent across the site. Aside from sector 29, the deceased in different sectors were treated in remarkably uniform ways. Under the auspices of state membership, mourners at this colony asserted a shared identity rooted in homeland identity. The situation at Tumilaca la Chimba was different. Here, distinctions between sectors suggest an increasingly fractious social environment in which intra-community corporate identities were more significant in the treatment of the dead than during the state period.

Architecturally, Unit 44 is notable for its exclusive use of well-constructed, stone lined cists, all of which were elaborated by an outer ring of stones. Unit 44 contrasts with the other three sectors, all of which contained a mixture of stone lined cists, partially stone lined cists and unlined pits. When chi-square tests were run on specific aspects of tomb architecture, other statistically significant differences emerge between the cemeteries. In addition to the statistically significant correlation (at 0.05 level) between cemetery and tomb type produced by the exclusive presence of stone lined cists in Unit 44, there are statistically significant correlations between cemetery and whether tomb mouths had been prepared (at 0.001 level) and between cemetery

and whether tomb floors had been prepared (again at 0.001 level).¹¹⁵ Outer stone rings are preferentially found in certain cemeteries with a statistically significant correlation between the presence of stone rings and cemetery existing at the 0.05 level. All sectors included tombs with and tombs without capstones. Unit 45 contained the only example of a tomb with two capstones (45-9).

Although no statistically significant correlation exists between cemetery and tomb shape, the limited presence of oval tombs is interesting. Overwhelmingly, tombs at Tumilaca la Chimba were roughly circular, as at Chen Chen. However, there were several examples of shallow, oval tombs. The three clearest examples of these were in Unit 46 (46-3, 46-4 and 46-10). All of these tombs contained the skeleton of an adult male. Although placed in the flexed position consistent across Tumilaca la Chimba, these males were lying on their backs instead of seated as in the circular tombs. 47-20 was the only other example of a roughly oval tomb and contained the skeleton of an adult male lying on his side.

All of the sectors contained individuals of both sexes and a biological age range. There is no statistically significant correlation between biological sex and cemetery, or between the age categories utilized in the osteological analysis and cemetery. The only difference that emerged was between cemetery and what I term reproductive age. For females I took this as the age span between the average onset of menarche (17-18) and menopause (50) in non-industrial societies (personal communication, Abrams 2010).¹¹⁶

¹¹⁵ A tomb mouth was determined to be prepared when it had any form of stone architecture or mortar on it. A prepared floor was any floor that had a clay base or a stone slab placed on the bottom. When chi-squares were run on the different types of mouth and floor preparation, no statistically significant correlations were evident.

¹¹⁶ In the entire sample, the only adult females were under 30 years old. Only fourteen individuals could be securely determined to be biologically male or female. Of these, five were

Individuals were buried in a consistent manner across the sectors, seated, flexed and facing east. The only exceptions were those in the oval graves, where corpses were on their backs, and in one case on their side. These individuals were nonetheless oriented toward the east.¹¹⁷ Textile and fiber rope fragments were present in all the sectors. Their relative frequency in each sector varies, but this may be attributed to differential preservation conditions and not necessarily due to funerary behavior. The two examples of secondary interment were both in Unit 47.

Different sectors are distinguished by the cultural grave inclusions recovered from them. In addition to the unusual oval shaped burials and burial placement, Unit 46 was marked out by the inclusion of juvenile camelid feet in three graves (46-3, 46-10, 46-8).¹¹⁸ The placement of these camelid bones was particular, with a foot placed in each of the four cardinal directions. Although two instances of camelid feet were in the shallow, oval graves, another was in a circular pit and a fetal burial in Unit 46 contained the atlas of a llama, suggesting that inclusion of camelid remains was associated with the sector rather than the unusual tomb type. Camelid remains not only represent a difference with Chen Chen, they also mark Unit 46 out from the other three sectors at Tumilaca la Chimba. Comparing faunal assemblages from the middle valley sites of M10 (state period) and M11 (collapse phase), Goldstein (2005) argues that with the breakdown of the Tiwanaku political economy, the residents of Moquegua had less access to

females under 30 years old, three were males under 30 and six were males over 30. I return to this skewed frequency of males and females when I discuss intra-corporate identities.

¹¹⁷ The only individual not oriented to the east was the adult male in context 45-16. However, I question whether the context was a formal tomb and think that the west orientation was a product of later disturbance to the body (see Appendix E).

¹¹⁸ Susan DeFrance analyzed the faunal remains recovered from burials at Tumilaca la Chimba and identified these feet as from juvenile animals.

camelid herds.¹¹⁹ The evidence from Unit 46 indicates that camelids remained ideologically significant. Even if they were less widely available, they were an important aspect of ritual behavior.¹²⁰

A statistically significant correlation exists between cemetery sector and the presence of several other grave inclusions, all at the 0.05 level. Spoons were only recovered from Units 44 and 45. Their absence from Unit 47 might be attributed to preservation conditions, as organic and botanic materials generally did not preserve as well on the western slope of the *cerro*. However, their absence from the Unit 46 assemblage is noteworthy. Unit 46 shares water run-off conditions with Units 44 and 45, where spoons have been found. Their absence from Unit 46, therefore appears to be a result of cultural practice, not preservation conditions.

Obsidian was found exclusively in the adjacent sector, Unit 45, while the deposition of chrysocolla and sodalite jewelry appears restricted to two cemeteries – 44 and 45. As discussed, the very presence of chrysocolla and sodalite items distinguishes burials at Tumilaca la Chimba from those at Chen Chen. As with the camelid inclusions, they also mark out different sectors within the post-collapse site.

Ceramic vessels and sherds were included in tombs in all four sectors. Given the small sample of intact vessels and of decorated pieces, I am reluctant to infer too much from differences in form and decorative motif. No *keros* were recovered from Unit 44, for example,

¹¹⁹ Excavations in the domestic sector at Tumilaca la Chimba in 2010 suggested considerable access to camelids at the site. The faunal remains await formal analyses; however camelid bones were recovered from several domestic contexts and post-collapse villages appear to have continued to utilize camelids as a food source.

¹²⁰ Camelid parts have long been used in Aymara and Quechua rituals, and the practice of interring a camelid fetus in the corner of a house during construction is repeatedly recorded in archaeological, ethno-historic and ethnographic literature (Mishkin, 1963; Tschopik, 1946). Adult camelids, buried both by themselves and in association with human graves have been recovered from other Middle Horizon sites (Gladwell, 2004).

but as only one intact vessel was recovered from the six excavated tombs in the sector and the adult burials in the unit were looted, it would be imprudent to state that *keros* were never associated with Unit 44 graves.

However, crafting differences between the sectors became evident through other aspects of the ceramic analysis. In Unit 46, paste texture is thicker than in other sectors. Red slipped ceramics are most common across the cemeteries – accounting for 40% of slipped material. Beyond this standard color, however, reddish brown slips occur exclusively in graves in Unit 44, orange or yellow slips exclusively in Unit 46, and a reddish yellow slip exclusively in Unit 47.

The role of ceramics during funerary rituals also differed. In Unit 46, two *sahumadors* with considerable carbon deposits had been broken on top of a juvenile grave (46-8). There is no evidence for burning of grave inclusions in either Unit 44 or 45. Although there was ceramic material in Unit 47 with evidence of burning, there was no evidence of in-situ burning as in Unit 46. I suggest that mourners in Unit 46 enacted specific funerary rituals after interment that distinguished them from other sectors, as did their choice of grave type and grave inclusions.

The paleo-botanical data also suggests differences in the funerary rituals practiced in different sectors. Unit 46 is again marked out, by the unique presence of fish eye lens and crayfish. Particular flowers are associated with some units, including those from an *Asteraceae* flower which were associated with three burials in unit 45. It is important to avoid projecting contemporary funerary practices onto the past, but as Goldstein (Appendix G) notes, the very specific concentration of particular seeds in certain units might suggest intentional placement. Body treatment possibly differed in Unit 44. Relatively few pupae were recovered from the fine

screen samples, which may indicate that corpses were dried or de-fleshed prior to interment, again a funerary behavior limited to one sector.¹²¹

Differences between sectors are subtle and they are limited. The small sample size restricts the possibility of making concrete conclusions from the data. Nonetheless, the close analysis of funerary contexts at Tumilaca la Chimba does reveal distinctions between the four sectors. These differences are evident through the entire funerary process beginning with the construction of the tomb, the preparation of the body, the inclusion (or absence) of certain material goods, and the behaviors enacted after the tomb was sealed.

7.9 Intra-Corporate Identities at Tumilaca la Chimba

Intra-corporate identities are those identities that distinguished individuals within the corporate group. Osteological data provides a framework for examining how individuals were culturally conceived of by mourners. There is a risk of inappropriately projecting assumptions about gender and age groups, but categorizing individuals according to biological sex and age is the best way of examining cultural categories based on and contributing to the physical body.

7.9.1 Sex

Of the 53 skeletons analyzed, the sex of only 14 could be determined; three were female, two were likely females, seven were males and two were likely males. One of the males was in context 45-16, unlikely to be a formal tomb and so is removed from the following discussion. The small sample size is in part due to the high frequency of sub-adults recovered,¹²² as well as

¹²¹ An alternative explanation is that the cemetery was not used during fly seasonality. The radio-carbon dates indicate that there is no temporal distinction in when the different cemeteries were being used, but it is possible that there were seasonal differences.

¹²² The high frequency of sub-adults can be attributed to two factors. Firstly, high mortality rates for individuals under 5 years old are expected in non-industrial populations and two thirds of the sub-adults in the Tumilaca la Chimba sample were under 5 when they died. Secondly, the project's aim to recover intact burials likely skewed the demographic sample recovered. Looted

the presence of an additional four adults who could not be sexed, and it places restrictions on what can be said about sex based differences in mortuary treatment.

Nonetheless, it is apparent that distinctions between male and female adult burials were minimal. All three tomb types (stone lined cists, partially stone lined cists and unlined pits) were used for males and females. Outer rings were present around both male and female tombs, and capstones were present and absent on graves of both sexes. Oval burials only contained males, all female burials were circular. Within tombs, all females were sat flexed, facing east. Only males were found on their backs or sides, and all four examples were in the oval shaped tombs. Both braided and twisted fiber ropes were wrapped around males and females. There are slight differences in the textiles in which individuals were buried. Examples of finely spun woolen *mantas* were recovered from both male and female tombs. However, the only example of cotton associated with a sexed individual was with a female (45-1). Finally, although the same type and color of garment was interred with males and females, there is a difference in the weaves associated with each. The three *mantas* interred with males were woven in a warp-faced weave. The three interred with females were all woven in an interlocking warp/weft weave. Contemporary notions of dress, both in the Andes and more globally, focus on gender differences in garment style. For the dead at Tumilaca la Chimba, differences in dress were far more subtle, and indicate a concern with differentiating males and females from the very inception of garment weaving.¹²³

tombs at Tumilaca la Chimba appear, based on their size, to have mostly been adult tombs. Adult tombs are more visible and likely attracted more attention than the smaller, sub-adult tombs. Perhaps also, *huaqueros* anticipate more valuable grave goods in adult graves so intentionally target them.

¹²³ A larger sample would be necessary for confirming a difference in sex associated weaves.

The small sample and high frequency of looting (only three of the 13 tombs discussed here were intact) limit discussion about grave inclusions and sex. Ceramics were only recovered from a total of five adult graves (one female, four male) and intact vessels from only one of those (46-10). A *kero* and a *tazon* were included in 46-10, and so, as at Chen Chen, both these vessels could be associated with males. No *kero* fragments were found with female graves. Although incomplete, the ceramic fragment from a female grave (47-10) could be identified as a *tazon*, and so as at Chen Chen, *tazones* were not excluded from female graves. All ceramic material from adult graves was red-slipped and all but one fragment (in 47-20) was of a fine paste. Motifs were geometric on all ceramics associated with adult burials apart from the modeled zoomorphic *kero* in 46-10.

Wooden spoons and chrysocolla beads were associated with both male and female burials. Camelid remains were found only in male or sub-adult burials.¹²⁴ The only grave inclusion exclusively associated with females was a cactus spine needle recovered from 47-10. As far as this data can be interpreted, it appears that sex based differences in funerary behavior were slight. Visible monuments to males and females were indistinguishable, and the distinctions within them were limited.

Before turning to age distinctions across the entire sample, I want to mention age in relation to sex. The limited sample size makes investigating the interplay of age and sex particularly problematic. However, it is noteworthy that all five of the females were under 30 years old.¹²⁵ Males are represented across the biological spectrum, from their late teens to at least

¹²⁴ As noted in Chapter Six, the only image of a camelid was from an adult male burial.

¹²⁵ As Starbird comments in her report (Appendix F), this may be because older females tend to be more robust and can be mistakenly identified as male. Conversely, adolescent males tend to be more gracile and may be mistakenly identified as female.

fifty years old. Baitzel notes that the demographic profiles for the state period sites of Rio Muerto, Omo M1 and Chen Chen diverge from uniformitarian age-at-death distributions (Baitzel, 2008; Baitzel and Goldstein, 2009).¹²⁶ She suggests that the low frequency of individuals above the age of 30 at both Omo and Chen Chen style sites is most likely explained by some process of return migration from Moquegua to the Tiwanaku heartland.¹²⁷ The Tumilaca la Chimba cemetery represents another situation. Here, older males are represented, but females over thirty are completely absent from the excavated sample. I am reluctant to make firm conclusions, again due to sample size, although if this pattern were evident in a more robust sample it might indicate cultural notions about the value of specific groups of males and females within society.

7.9.2 Age

Other than the absence of females over thirty, mortuary treatments differed very little according to age.¹²⁸ All three principal tomb types were found with adults, adolescents, children

¹²⁶ Baitzel references Waldron's population model as well as an age-at-death distribution from the sedentary maize agriculturalist population at the 14th Century Northern Mexican site of Paquimé (DiPeso, 1974; Waldron, 1994).

¹²⁷ Baitzel discredits biological explanations, noting that the high rate of child mortality and the expected frequency of individuals between the ages of 20 and 30 do not support the idea that the low number of older adults was caused by shortened lifespan. She also argues against alternative disposal methods for older adults, commenting that despite extensive investigation, no cremated or spatially isolated burials have been located.

¹²⁸ Age is a culturally constructed notion. My discussion here is based on osteological determinations of age, which are rooted in biology and which give an approximate age span. Social age may not have been as closely linked to biological age as it is in contemporary Western thought. However, I maintain that biology provides the only viable framework for identifying social categories of personhood when working with archaeological data for which there is no directly applicable ethnographic or ethno-historic evidence.

and infants.¹²⁹ Outer rings were found with the complete age spectrum (including fetal individuals). Different investment in the construction of tomb mouths and floors did not correlate with the age of the individual buried inside. However, there are two age based distinctions in grave architecture. Firstly, the four oval shaped tombs contained individuals ranging from late 20s to at least 50 years old when they died but notably all were adults and all were males. Secondly, in six tombs, the corpse was sat on a small flat stone on the floor of the tomb. Five of these flat stones were in the burials of individuals aged less than four years. Although no human remains were recovered from the sixth tomb, the very small dimensions indicate it originally contained an infant. The practice of placing a flat stone at the base of the grave was restricted to infants and young children. This pattern has parallels in the ethnographic literature. Funerary behaviors differ little according to individual identity in contemporary Aymara practices but the one group who do receive particular treatments are babies under two years old, who are placed in chairs and carried to the cemetery (Chapter Five). This may be no more than coincidence, but if scholars are to seek enduring Andean funerary traditions, then it is interesting that there are such similarities in the one aspect of mortuary treatment that is specific to infants.

As with sex distinctions, the small sample of intact tombs limits conclusions about the correlation between age and cultural grave inclusions but the data from Tumilaca la Chimba suggests that they were minimal. Ceramic vessels were recovered from burials of fetal individuals, infants, children, adolescents and adults. Although the fetal/infant burials with ceramic vessels only had one vessel each, children and adults could have more than one vessel. Type of vessel was not age restricted – *keros*, *tazones* and pitchers were all recovered from

¹²⁹ Chi-square tests were run to test correlations between age and these aspects of funerary behavior. Where I state that there was no correlation, I mean that there was no statistically significant correlation at either the 0.01 or 0.05 level.

burials of individuals cross-cutting the age spectrum. *Keros* were recovered from one infant and one fetal burial. The only discernable difference in ceramic inclusions was that adults were buried with a greater frequency of slipped ceramics than sub-adults. Jewelry was found in child and adult burials. Obsidian was exclusively recovered from sub-adult burials. Textiles were recovered from burials across the age spectrum. While both warp-faced and interlocking weaves were found with all age bands, as well as both thicker and finer weaves, cotton textiles were only recovered from the burials of younger individuals (including the adolescent female mentioned above). While individuals were buried with the same repertoire of grave inclusions, regardless of their age at death, detailed analysis of those inclusions suggests that possibly younger individuals were buried with slightly less ‘valuable’ versions of items than adults, specifically un-slipped ceramics and cotton textiles.

The presence of fetal burials suggests that membership of the community was ascribed even if an individual did not survive birth. Cross-culturally, still born or very young infants typically receive different mortuary treatments from the rest of the population. Often they are not accorded full funerary rites suggesting that personhood is not conferred on individuals who do not live long enough to become members of a community (Anderson and Parfitt, 1998; Parker-Pearson, 2000; Scott, 1999). Yet, at Tumilaca la Chimba (and at Chen Chen), very young individuals, one only in the second trimester (Starbird, Appendix F), were interred in miniature versions of adult tombs – perfectly formed stone lined cists, and buried with elaborately decorated ceramic vessels. At Tumilaca la Chimba, personhood and community identity was assigned to individuals even if they were never a part of the living community.

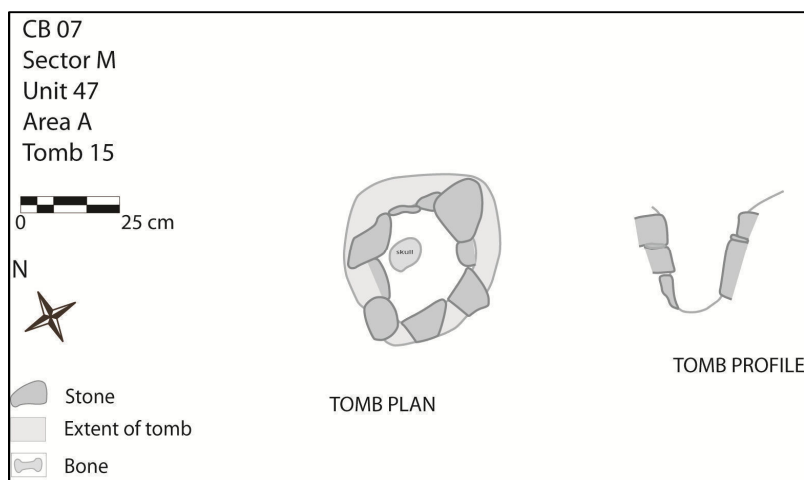


Figure 40. Tomb of an individual estimated to have died during the second trimester.

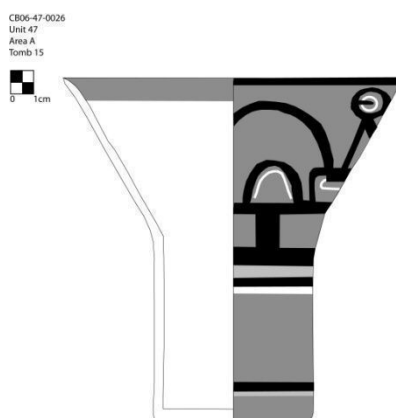


Figure 41. Red-slipped *kero* buried with individual estimated to have died during second trimester.

7.9.3 Idiosyncratic Funerary Treatments

Beyond age and sex distinctions, there was evidence for idiosyncratic funerary treatment.¹³⁰ Two likely examples of secondary burial were identified (47-8 and 47-18).

Although re-opening and disturbance of human remains does not seem to have been commonplace at Tumilaca la Chimba (or Chen Chen),¹³¹ these two tombs contained individuals whose lower limbs had been placed in anatomically impossible positions indicating that the corpses had been placed in the tomb or rearranged after decomposition.

The presence of two capstones in tomb 45-9 represents a unique behavior at Tumilaca la Chimba. This child's grave had been capped with a single stone, and 19cm above this, another capstone and two outer rings had been constructed. It is unclear whether the entire grave was constructed at one time, or in multiple phases. Either, specific additional investment took place at the grave of this child at the time of interment, or later additions were made to the tomb.

Although ceramic vessels were common, tomb 46-13 contained two unfired ceramics. One was a small vessel, the other resembled a spoon. The grave contained the body of a child, aged 4 years +/-1 year. That the ceramics were poorly crafted perhaps raises the possibility that they had been made by the deceased or another child. I am hesitant to assume the emotions of past actors¹³² but the presence of these distinctive, poorly made objects highlights the fact that

¹³⁰ Although these particularities of mortuary behavior appear to be unique to specific contexts, it is possible that a larger sample size would demonstrate that they are part of wider patterns.

¹³¹ There is evidence for pre-1600 disturbance of tombs, evidenced by the presence of volcanic ash from the eruption of the Huaynaputina volcano on 19th February 1600. However, these represent different contexts from 47-8 and 47-18 in which corpses had been purposefully arranged in anatomically impossible positions versus the tombs with ash deposits which showed evidence of disturbance and no re-arrangement. 47-18 was also an intact tomb with its capstone in place.

¹³² It has been argued that archaeologists must attempt to integrate the sentiment and grief of mourners into their analysis of burial contexts (Joyce, 2001; Kus, 1992; Tarlow, 1999). While I

specific choices were made by mourners about what to put in individual graves. Another example of a miniature object was recovered from 45-15. The modified shaft of a large mammal's long bone¹³³ was recovered from this adolescent's tomb. Its finished shape is similar to that of a *wichuñya*,¹³⁴ the weaving tool used for selecting threads. Although too small to have been functional (it is approximately one twentieth the size of a viable *wichuñya*), it perhaps represents a model or toy.

Tomb 46-14 was idiosyncratic for two reasons. In common with other tombs at the site, it contained fiber rope. However, where other twisted fiber ropes at the site were twisted in an S direction, the rope in 46-14 had been twisted in a Z direction. This is notable because Z ply in Andean threads are often associated with witchcraft or healing. One way of getting rid of bad spirits is to perform a "*cekarpayana*" or "left-handify" ritual in which a thread is spun backwards, producing a SZ thread, instead of the normal ZS (La Barre, 1948). Grave 46-14 also contained toad bones, an animal with ritual associations in some parts of the Andes (Bray, 2002). The individual buried in the tomb was a male in his late teens or early twenties and exhibited one of the rare examples of circumferential cranial modification (of twenty-two examples determined tabular or circumferential, only three were circumferential). The unusual grave inclusions, coupled with the circumferential cranial modification perhaps indicate that this individual had

agree that the mortuary record is a product of human actors who undoubtedly experienced emotional reactions to death, the nature of those reactions was in large part culturally constructed. As in all archaeological research, an investigator's own cultural conditioning frames interpretations of burials. Thus, while my own response to 46-13 and that of the field assistant working on the tomb was to assume that a bereaved mother had placed her child's handiwork in the grave, this response is a product of contemporary notions about attachment and grief, and should not be used as a proxy for the sentiments of past actors.

¹³³ Identified by Susan DeFrance.

¹³⁴ *Wichuñya* is the Aymara word. The tool is called *ruqui* in Quechua.

some kind of special identity inscribed from infancy (circumferential cranial modification), that they had suffered some unusual death (they were relatively young when they died) or that they were associated in life with ritual activity. Arguably, the circumferential cranial modification is significant. The other two examples at the site were also from distinctive burials. One was in 46-10, the oval burial with the modeled snake kero (snakes are also ritually significant in many Andean traditions), and the other was in 45-9, the burial with two capstones.

Intra-corporate identities were not highlighted at Tumilaca la Chimba. There are few distinctions that correlate with age and sex. It would be interesting to examine whether intra-corporate distinctions are more prevalent in particular cemeteries than others, but the sample size necessitates analyzing intra-corporate identities across the site as a whole. The idiosyncratic funerary behaviors are significant because they demonstrate that although intra-corporate identity distinctions were not emphasized in death at Tumilaca la Chimba, burial at the site nonetheless focused on the individual, with their particular life history, position in the community and relationship to others. The focus on individuals was uniform at Tumilaca la Chimba, in contrast with Chen Chen where several examples of multiple interments indicate a concern with representing groups in death. As archaeologists we approach burials by looking for patterns that indicate social affiliations between groups of people. Patterns in large samples of mortuary data are important for extrapolating cultural notions of identity. Although each example of unique tomb architecture, post-mortem body treatment and grave inclusions cannot necessarily be explained, they do serve as reminders that groups are comprised of individuals whose particular relation to others will mediate and interact with funerary treatment based on community, group, gender and age based identities.

7.10 Summary

Excavations in the cemeteries at Tumilaca la Chimba demonstrate that mourners at this post-collapse site largely maintained earlier funerary practices. They continued to build similar types of tombs, prepare corpses in very similar ways and interring similar items with the dead. It is also apparent that new funerary behaviors were utilized at this time, behaviors that were repeated at other Moquegua Valley post-collapse sites but not beyond. As the broad socio-political and economic networks that existed under state authority were eroded, this was reflected in increasing regionalization in ritual practice. Within Tumilaca la Chimba, greater difference is evident between the spatially distinct cemetery sectors than was present at Chen Chen. Difference is evident throughout the funerary process, from the construction of tombs, the placement of the body, the inclusion of cultural materials and the rites performed after tombs were closed. Within the sectors, distinctions between skeletons differentiated by age and sex were minimal although idiosyncratic behaviors indicate that individuality was a factor in the particularities of funerary treatment.

The sample size and disturbed nature of many of the contexts do present interpretative limitations. Several of the discussions above are based on qualitative rather than quantitative analysis. Where possible, statistical analyses were run but the small sample size, particularly when examining sex based distinctions or grave inclusions, made this impossible at times, and a considerably larger sample would be needed in order to prove statistically significant correlations.¹³⁵

¹³⁵ The looted condition of the site means that even with much more extensive excavations, gaining a sample comparative to the Chen Chen data might be difficult.

8. DISCUSSION AND CONCLUSIONS

8.1 State Collapse in Moquegua

During the Middle Horizon, politics in the South Central Andes were dominated by the emergence and spread of the Tiwanaku state. From its center in the Titicaca Basin, the state exerted influence across distant and disparate locales. This influence was strongest in the Moquegua Valley, 300km from the altiplano heartland, where a colonial agricultural population was installed, following initial forays into the region by pastoralists (Goldstein, 1989b, 2005). Bringing with them homeland notions about life and death, the inhabitants of the Moquegua colony asserted and materialized their Tiwanaku state membership in the houses they built, the ceramics they made and the rituals they practiced (Goldstein, 1993a, 1993b).

The collapse of the Tiwanaku state also had major ramifications for the Moquegua Valley. In the altiplano, drought likely contributed in substantial ways to political disintegration (Kolata, 1993a; Kolata and Ortloff, 2003). In Moquegua, the Tiwanaku colony's Wari neighbors played a significant role in the state's turbulent end. Through their ambitious hydraulic projects, Wari elites in the upper valley disrupted water supplies to the Tiwanaku agricultural fields in the middle valley (Williams, 2002). Dependent upon irrigation in the arid environment, inhabitants of Tiwanaku sites lost faith in the ability of the state to provide crops, goods and political stability. Although the causes of state demise in Moquegua were not identical to those in the Tiwanaku heartland, the fallout was similar. In both the heartland and the Moquegua Valley, rejection of state authority was accompanied by the destruction of symbols of state religious ideology, the tearing apart of monumental architecture and large scale abandonment of state administrative centers.

In the Moquegua Valley, during the period locally termed Tumilaca, populations fled state centers in the middle valley and resettled in much smaller, more widely dispersed settlements. While some communities stayed in the middle valley, (for example at Omo M11, Cerro Chamos and Maria Cupine), others underwent a mini-migration to the coast, (for example to the site of El Algodonal), and into the Wari territory of the upper valley, at Tumilaca la Chimba, Santa Rita la Chica, Tumilaca el Molino, and Cerro San Miguel. The data analyzed in this thesis reveal some of the intricacies of the transition from state colony to independent villages.

8.2 Chen Chen and Tumilaca la Chimba; the transition from state colony to refugee village

8.2.1 The Timing of Transition

Despite being referred to as the collapse phase of the Tiwanaku occupation of the Moquegua Valley, few absolute dates existed for the Tumilaca period prior to this project, especially in the upper valley. In particular, there were no dates for Tumilaca la Chimba, despite it being the type site for the phase. The twenty-four radiocarbon dates derived from this project (ten from Chen Chen and 14 from Tumilaca la Chimba) support the long held idea that this upper valley site was principally occupied after the abandonment of the middle valley state period Tiwanaku sites and the collapse of Tiwanaku state authority in the Moquegua Valley ca. AD 1000. Of the eleven¹³⁶ reliable dates from the Tumilaca la Chimba cemeteries and excavated domestic unit, eight confidently date to after AD 1000. Eight of the 12 dates discussed for Chen Chen (the ten derived from this project, plus two reported by Owen for reported tombs), confidently date to before AD 1000. However, the dates are interesting because they suggest that

¹³⁶ For reasons explained in Chapter Seven, three of the reported dates from Tumilaca la Chimba are removed from this discussion.

occupation at Chen Chen may have begun earlier than previously thought, as early as AD 700 and also that the Tiwanaku affiliated occupation at Tumilaca la Chimba may have continued later than anticipated, as late as AD 1250. Further, when all 23 reliable dates are plotted together, it is evident that there is some overlap between the two sites (Figure 42).

The cemeteries at Chen Chen (at least sectors 27, 34, 30 and 28) continued to be used even after the establishment of the village at Tumilaca la Chimba, while two dates from Tumilaca la Chimba suggest that the site was possibly in use by Tiwanaku affiliated mourners as early as AD 950. The occupations at these two sites are not, therefore, temporally discrete but indicate that the village at Tumilaca la Chimba was established before Chen Chen was completely abandoned. Political collapse is not an instantaneous event. The destruction wrought on material indicators of state authority may happen very quickly, but the social conditions that lead to destruction represent a process of change. What we see with the radiocarbon dates from the two sites is that process of gradual rejection and abandonment. The Tumilaca la Chimba population represents a group who chose (or were forced) to leave the state center at Chen Chen. Their actions in moving up-valley and establishing this small village were likely integral in the very process of state decline. Tiwanaku state administrators at Chen Chen had already seen their authority weakened by the effects of Wari hydrology projects. Even before disappointment with the state turned to social unrest in the middle valley, Chen Chen occupants began to vote with their feet, possibly as early as AD 900 - 950. They took with them ancestral practices, traditions and beliefs learnt at Chen Chen but their decision to leave inextricably damaged the local administrative structure and ultimately the Tiwanaku state.

Atmospheric data from Reimer et al (2004); OxCal v3.10 Bronk Ramsey (2005); cub r:5 sd:12 prob usp[stat]

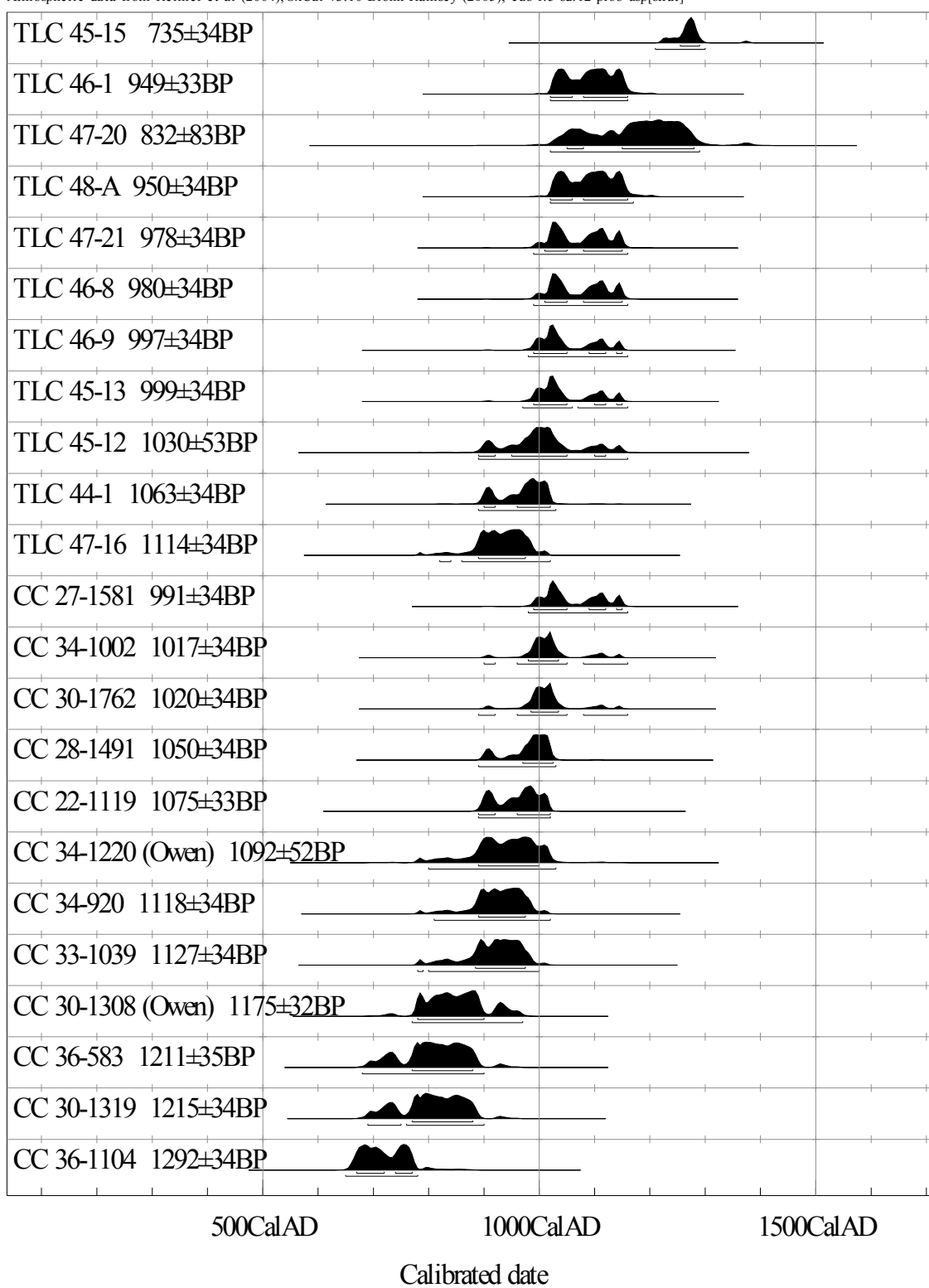


Figure 42. Plot of calibrated dates from Chen Chen and Tumilaca la Chimba.

8.2.2 Continuity and Change

Despite the temporal overlap, and the evidence for biological and cultural continuity (Bawden, 1989, 1993; Sutter and Sharratt, 2010), there are marked differences between Chen Chen and Tumilaca la Chimba. The site at Tumilaca la Chimba was well-populated. Residential surface architecture indicates that homes were clustered in groups, and at least one hundred small houses are evident across the site. Surface survey conducted in 2007 suggests that the Tumilaca phase community occupied every livable part of the flat bluff. For a refugee village, the population was sizeable, and certainly Tumilaca la Chimba appears to be considerably larger than other Tumilaca phase sites in the immediate vicinity, particularly Santa Rita la Chica and Tumilaca el Molino. However, the site is on a completely different scale from Chen Chen where as many as 12,000 tombs (Owen, 1997a) indicate a considerably larger population than that suggested by the approximately 500 tombs at Tumilaca la Chimba. Further, absent at Tumilaca la Chimba is evidence for monumental construction, for shared ritual space or large scale storage facilities.¹³⁷ At Tumilaca la Chimba, the focus of daily life shifted from a concern with fulfilling the state's requirements, to providing for one's own household. The relationship between different Tumilaca phase sites remains little explored, but the defensive location adopted by inhabitants of Tumilaca la Chimba and of other collapse phase communities, does indicate a growing unease in the Moquegua Valley, an unease likely rooted in the unrest that led to state collapse.

¹³⁷ Although there is little evidence for political elite in the cemeteries, and although there are no signs of state authority at Tumilaca la Chimba, some form of community leadership undoubtedly existed at the site. The site was well-populated, and both the cemetery and residential sectors are well organized. I do not find it credible that there was no hierarchy or leadership at the site.

8.2.2.1 Community Organization

Regardless of its differing nature, community organization at Tumilaca la Chimba does parallel that at Chen Chen in many ways. At both sites, the dead are organized into spatially segregated cemeteries, and at both Chen Chen and Tumilaca la Chimba, radiocarbon dating of the different cemeteries indicates that they were used concurrently, not sequentially. The demographic profile of cemetery sectors at Chen Chen and at Tumilaca la Chimba supports the earlier argument that sectors in Tiwanaku cemeteries represent corporate social groups that in life were separated into neighborhood groupings (Blom, 1999). Thus, community organization endured despite state collapse. There are many parallels for intra-community corporate groupings in archaeological, ethno-historic and ethnographic literature from the Andes and the designation of these Tiwanaku factions as *ayllus* is likely appropriate (Blom, 1999; Hoshower, et al., 1995).

However, at Tumilaca la Chimba there are only four cemetery sectors, in contrast to the 30 plus that existed at Chen Chen. Although the non-metric dental trait study by Sutter (2010) confirms that the two populations were biologically related, it is not clear if the Tumilaca la Chimba population represents an accurate reflection of the entire Chen Chen community. It is more likely that it does not. Chen Chen was inhabited by multiple groups, and I think it probable that these groups fled to different locales – the inhabitants at El Algodonal on the coast and those at the middle valley Tumilaca site of Maria Cupine were likely derived from different intra-community groups at Chen Chen. Community organization is recognizable in terms of cemetery sectors, but as in other Andean contexts, these sectors possibly coalesced into larger intra-community divisions that perhaps formed the basis of refugee communities.

8.2.2.2 Craft Production

Considerable similarity is evident in material culture between Chen Chen and Tumilaca la Chimba. The Tiwanaku ceramic typology for the Moquegua Valley recognized a general continuity in ceramic forms and designs, with the absence of particular state affiliated motifs (Goldstein, 1985). Chemical analysis of ceramics from Tumilaca la Chimba and Chen Chen indicates that collapse phase potters also continued to use similar paste recipes, and source clay chemically indistinguishable from that used by state period ceramicists. P-XRF analysis of a large corpus of ceramic from the two sites, and LA-ICP-MS data from a smaller sample reveal that ceramic material produced at Chen Chen and Tumilaca la Chimba grouped together based on chemical composition. Chen Chen potters utilized clays that are prevalent in the middle Moquegua Valley (Sharratt, et al., 2009). Although a chemically distinct clay source is available in the Tumilaca drainage, potters at Tumilaca la Chimba appear not to have made use of it, but to have continued to use raw materials that cannot be chemically differentiated by those used at Chen Chen. Clays with this chemical signature are available within at least 7km of Tumilaca la Chimba. Although this is a little further than the range of 3-4km for clay procurement among ethnographically documented potters in the Andes (Arnold, 2000), it is not an unfeasible distance. Therefore, the utilization of clays chemically undistinguishable from those used at Chen Chen does not necessarily indicate that collapse phase potters continued to exploit the same specific clay sources as their predecessors.

With state collapse, there were subtle shifts in textile production. There has been limited work on textiles in the Moquegua Valley (Clark, 1993) and research on Tiwanaku textiles in particular is in its infancy (Plunger and Goldstein, 2008). However, comparison between the two small textile collections from Chen Chen and Tumilaca la Chimba is interesting. Although

collapse phase weavers produced very similar garments and used techniques that were likely handed down through generations of Tiwanaku textile producers, there is a shift in the fineness of textiles and an increased presence of cotton versus wool at Tumilaca la Chimba. Grave inclusions in several tombs are testament to the presence of camelids at Tumilaca la Chimba and camelid wool was used in some textile production.¹³⁸ However, while cotton was never included in burials at Chen Chen and other state period sites, a fact attributed to the ideological significance of wool (Goldstein, 2005), at Tumilaca la Chimba it became an acceptable shroud for the dead. More generally, patterns in weaving and spinning indicate a lesser investment in textile production at Tumilaca la Chimba. Scholars have long characterized Tumilaca phase ceramics as essentially shoddy versions of state period assemblages. Apparently, textile arts also went into decline. Decreasing use of wool may indicate that inhabitants had reduced access to camelid herds, and this was likely a consequence of a breakdown in regional economic networks and trade connections with the altiplano.

8.2.2.3 Economic Networks

The breakdown of regional economic networks is frequently cited as a hallmark of state collapse (Renfrew, 1979; Yoffee, 1988). In Moquegua, the effects of state collapse are apparent in the absence of ceramic imports and other foreign goods. Chemical analysis of ceramic material from Chen Chen and Tumilaca la Chimba indicates that there was non-local ceramic material in the Chen Chen sample. However, all of the analyzed Tumilaca la Chimba mortuary

¹³⁸ Excavations in two residential units at Tumilaca la Chimba in 2010 also demonstrated that camelids were likely utilized as food. Ongoing excavations in the domestic sectors at Tumilaca la Chimba will provide a more robust comparative sample to examine whether, compared with state period sites, there was a significantly reduced camelid presence, as Goldstein (2005) argues for middle valley Tumilaca phase sites.

ceramics were produced with Moquegua Valley clays. The state period colony had access to imported ceramic vessels, but chemical data indicates that the collapse phase community did not.

Other non-local items recovered from Chen Chen are absent in the Tumilaca la Chimba assemblage. In particular, spondylus, from Ecuador, and snuff trays, possibly from Northern Chile, were present in limited quantities at Chen Chen but there is no evidence for parallel distant economic ties in the collapse phase village.

Although material connections with distant locales seem to have broken down, it is apparent that there was still a concern with producing iconographic displays of foreign connections. In addition to the expression of an affinity with the altiplano heartland (despite little evidence for ongoing tangible connections), there is evidence of an awareness of other distant locales. The large *kero* recovered from tomb 46-10 depicts a snake native to lowland Bolivia and Peru, certainly not present in the Moquegua Valley. P-XRF analysis of the composition of the vessel itself indicates that it was made locally, from Moquegua Valley clays. But the image it depicts expresses an interest in the world beyond the immediate locality.

8.2.2.4 Wari Influence

The Chen Chen ceramic assemblage also includes Wari style vessels, which are absent from the Tumilaca la Chimba corpus. The nature of relations between the Tiwanaku and Wari colonial populations is the subject of ongoing research, but evidence from the Chen Chen burials adds to growing consensus that inhabitants of Wari and Tiwanaku sites were engaged in socio-economic relations (Garcia Marquez, 1990; Williams, 2008). The radiocarbon dates derived from excavations at Tumilaca la Chimba indicate that this site, located on the slopes of Cerro Baúl was inhabited before the abandonment of the Wari colony ca. AD 1050 (Sims, 2006; Williams, 2001). Yet, despite the argument that Wari controlled all aspects of the upper valley political

economy until Cerro Baúl was abandoned (Sims, 2006), there is little evidence in the ceramic assemblage at Tumilaca la Chimba for economic interaction between the village and the Wari colony.

Obsidian recovered from Tumilaca la Chimba also speaks to the relationship between Tumilaca la Chimba and Wari occupants of the upper valley. There was no obsidian in the Chen Chen sample analyzed in this project. However, INAA analysis of eight obsidian flakes from state period Omo sites indicated the presence of obsidian from four distinct sources during the period of Tiwanaku state authority in Moquegua. The Chivay, Alca, Andahuyalas A (or Potreropampa) and Quispisisa sources were all represented in Omo site assemblages (Goldstein, 2005). As Goldstein notes, this pattern is distinct from heartland Tiwanaku sites, where Chivay obsidian accounts for 90% of obsidian (Burger, 2000). The Tiwanaku colony in Moquegua obtained materials from far further into Wari territory than heartland Tiwanaku, and Goldstein (2005) attributes this to one of several factors; the presence of Wari workshops in the Tiwanaku colony, through trade or marriage alliances with the Wari, or through curation of obsidian at abandoned Wari sites in Moquegua. The p-XRF data from the Tumilaca la Chimba obsidian pieces¹³⁹ indicates that inhabitants of this post-collapse community also utilized materials sourced from the Wari heartland. Given the proximity of the site to the Wari colony at Cerro Baúl, and building on Sim's (2006) argument that inhabitants of upper valley Tumilaca sites were incorporated into the local Wari hierarchy, the presence of Quispisisa and Alca obsidian

¹³⁹ As commented in Chapter Seven, most of the obsidian was recovered from the surface. The lack of contextual information clearly limits the utility of this data for understanding obsidian use at the site.

could again be explained through either interaction with Wari colonists or curation of disused pieces.¹⁴⁰

8.2.2.5 Subsistence and Health

Disruption to agricultural systems was a contributing factor in the rejection of Tiwanaku state authority (Williams, 2002). Nonetheless, faunal and macro-botanic analyses from the domestic context excavated in 2007 indicate that refugee communities appear to have largely maintained the subsistence activities practiced at Chen Chen, with a reliance on maize and quinoa (D. Goldstein in Appendix G), and some use of guinea pig and camelids (DeFrance, personal communication 2007). However, agricultural storage at least was now on a household rather than community level.

Despite the overall continuity in subsistence strategies, there is some evidence for declining health in the collapse period. Mortality peaked at about the same age (approximately two years) in the Chen Chen and Tumilaca la Chimba populations, but there is an increase in evidence for *cribra-orbitalia* and *porotic hyperostosis* among infants and children (Starbird, et al., 2010). Although it is between Tumilaca and Late Intermediate Period populations (53.4%) that increasing nutritional stress is particularly striking, the higher frequency of lesions (19.5% at Chen Chen, 39.1% at Tumilaca la Chimba), between the two Tiwanaku affiliated populations suggest that the inhabitants of Tumilaca la Chimba were already beginning to see the health impacts of state fragmentation and settlement re-location.¹⁴¹

¹⁴⁰ All obsidian recovered from Tumilaca la Chimba (in 2007 and 2010) were flakes or points, no cores have been identified.

¹⁴¹ Tuberculosis is also evident in the Tumilaca la Chimba sample but not in the Chen Chen population.

8.3 Identity in the Mortuary Record; pre and post-collapse

In addition to documenting the implications of Tiwanaku collapse on settlement organization, craft production, economic interaction and population health, burials from Chen Chen and Tumilaca la Chimba reveal one of the processes through which collapse phase communities renegotiated identity in response to Tiwanaku state fragmentation. Analysis of these burials suggests that as populations moved from the state administrative centers in the middle valley to the smaller nucleated villages in the upper valley, a process of identity negotiation began during which shared ancestral roots remained salient but community unity also began to slowly fragment. In Chapter Five, I posed four principal research questions. In the following, I draw on the data presented in Chapters Six and Seven to address those questions.

- 1) Following political decline, to what extent did mourners at Tumilaca la Chimba assert their Tiwanaku heritage, and were descendents of the Tiwanaku enclaves embedded in extra-community networks that paralleled those during the height of the state?*

During the height of the state presence in Moquegua, funerary rituals were key moments for the assertion of extra-community identities. Just as migrant Aymara mourners do in Moquegua today (see Chapter Five), inhabitants at Chen Chen used funerals to express particular aspects of the deceased's identity. Specifically, by enacting certain behaviors throughout the entire commemoration process, from the construction of the tomb, the preparation and final positioning of the body, to the items interred with the corpse, the living at Chen Chen used the dead to demonstrate their Tiwanaku heritage. In death, homeland identity was possibly the most salient identity associated with an individual. The ideological connection between the Tiwanaku heartland and the Moquegua colonies has long been recognized (Goldstein, 1989a). However, comparison of the Chen Chen sample analyzed in this thesis with Korpisaari's (2006) recent

synthesis of altiplano burial data suggests that the heartland identity asserted by Chen Chen mourners was specific.

Although Chen Chen is understood to have been an administrative center with close economic ties to the state's political core, the identity expressed in mortuary behaviors appears to have been rooted not in the immediate hinterland of the state capital or even the second tier settlements in the Tiwanaku and Katari valleys. Instead, mortuary data suggest social affiliations with the lake shore, Copacabana peninsula and islands. These affiliations took precedence over identities derived from more local geography. In fact, the apparent differences in mortuary treatments at Chen Chen and Omo style sites in the Moquegua Valley indicate that rather than develop a shared colonial identity, distinctions between immigrant groups, presumably derived from variations in the homeland were salient features in the ritual expression of identity.^{142, 143}

The data from Tumilaca la Chimba demonstrate that mourners there also asserted their Tiwanaku heritage. Despite abandoning Chen Chen and rejecting certain symbols of state authority, this community remained deeply rooted ideologically in its Tiwanaku ancestry. The state had fragmented, the socio-political environment had radically changed and economic ties to the heartland had broken down. Nonetheless, mourners at this site sought to reassert their Tiwanaku identity. Arguably, then, inhabitants of Tumilaca la Chimba did not consider their

¹⁴² Perhaps this should be expected. Migration to a new environment does not necessarily remove existing discord between groups. As an example, Tamil versus Sinhalese ethnic identity remains an important line of difference among Sri Lankan migrant communities in Europe (Zunzer, 2004).

¹⁴³ Based on limited published data on Tiwanaku affiliated cemeteries from the Azapa Valley and I raise it only as a possibility, I think it possible that the dual migrant community evident in Moquegua also existed in other locales, specifically in Northern Chile, where the mortuary record includes cemeteries with patterns similar to those seen at Chen Chen and those reported for Omo style sites (Baitzel, 2008; Goldstein, 1995b; Green, et al., 2007).

Tiwanaku identity as inextricably intertwined with the state. Being Tiwanaku, in this respect at least, was not a matter of being a member of a political entity, but about heritage and ancestry.

As discussed, collapse is a drawn out process. Archaeologists categorize past cultures in large part by their political structure. As such perhaps we are too quick to assume that the disintegration of that political structure equated with the end of that culture (Eisenstadt, 1988). Scholars working on collapse in the past are increasingly considering the extent to which life continues after collapse, focusing on continuity in household architecture, domestic practice and material culture (Chase and Chase, 2006; Demarest, 2004; Rice, et al., 2004; Schwartz and Nichols, 2006). When identity is taken as the focus of attention, particularly the intentional assertion of identity inherent in funerary ritual, it is evident members of political entities likely did not consider political fragmentation a clear break point. Considerable literature has been dedicated to understanding the nature of the Tiwanaku political system, but for the community at Tumilaca la Chimba, a community whose roots were so very entrenched in the colonial wing of that political system, Tiwanaku was perhaps not about politics, at least not state level politics. Regardless of the radically new political environment and the disintegration of the Tiwanaku state, members of this community saw themselves and wanted to be seen as Tiwanaku.

Extrapolating extra-community identities from the Tumilaca la Chimba mortuary data is more difficult than for Chen Chen. State collapse meant the breakdown of the principal extra-community networks in which Chen Chen mourners were embedded. However, it also meant the creation of new networks. As refugee communities dispersed and established villages in new locales, so they created a post-collapse system of communities. The extent to which these collapse phase communities interacted is little understood, but based on the mortuary data at least, it appears that Tumilaca phase communities operated in far narrower networks than their

predecessors. Although ancestral funerary rituals were largely maintained, there were innovations specific to the Moquegua Valley. Comparative contemporaneous data for Tumilaca la Chimba is limited to Tiraska in the altiplano (Korpisaari, 2006) and El Algodonal on the coast (Owen, 1993) and the looted burials recovered at Omo M11 (Goldstein, 1989b). Data from these sites indicate that although collapse mourners in the altiplano, the Moquegua Valley and the coast generally maintained Tiwanaku practices derived from specific regions of the heartland, the Moquegua Valley communities also began to innovate in funerary rituals. This is most evident in the construction of stone rings, a practice evident in more than a third of burials at Tumilaca la Chimba and reported for Omo M11 and cemetery N (the Tumilaca phase cemetery) at Omo M10, but not for El Algodonal or Tiraska. Drawing on Stanish (1985) who argues that stone rings indicate increasing competitive display, their presence in the Moquegua Valley is arguably explained by the proximity of these sites to the earlier colonial seat.

Comparing the data from Chen Chen and Tumilaca la Chimba, it is apparent that mourners in the collapse phase community continued to perform funerary practices that demonstrated the Tiwanaku roots of their shared identity. The particular behaviors carried out were derived from specific areas of the Tiwanaku heartland and their maintenance through state fragmentation indicates how, for mourners at least, much of their Tiwanaku identity was divorced from the overarching political climate. However, comparison with other collapse phase communities also suggests that extra-community networks became narrower with the fragmentation of the state.

2) To what extent did inhabitants at post-collapse sites assert a community identity that was rooted in their immediate Chen Chen ancestry?

The maintenance of Tiwanaku derived funerary behaviors at Tumilaca la Chimba is itself indication that the inhabitants of this site asserted a community identity that was rooted in their immediate Chen Chen ancestry. Generally, mortuary treatments at the two sites are remarkably similar. Yet the overall continuity of earlier traditions masks subtle differences. Mourners at Tumilaca la Chimba shifted the focus of investment to the visible aspect of funerary monuments, with an increased concentration on exterior tomb building and less of a concern with what went into a burial. Behaviors not seen at Chen Chen are also apparent at Tumilaca la Chimba, specifically the evidence for revisiting of tombs, in the form of secondary burial and double capstones.

For the most part, greater variability was also acceptable at Tumilaca la Chimba, with more variation in tomb construction, and in some of the items interred with the dead. Conversely, there was a stricter adherence to other aspects of mortuary behavior, specifically orientation towards the east. Given other indications of concern with directionality, specifically towards the Tiwanaku heartland, this merits some discussion. The inhabitants of this community were responding to changing social conditions, specifically the demise of state authority. Their reactions to the concomitant breakdown of economic networks and likely increased valley-wide tension are evident in changes in craft items, settlement location and focus on visible monuments to the dead. However, in moments of turmoil, perhaps people cling even more tightly to the behaviors they think make them who we are, and take greater pains to display identity. As discussed, despite rejecting the political wing of the state, this community very much saw themselves as Tiwanaku, and the increased focus in particular aspects of funerary treatment

suggest that collectively, this community felt it necessary to reaffirm to themselves and others that they were Tiwanaku.¹⁴⁴

3) To what degree did intra-community social categorizations (Intra-Community Corporate and Intra-Corporate identities) present at the height of the state remain appropriate for members of communities established in the wake of state collapse?

Intra-community social categorizations include a multiplicity of identities; those based on membership of a corporate social group within the community and those based on biological and cultural distinctions that cross-cut corporate social groups. Despite similarities in community structure, the community at Tumilaca la Chimba is not directly equivalent to that at Chen Chen.

Much smaller in size, with a cemetery comprised of only four sectors, I think it probably represents a subset of the Chen Chen community. The immediate ancestral population at Chen Chen had fractured and scattered across the Moquegua countryside. The result was a series of much smaller communities, likely comprised of collectives of corporate social groups. The evidence for increasing competition in collapse phase funerary practices raises the possibility that friction existed within these communities also. Arguably, fragmentation and factionalism happened at multiple hierarchical levels – first Chen Chen splintered into distinct communities and then those communities themselves began to fracture.

The absence of a community wide non-normative cemetery, as seen at Chen Chen and Omo M10, also points towards increasing internalization at the level of intra-community corporate groups. I suggest that at Tumilaca la Chimba, ‘deviant’ or non-normative individuals

¹⁴⁴ Other examples might include the increased focus on American identity since 9/11, a focus materialized in the proliferation of American flags in public and private space. Geographically closer to the data in this thesis, funerary practices among Aymara migrants to the city of Moquegua also indicate a concern with highlighting homeland identity. As migrants negotiate their place in both the city and their native villages, perhaps they feel a need to reaffirm their membership in their homeland communities.

were dealt with by their corporate social group. There is some evidence that certain individuals were treated in a slightly different manner from the mainstream population, and the ways they were dealt with have parallels in some of the behaviors in sector 29 at Chen Chen. Although the reasons for these unusual treatments cannot be extrapolated from the data, the ways in which the two communities understood the position of non-normative people in the community differed slightly. In the state period, deviant individuals were accorded space in a community wide cemetery. In the collapse phase, they remained in death a member of their corporate social group. This is one element of an overall refocusing of identity onto intra-community factions and away from community wide unity.

Differences between the cemeteries were minimal at Chen Chen, which may indicate the mourners' concern with emphasizing their community-wide identity rooted in Tiwanaku heritage. Consistency is evident throughout the entire funerary process. There are no distinctions in intentional displays of affiliation, or in material evidence for identity inscribed in the body or in craft goods. In contrast, at Tumilaca la Chimba, there is greater evidence for distinctions between intra-community social groups. Differences are limited and they are subtle, but they are apparent in grave architecture, potentially in how corpses were prepared before interment, in craft goods buried with the dead, and in rituals carried out after entombment.

Membership of a corporate social group was likely a significant identity for members of Tiwanaku communities, and at Chen Chen and Tumilaca la Chimba it appears to have also been recognized in death. This fundamental unit of identity was maintained through political fragmentation. However, arguably, collapse phase community mourners at Tumilaca la Chimba emphasized this line of difference more strongly than their predecessors. Factionalism occurred valley wide, but I think that in the Tumilaca la Chimba data we are seeing the process of

factionalism repeating at the community level. Perhaps, there was a concomitant shift in notions about the 'Other', about 'Us' and 'Them.' At Chen Chen, similarity across the cemetery sectors indicates that the community defined itself as a shared collective. At Chen Chen the 'Us' was the entire community. At Tumilaca la Chimba differences between the cemeteries suggest that mourners considered their intra-community group to be their 'Us' while other groups at Tumilaca la Chimba were separate, they were the 'Other.'

The data on intra-community identities at Chen Chen and Tumilaca la Chimba indicate that funerary display of personhood was largely maintained overtime. Difference based on sex, age, status or occupation is minimal in burials. The Chen Chen sample indicates that sex based distinctions were even more limited than previously thought, and those that do exist may intersect to a degree with the age of an individual. Comparison with the cemetery at Omo M10 raises the possibility that the funerary expression of sex restricted identities was different in the distinct Tiwanaku migrant groups in Moquegua. In the collapse phase period, there were also few sex based distinctions. During both periods, gender identity likely structured an individual's life experience but was not a key point of difference in death. Scholars investigating the relationship between gender ideology and political organization have suggested that women's social standing is diminished in emerging states as there is a transition from kin-based to non kin-based political organization (Gailey, 1987; Gero, 1992). Whether state collapse results in the counter effect is an interesting question. However, in the Tiwanaku example, gender distinctions were not ritually emphasized either under the auspices of state authority or when the state disintegrated.

Age based distinctions are also difficult to tease out from the data. At Tumilaca la Chimba, the unusual oval shaped graves were created for adult males only. One other

architectural practice became more restricted with time. Flat stones were placed on the floor of tombs at both sites. At Chen Chen they were more frequently found in sub-adult graves but there are examples in adult graves also. At Tumilaca la Chimba, this practice was restricted to young children.

It is interesting that at Tumilaca la Chimba, younger individuals received arguably “cheaper” versions of the same items buried with adults. Cotton textiles were only buried with younger individuals, who were also more likely to be buried with un-slipped ceramics. While there was a concern to accord all members of this society a Tiwanaku funeral, as economic networks fragmented and crafting practices went into decline, “better quality” versions of materials were reserved for older individuals. The maintenance of notions of personhood is particularly evident in fetal, neonate and infant burials. Very young individuals, even several who were never part of the living community, were accorded the same funerary treatments as all other individuals. This contrasts with cross-cultural examples in which neonates are treated differently (Anderson and Parfitt, 1998; Scott, 1999). While this thesis is focused on identity in death, the apparent accordance of Tiwanaku personhood to such young individuals raises questions about identity before birth in both these communities.

Status distinctions are almost in-discernable at both sites. Although the architecture of certain tombs indicates greater investment in labor and materials, these do not correlate with other ‘typical’ indicators of wealth or rank. I argue that some form of authority or leadership must have existed at Tumilaca la Chimba, and was undoubtedly present at the colonial center of Chen Chen. Yet, individual rank was not a key variable in mortuary behavior. Occupational identities are also difficult to extrapolate from either the cultural or biological data. Grave inclusions suggest that certain activities were associated with females or males, such as textile

production. However, although musculoskeletal stress markers were identified on individuals from both sites, tying such markers to specific activities is questioned (Stirland, 1991) and has been specifically challenged in relation to spinning and weaving (Toyne, 2002, 2003).

Occupational affiliations are hinted at but determining them through cultural and biological evidence is problematic.

4) Did the relative salience of different modalities of identity shift with the disruptions wrought by regional political fragmentation?

This study of pre and post-collapse identity display in Tiwanaku communities in Moquegua sought to identify whether their members underwent processes of identity negotiation similar to those evident in more recent examples of state collapse. In Somalia, Yugoslavia and elsewhere, political fragmentation precipitated a reworking of salient identities with factional affiliations becoming more significant. Modern nation states are not equivalent to this pre-Columbian state but they do highlight some of the potential ways in which communities redefine salient identities.

I suggest that similar patterns are evident. Inhabitants at Tumilaca la Chimba lived in a politically tumultuous world. The state authority that had structured social relations for several hundred years dissipated, and the small groups established during political fragmentation had to redefine social relationships both between and within communities. Although collapse phase communities continued to assert their altiplano heritage and present themselves as just as Tiwanaku, socially if not politically, as their Chen Chen predecessors, there is a shift in the expression of difference within these communities. The shift is subtle, and only emerges through the detailed analysis of multiple lines of evidence. At Chen Chen, mourners engaged in an accepted repertoire of funerary rituals, and actively played down difference, both between and

within corporate social groups. By doing so, members used commemoration of the dead as a way of asserting and reaffirming community identity. Commonality in death presented a picture of unity, regardless of actual divisions within Chen Chen society. At Tumilaca la Chimba, the community still collectively presented itself as Tiwanaku, despite political fragmentation. It also largely maintained earlier ideal notions of personhood. However, at Tumilaca la Chimba, there is some evidence that greater variation was acceptable in funerary behavior, and also that this variation correlates with cemetery sector. I argue that there was a redefining of salient identities; that as members of this community attempted to negotiate social relations in the absence of the overarching state they increasingly focused on corporate group identities.

8.4 Conclusions

How communities perceive themselves and their members, as well as the affiliations they create, maintain or reject are embedded in and affect the socio-political environment. Identity has been an increasingly prevalent theme in archaeological literature. Recent discussions have examined the shifting, hybrid and multi-faceted nature of identity (Barth, 1969; Diaz-Andreu, et al., 2005; Insoll, 2007a). Research on imperial contexts demonstrates that identities are particularly malleable during major political change, because notions of self, community and other interact with broader social frameworks. Interaction with and incorporation into expanding political entities, whether Ancient Rome, colonial Spain or imperial Britain, contributed to the reformulation of community and individual identities among both colonized and colonizer (Seretis, 2003; Voss, 2005; Wells, 1999).

This diachronic study of identity among Tiwanaku affiliated communities in the Moquegua Valley indicates that the opposite situation, in which states collapse, represents social turmoil on a par with state expansion. In ways parallel to contemporary examples of state

collapse (Besteman, 1996; Bowman, 1993; Mohamoud, 2006), the fragmentation of Tiwanaku political authority precipitated a reworking of the relative salience of different identities. Internal factional affiliations became increasingly significant as identities based on state membership were eroded. Mourners at Tumilaca la Chimba performed funerary rituals that signified their continuing maintenance of a community identity derived from their shared Tiwanaku heritage. These rituals are similar to those conducted at Chen Chen. However, where at Chen Chen, remarkable consistency across the site served to emphasize unity, increasing difference both between collapse phase villages in different areas of the Osmore Drainage and within the Tumilaca la Chimba community itself, suggest that mourners during and following state fragmentation placed more emphasis on intra-community corporate identities.

The causes of political disintegration affect the affiliations formed or broken in the wake of state collapse. I suggest that the increasing factionalism and internalization apparent at Tumilaca la Chimba supports the argument that Tiwanaku authority in Moquegua broke down because of splintering within the colonial community (Goldstein, 2005). Although Wari actions were a factor in Tiwanaku state collapse (Williams, 2002), direct imperial incursion into Tiwanaku territory by Wari colonists would, I think, have had a very different impact on identities among collapse communities. In the former Yugoslavia, the absence of a common enemy led to the development of internal antagonism and the increased significance of factional identities (Bowman, 1993). I think that we see a similar process in the Tiwanaku Moquegua case, in which Wari actions contributed to the unrest in the middle valley but were not necessarily perceived as a direct threat to the colony.

Addressing the complex question of whether the intra-community identities increasingly emphasized at Tumilaca la Chimba were intra-community groupings that existed before

Tiwanaku state domination is more difficult than in contemporary situations where researchers are not restricted by the fragmentary and incomplete nature of archaeological data (Besteman, 1996). However, based on wider studies of Tiwanaku and more broadly on Andean notions of social organization, I would be inclined to argue that these groups remained significant social units through time.

This study is limited and certainly the sample sizes present considerable interpretative difficulties. I recognize also that a fuller understanding of life, death and identity at Tumilaca la Chimba requires exploring other archaeological contexts at the site. Giving access to biological and cultural data, cemeteries contain the physical remains of individuals who were simultaneously members of political entities, of communities, clans, families, genders, age grades and who held particular occupations and statuses. In this respect, their analysis is an appropriate way of accessing multiple identities. However, because burials are the material remains of ritual processes, in which mourners chose to present the dead in particular ways, specifically to highlight and downplay elements of identity, they alone cannot offer a comprehensive understanding of the multiple social affiliations that coexisted at Chen Chen and Tumilaca la Chimba.

In particular, the emphasis on group identities (community and intra-community) at both sites and the downplaying of identities based on an individual's particular experiences make it challenging to extrapolate much about changing notions of gender, age, status and so forth. I maintain that these were likely very significant lines of difference at these two sites, and there are hints at them in the mortuary record. However, because mourners chose not to emphasize such difference, it is difficult to examine whether gender ideologies, notions about adulthood or the presence of ranking changed much with state collapse. In Chapter Five, I argued that

challenges to the Saxe/Binford model are relevant to Andean studies of mortuary data. Rather than supporting the continued adherence to this model, ethnographic and ethno-historic evidence actually indicates that burials are not straightforward reflectors of life identities. The very fact that there are lines of difference that almost certainly existed at both Chen Chen and Tumilaca la Chimba but that are not evident in the mortuary data only adds weight to these challenges.

Additional data, drawing on residential and other non-mortuary contexts at both sites would provide a more comprehensive picture of community organization and social affiliation. I have adopted a perspective which regards funerals as tools used by mourners as they negotiate their own position in the living society, in which people present themselves as they wish to be viewed (E. Morris, 2006). In some respects this demands an instrumentalist approach to identity which works from the position that “people with common interests coalesce into groups in pursuit of those interests” (Bentley Carter, 1987: 25). However, the manifold identities that coexist in any one individual can be conscious or unconscious; they can be the result of intentional or accidental social affiliations. While I have tried to tease out some of the unconscious expressions of identity, by considering skeletal data and details of craft production, exploring the way in which identity played out in life demands a larger and more varied data set.

The diachronic analysis of funerary practices does demonstrate, however, that the community at Tumilaca la Chimba divorced its ideological identity from political authority. Despite the demise of the Tiwanaku state, they still presented themselves as culturally Tiwanaku. Yet, shared Tiwanaku identity could not prevent ongoing fragmentation, which had begun as early as AD 950 with the breakup of the Chen Chen community, when factions within the town began to leave and establish new villages. I think that in the Tumilaca la Chimba data we see the beginnings of fragmentation within these new villages also. I suggested that funerary rituals act

as a form of prescription. By materializing particular notions of salient identity, the treatment of the dead makes those ideas visible and ultimately contributes to their acceptance and replication in life as well as death. Despite their limitations, mortuary data merit our attention because they are the physical residue of one of the contexts in which mourners actively changed their social environment.

Tumilaca phase communities represent the very end of the Middle Horizon in Moquegua, a period that arguably lasted until AD 1200. What came next, the Late Intermediate Period (AD 1200 – 1475 in Moquegua), locally termed *Estuquiña*, was a marked change from the Middle Horizon. Investigation at sites such as Tumilaca la Chimba, which have Late Intermediate Period occupations superimposed over Tumilaca deposits, is necessary for examining the nature of the transition from the terminal Middle Horizon to the Late Intermediate Period. Why and how Tumilaca communities eventually disappear from the archaeological record and were replaced by *Estuquiña* villages is unclear, but I suggest that the beginnings of the final end of Tumilaca communities lie in the increasing factionalism that is apparent in the funerary record from Tumilaca la Chimba.

APPENDICES

APPENDIX A

STATE COLLAPSE IN THE CONTEMPORARY WORLD

The numerous examples of state collapse throughout history indicate that political disintegration was a recurring process in the past. Political disintegration marked the end of many ancient states in disparate geographical and temporal contexts. Yet, a brief review of global events in more current history, as recently as the last three decades, brings to our attention a series of modern political collapses. The recent disintegrations of, the Soviet Union (1991), the former Yugoslavia (1991/1992), the governments of Somalia (1991), Afghanistan (1979 & 2001), Iraq (2003), Chad (1980) and Liberia (1989), among others, demonstrate that political dissolution is an issue with relevance beyond reconstructing the distant histories of long gone states. Instead, the causes and consequences of political disintegration are of considerable contemporary concern.

Global concern with state collapse is evident in both international political policy with predicting and preventing future collapse and in mass media reactions to contemporary collapses. The state is currently the only internationally accepted mechanism for social organization, and in the international relations literature, at least, a direct correlation is made between stable political government and normality (Mohamoud, 2006). As a result, there is evident foreign interest in restoring state government where it has failed, often through the United Nations, as in the case of many failed African states (Gambari, 1995) or through specific foreign governments, as seen in Iraq and Afghanistan. Intervention by foreign governments in Iraq and Afghanistan is particularly interesting. Despite the role of foreign governments in bringing down existing political structures there, the state is so explicitly the normative system of modern social organization, that immense efforts are made by those same foreign governments in reconstituting a state where one had just been destroyed. The international relations literature, as well as international government policy, is unilaterally focused on the issue of restoring state legitimacy and authority, with little consideration of alternative approaches to social organization (Foltz, 1995; Lowenkopf, 1995; Mohamoud, 2006).

Mass media extends this concern with state collapse beyond governmental policy and the scholarly literature. Although there is a notable disparity in the level of media attention that individual state collapses receive, the language and images used to report those that do receive attention is telling. In keeping with the contemporary idea that state government is necessary for social order, media accounts of recent state disintegrations offer a picture of chaos, violence and deterioration. As an example, articles about Somalia are full of words such as “conflict,” “struggles,” “violence,” “famine,” “ghost city,” “catastrophe.”¹⁴⁵ The widely reported kidnappings of foreign cruise and freight ships by Somali pirates during 2008 compounded another dimension of collapse in the modern world; the idea that it affects people far beyond the

¹⁴⁵ BBC website 10th February 2009

http://news.bbc.co.uk/1/hi/in_depth/africa/2004/somalia/default.stm

Guardian Newspaper website 19th February 2009

<http://www.guardian.co.uk/world/somalia?page=4>

APPENDIX A (continued)

borders of the failed state. The role of foreign governments in state collapse (both before and after the fact) has led to the involvement of thousands of foreign military personnel, and the concomitant impact on those individuals and their families. Action by pirates off the Horn of Africa takes this a step further; if even a vacation on a western, state of the art cruise liner across the Indian Ocean can be endangered by the fallout of political disintegration in Africa, then collapse really is a “matter of considerable importance to every member of a complex society” (Tainter 1988, 193).

Awareness of the far reaching implications of political disintegration has turned into a concern with anticipating and preventing future collapses. In 2005, the non profit organization Fund for Peace and the magazine Foreign Policy created the Failed States Index. Compiled every year, the index assesses modern states’ likelihood to fail. By monitoring what it regards as a state’s core institutions (leadership, military, police, judiciary, and civil service), the FSI “rank[s] the countries where state collapse may be just one disaster away” (FSI website 10th February 2009). The FSI authors present state collapse as the result of one shock event, giving as an example the impact on Pakistan’s political system of Benazir Bhutto’s assassination in 2007. Interestingly, this perspective fits more closely with earlier archaeological interpretations about the causes of state collapse than those suggested in the last two decades. The FSI classifies countries as ‘alert’, ‘warning’, ‘moderate’ or ‘sustainable’. The reason for ranking countries, the FSI states, is that there is a connection between state collapse and “societal deterioration” (FSI website, 10th February 2009). The creation of the FSI exemplifies the very real awareness of and concern to avert state disintegration in the contemporary world. Yet, scholars working on political disintegration in the past have been hesitant to even mention collapse in the contemporary world. While there are sound reasons for their reluctance, I suggest that it places limits on developing an archaeology of collapse.

Scholars writing on ancient state collapses occasionally suggest, as a brief aside, that their analysis is important for averting similar dissolution in the future (Grant, 1999; Tainter, 1988)¹⁴⁶. Even less frequently, scholars from other social sciences have offered perspectives on state collapse in the past (Eisenstadt, 1988; Kaufman, 1988). Overwhelmingly, however, both archaeologists examining the collapse of ancient states and political scientists documenting and exploring political dissolution in contemporary states have insisted that their intellectual endeavors are distinct and of minimal mutual interest (Yoffee and Cowgill, 1988; Zartman, 1995).

Certainly, modern nation states are not wholly analogous to the pre-industrial states with which most archaeologists are concerned. The emergence, expansion, functioning and decline of every state are historically contingent processes. The differences between the historical contexts in which, for example, Khmer states rose and fell in Cambodia during the first millennium AD and the establishment and disintegration of the Somali state (1960-1991) are considerable.

However, reluctance to engage with intellectual thought about state collapse in contemporary situations means scholars working on ancient states lose opportunities to gain insights into the complex ways in which political disintegration impacts members of those states.

¹⁴⁶ Tainter’s forewarning in 1988 that one of the major collapses threatening western society was a general economic breakdown, brought about by un-repayable national and international debts seems particularly prophetic at the time of writing this discussion in 2009 (Tainter 1988, 210).

APPENDIX A (continued)

Any comparative consideration of social process must be undertaken with a thorough understanding of the limitations of that comparison. This is so when we compare ancient states with each other, just as it is so when we use contemporary examples to think about social process in the past. But completely abandoning the comparative approach of ancient states would be misguided (Schwartz, 2006), and I suggest that completely ignoring social patterns in the contemporary world is also unhelpful.

Further, the avowed distinction between modern and ancient state collapse, a distinction emphatically asserted by both political scientists and archaeologists, belies the fact that all scholarly enterprise is undertaken in historically contingent cultural conditions. That our scholarly interests and foci are influenced by our own socio-political and historical environment is a point reiterated by several authors. Research on ancient state collapse is taking a new direction; one that moves away from the causes and immediate ramifications of collapse to a concern with the longer term processes of regeneration and the impacts of collapse on the daily lives and identities of ordinary members of society. Although this reorientation is connected with broader paradigm shifts in the discipline, it is also a product of the historical environment in which research is undertaken. Regardless of whether scholars draw explicitly on contemporary examples in their interpretation of ancient collapse, increased awareness of collapse situations in the contemporary world influences the way that scholars think about ancient collapse. Thanks to the rapid expansion of mass media communication, collapse elsewhere in the world is more immediate. The availability of video, photographs, and interviews with individuals caught up in collapse perhaps humanizes or personalizes state collapse. I suggest that this, in tandem with increasing archaeological interest in identity construction and expression, is influencing the direction that archaeological studies of collapse are taking.

APPENDIX B

DATA COLLECTION AND ANALYSIS

Spatial

Existing research on Tiwanaku identity suggests that the spatial separation of individuals, both in life and in death, was an indicator of corporate group identity (Blom, 1999; Janusek, 1999). There is an ongoing tradition in the south-central Andes of distinct communities simultaneously using the same cemetery, but interring their dead in distinct sectors within that cemetery¹⁴⁷ (Tschopik, 1946). As such, spatial data gathered from both Chen Chen and Tumilaca la Chimba is central to exploring identity at the community and intra-community levels. For Chen Chen this is achieved by reference to maps and drawings produced by the original excavators (Owen, 1997a; Pari Flores, et al., 2002). At Tumilaca la Chimba, earlier researchers had reported the presence of four distinct cemetery sectors (Bawden, 1989). That these sectors were discrete was tested using ground penetrating radar (GPR). This GPR work was carried out using a Mala Geoscience X3M system with a 500 MHz antenna. Parallel profiles were run 1m apart on the edges of the four cemetery sectors to identify evidence of subsurface voids. Spatial data within sectors was gathered through drawings and photography, including overhead images. In addition, all excavated tombs were mapped using a Topcon GTS-202 Total Station. Horizontal control was established by shooting from a geo-referenced base station established by differential GPS by the Instituto Geográfico Nacional, Lima, Peru in UTM coordinates based on the WGS 84 datum. Looted tombs were also mapped in order to infer spatial organization of tombs within the cemetery sectors.

Excavation Protocols

Excavations were conducted at Tumilaca la Chimba. Each of the four cemeteries was sampled and excavated in 4m² areas. Each of these excavation areas was marked out, photographed and surface elevations taken using the Unit datum. The entire area was excavated down to the level of the tombs. Given considerable looting and the steep slope of the ridge, the context between the surface and the tombs was extremely mixed. This initial layer of excavation was designated Layer S/A, as it includes both the surface and the first subsurface layer. Skeletal and cultural materials were recovered, bagged, and underwent laboratory analysis.

Each identified tomb was photographed, drawn and elevations taken before excavation began. The contents of the tomb were designated Layer B. As with Layer S/A, all excavated soil was screened with a ¼ inch screen. A sample of 1 liter was taken from tombs for fine screen analysis. Where possible, an additional sample was collected from the pelvis area of the skeleton.

All tombs were photographed and drawn multiple times during the course of excavation. Tombs were recorded on a standard field form (see below), which contained information on tomb architecture, position and orientation of human remains and grave inclusions. Contents of tombs were collected and bagged for laboratory analysis.

After all tombs had been excavated, final photographs, including overheads, were taken, and final elevations taken. The corners of each excavation area, each individual tomb, and

¹⁴⁷ Interview with Ysidora Yony Nina Jorge, native of Calacoa, District of Carumas, Department of Moquegua, and current resident of the Chen Chen neighborhood, Moquegua, Peru. 8th August 2009.

APPENDIX B (continued)

datums were mapped using a GTS-202 Total Station. Horizontal control was established by shooting from a geo-referenced base station established by differential GPS by the Instituto Geográfico Nacional, Lima, Peru in UTM coordinates based on the WGS 84 datum. All tombs and excavation units were backfilled at the end of excavations.

Architectural

Although brief descriptions of Chen Chen tombs exist (Buikstra, 1995; Vargas, 1994), detailed investigations into the construction of a large sample of tombs was still wanting. For Chen Chen, this information was gleaned from the excavators' field notes, forms and drawings (Owen, 1997a; Pari Flores, et al., 2002). During the excavation of Tumilaca la Chimba this information was recorded in field notes and field forms. A typology of tomb types was established, and each burial categorized within this typology. Information on the presence/absence of a capstone, the material used in the capstone, the construction of the mouth of the tomb, the shape, diameter, and orientation of the mouth, the treatment of the tomb floor, the shape and diameter of the floor, and the depth of the tomb was recorded. This information was also recorded in photos and profile and plan drawings that were made for each tomb.

Tomb Arrangement

The arrangement of skeletal and cultural materials in the tomb is important for examining the maintenance of funerary traditions as well as associations between cultural materials and the deceased. There is a widespread tradition of orientating human bodies towards the east in the south-central Andes (Buikstra, 1995; Williams, 1990)¹⁴⁸. For Chen Chen this information on skeletal orientation and position, as well as placement of cultural inclusions was available through the notes, forms and drawings of the original excavators. At Tumilaca la Chimba, the internal and (where appropriate) external arrangement of burial inclusions was documented through drawings and photos, as well as in excavators' notes. Depths of cultural inclusions as well as skeletal elements was recorded on plan drawings also.

Grave Inclusions

Analysis of all materials from the Chen Chen sample was conducted during this project, and so greater consistency between the two sites could be achieved for grave inclusion analysis than could be for spatial and architectural data gathered during excavations. Both biological and cultural materials were subject to thorough laboratory analysis. The nature of those analyses and the methodologies utilized are detailed by inclusion type. Unless otherwise stated, material analysis was undertaken in the laboratory at the Museo Contisuyo, Moquegua.

Ceramic

There is considerable existing literature on Tiwanaku ceramics in the Moquegua Valley, both during the height of state occupation and in the wake of state disintegration (Goldstein, 1985, 2005; Owen, 2001). As discussed above, this literature largely focuses on form, slips and

¹⁴⁸ Interview with Justa Falcon Queya, native of Cambrune, District of Carumas, Department of Moquegua, and current resident of the community of Tumilaca, Moquegua, Peru. 12th August 2009.

APPENDIX B (continued)

decorative motifs. There has been some research on the differential inclusion of vessel forms in graves at Chen Chen (Blom, 1999; Buikstra, 1995), noting the apparent restriction of keros to adult male and juvenile burials. Detailed analysis was undertaken on the ceramic material from the Chen Chen and Tumilaca la Chimba burials included in this study. All intact vessels and ceramic sherds were analyzed using a coding system similar to that utilized in other studies in the Moquegua Valley (Nash, 2002; Sims, 2006) (see below). This system is designed to collect information not only on form and decorative motif, but also aspects of production.

Each shard or vessel was coded for weight, thickness, paste color, paste texture, paste type¹⁴⁹, firing characteristics, surface treatment, slip, color (determined using Munsell), and surface burning (both exterior and interior surfaces were analyzed), fragment type (non-diagnostic, diagnostic), vessel form, part of the vessel present, vessel height, and, where appropriate; rim form, rim diameter, rim thickness, neck diameter, neck height, base form, base diameter, base thickness, base characteristics (crude or slipped), handle form, location of handle, number of handles, surface decoration, location of surface decoration, surface designs (on both exterior and interior surfaces), and post-firing marks. All vessels and diagnostic sherds were drawn (with both a profile and a roll-out of the decorated vessels) and photographed.

In order to gather the chemical data on clay procurement necessary for examining the unintentional expression of intra-community corporate identity, a sample of sherds from each site was subjected to chemical composition analysis using Laser Inductively Coupled Plasma Mass Spectrometry (LA-ICP-MS) at the Elemental Analysis Facility, at the Field Museum of Natural History, Chicago. LA-ICP-MS analysis of ceramics from Chen Chen and Tumilaca la Chimba was used to examine material manifestations of social affiliation not evident in visual analysis alone. LA-ICP-MS was the preferable method for conducting chemical analysis because it is relatively inexpensive, requires minimal sample preparation, and in contrast with other techniques that completely destroy the ceramic shard, leaves a mark almost invisible to the human eye (Kennett, et al., 2004; Kennett, et al., 2001).

Increasingly popular, Inductively Coupled Plasma Mass Spectrometry has been used in a range of archaeological contexts and on a range of materials (Gratuze, 1999; Hall, et al., 1998; Kennett, et al., 2004; Little, et al., 2004; Mallory-Greenough, et al., 1998; Neff, 2003; Niederschlag, et al., 2003; Speakman and Neff, 2002). The technique has been applied to examine long distance trade in the past. More recently, investigators have used ICP-MS to examine more local differences, within the same valley or even the same community (Neff, 2003; Speakman and Neff, 2002). Some of these studies have sought to connect the finished product with the raw material, whether obsidian or clay (Neff, et al., 1992; Vaughn and Neff, 2004). Existing work on clay sources in Moquegua indicates that at least five chemically distinct clay groups are present in Moquegua and that several of these were in use during the Middle Horizon (Sharratt, et al., 2009). Chemical data retrieved from LA-ICP-MS analysis of Chen Chen and Tumilaca la Chimba sherds are compared against chemical data on the clay groupings to explore craft production strategies within as well as between the two communities.

¹⁴⁹ The paste typology utilized is similar to that used in other ceramic studies in the valley. Although the number of paste types is extensive, the typology is such that the data can be collapsed into fewer categories if desired (Nash, 2002).

APPENDIX B (continued)

ICP-MS allows the rapid collection of multi-element chemical data, and has the advantage of low detection limits (ppm for solid samples) (Pollard, et al., 2007). Samples are introduced either by dilution into a solution or through laser ablation. Laser ablation involves considerably less preparation than solution analysis and is the technique adopted in the analysis of Chen Chen and Tumilaca la Chimba ceramics. Ablation with a laser evaporates an area of the solid sample, and the products of this evaporation are carried in a stream of argon into a plasma torch (Pollard, et al., 2007). Due to the interface between the plasma torch and the mass spectrometer, positive ions enter a high vacuum magnetic selector, in which the ions are selected according to the mass-to-charge ratio, and the impact of the ions is recorded via a charge sensitive detector (Pollard, et al., 2007).

Protocols established for the Field Museum Elemental Analysis Facility were used for the chemical characterization of ceramic sherds from Chen Chen and Tumilaca la Chimba (Dussubieux, et al., 2007). These were the same protocols used for the analysis of the Moquegua clays against which the ceramic data is compared (Sharratt, et al., 2009). A Varian inductively coupled plasma-mass spectrometer (ICP-MS); equivalent to the Varian 810 instrument was used. The Varian is a quadrupole mass spectrometer; quadrupole mass filters are appropriate for trace element measurement because they rapidly scan a wide mass range (Pollard, et al., 2007). In the Field Museum machine, the ion beam is bent 90° by a series of lenses before it enters the quadrupole, increasing the sensitivity of the instrument 200 times (Elliot, et al., 2004). The facility at the Field Museum uses a New Wave UP213 (Helium carrier gas, 213 nm laser operated at 0.2mJ and a pulse frequency of 15 Hz) laser in conjunction with the ICP-MS to introduce solid samples.

The ceramic samples were ablated using the laser, with a spot size of 150 microns, and a dwell time of ninety seconds. The laser was positioned to avoid large temper grains so that analysis focused on the chemical signature of the clays used in ceramic production. Each sample was ablated ten times, and a total of fifty five elements were measured, using ²⁹Si as an internal standard to control for time variability in time efficiency and resulting signal strength. Chemical concentrations were calculated using NIST standards n610, n612 and Brick Clay (n679), in line with established protocol (Gratuze, et al., 2001). Error values were established using analyses of New Ohio Red Clay, which was subjected to the same protocols as the ceramic samples.

In addition to analyzing a sample of ceramic sherds, all complete vessels from both the Chen Chen and Tumilaca la Chimba collections were subject to analysis using X-ray fluorescence analysis (XRF). Although ICP-MS analysis produces far more precise data than XRF, and is particularly useful for analyzing trace elements in archaeological material, any LA-ICP-MS analysis required exporting ceramic material from Peru to the USA. This precluded the analysis of intact ceramic vessels, and limited the sample that could undergo chemical characterization through LA-ICP-MS. Conducting chemical characterization using a portable XRF instrument meant that analysis could be undertaken at the Museo Contisuyo, Moquegua.

XRF is a chemical characterization technique that operates by shooting X-rays onto a sample which then create inner shell vacancies in the atoms of the sample surface layers (Pollard, et al., 2007). The vacancies are de-excited when a secondary (fluorescent) X-ray, with energy similar to that of the elements in the sample, is produced. XRF characterization is reliant upon counting the secondary X-rays that escape and measuring their energies. XRF analyses of the Chen Chen and Tumilaca la Chimba ceramic vessels were conducted using the Field Museum's

APPENDIX B (continued)

portable XRF Innov-X Alpha Series instrument. The primary X-rays are excited in a X-ray tube with a tungsten anode (Williams, et al.). Used on soil mode, 32 elements can be measured on this instrument and analysis is possible down to phosphorous (Williams, et al.).

Textile

The aridity of the Moquegua Valley has contributed to the excellent preservation of pre-Hispanic textiles. Engravings on anthropomorphic stelae from the altiplano suggest the elaborateness of dress in the heartland, but it is in drier enclaves including San Pedro de Atacama and the Moquegua Valley that the original pieces have preserved in the archaeological record (Rodman, 1992, 2000; Wallert and Boytner, 1996). However, as commented, research on Tiwanaku textiles in Moquegua is in its infancy (Conklin, 1983; Plunger and Goldstein, 2008). Yet, it has long been recognized that textiles are important media of identity assertion in the Andes (Ackerman, 1991; Boytner, 2004; Cassman, 2000; Femenias, 1991). As discussed in Chapter Two, textiles can also be unintentional signifiers of identity (Sharratt and Williams, 2009). Further, detailed analysis of the production of textiles, similar to that adopted for ceramic material, can shed light on production and, given the domestic and familial context of textile production in most pre-Industrial societies, can offer insight into the social groupings within which textiles were produced.

Textiles were recovered from graves at both Chen Chen and Tumilaca la Chimba. Preservation conditions were better at Chen Chen and the textiles there were more numerous and complete than those in tombs at Tumilaca la Chimba. Both decorative elements and evidence for production (spinning and weaving) were documented in the textile analysis. The most extensive and intensive investigation of pre-Hispanic textiles from the Moquegua Valley was that conducted by Nikki Clark on Estuquiña materials (Clark, 1993). Her approach and recording system is increasingly utilized in Moquegua and was adopted in this project.

In several graves, at least two different textiles were present. Each individual textile was recorded separately. Using Clark's coding system, data was collected on the material (cotton or camelid wool), the dimensions of the fragment (width, length and thickness in cm), the form of the textile (normally blanket or shawl), and the state of preservation. The number of warp and weft threads per cm was recorded (thread count). The type of weave; weft faced, warp faced, balanced (both warp and weft appear in an interlocking pattern), the designs and colors were noted. Finally, spinning technique was analyzed by measuring the width of each thread, counting the number of spins per cm and determining the direction of the spin. Spins are either Z or S direction. In the Andes, S is far more common, with Z associated with witchcraft or curing (La Barre, 1948). Typically, Andean threads are spun in one direction and then two spun threads are twisted together (re-spun) to produce a stronger thread. The most common pattern in southern Andean textiles is ZS. As twist is visible, a pattern of SZ would be that more likely associated with curing.

Where possible, all of the above data was recorded for each textile. However, laboratory analysis was hindered by the fragmentary nature of the textiles. In some cases, loose threads were present in graves and these could be included in the analysis of investment in spinning, but not in investment in weaving. However, some textiles that could be analyzed for warp and weft count could not be analyzed for spin count. Many of the textiles from Chen Chen were still

APPENDIX B (continued)

wrapped around mummified human remains. In these cases, it was sometimes to remove a single thread on which to count spins, without damaging the specimen.

Wooden Artifacts

Again, due to arid conditions in the Osmore Drainage, wooden artifacts were recovered from both Chen Chen and Tumilaca la Chimba. Analysis of these was visual; data on the type of artifact (e.g. spoon), the weight, length, width, thickness, decoration, and wear were collected. These artifacts were photographed and drawn. Species identifications were not made on wooden artifacts because it is almost impossible to do this visually, and would require the removal of a slither of wood (Whitehead, personal communication, 2008). Destructive analysis was not justified in this study. In a few instances, species identification was suggested based on visual analysis by an archaeo-botanist.

Other Botanic Artifacts

Other botanic artifacts were also photographed and drawn. These included baskets, panpipes, gourds, cactus spine needles, and sandals. They were categorized by type, weighed, and measured, and the condition of the artifact noted.

Fine Screen Samples

Information on botanical inclusions was collected from the tombs at Tumilaca la Chimba. A one liter sample of soil was collected from tombs, and where appropriate, from the pelvis of the skeletal remains. These were fine-screened, and analyzed microscopically by Dr David Goldstein at the Sección de Palinología y Paleobotánica, Laboratorio de Ciencias Ambientales (LID), Facultad de Ciencias y Filosofía, Universidad Peruano Cayetano Heredia, Lima, Peru where there is access to a comparative collection of Peruvian and local taxa.

This approach for the recovery of paleobotanical data was used in place of flotation. Due to extremely dry conditions, fine screening in the Upper Moquegua Valley, as opposed to flotation, has been used for eight years with great success (Goldstein, personal communication, 2007). In addition, samples of the soil fill in intact vessels was recovered and also analyzed by Goldstein and his students. These analyses offer insight into the inclusion of food remains in the tombs at Tumilaca la Chimba (Appendix G). Unfortunately comparative data is not available for Chen Chen, as the excavators did not take samples for fine screening or flotation. However, there is evidence in some excavators' notes for the apparent inclusion of food remains in some graves.

Faunal

Faunal remains from Tumilaca la Chimba were analyzed by zoo-archaeologist, Dr Susan DeFrance, using the comparative collection at the Museo Contisuyo, Moquegua. She identified taxa and, where possible, the elements present. Faunal remains from Chen Chen were very few.

Shell

Shell inclusions from Chen Chen were analyzed by Monica Barrionuevo (Lic). They were weighed, the taxon identified, MNI (minimum number of individuals) and modification were noted. Shell inclusions were photographed. There were no shell inclusions in the graves at Tumilaca la Chimba.

APPENDIX B (continued)

Lithic

Stone tools from both sites were weighed, coded for type, and photographed. Several pieces of obsidian, both flakes and points, were recovered at Tumilaca la Chimba. These were subject to XRF analysis using a portable XRF machine in the Museo Contisuyo, Moquegua. The same instrument and protocols discussed above were used. Each piece of obsidian was sourced to one of the principal obsidian sources in the southern Andes. There was no obsidian in the Chen Chen sample.

In addition to stone tools and obsidian flakes, beads made of sodalite and crisacola were recovered from tombs at Tumilaca la Chimba. These were weighed, drawn, and photographed.

Skeletal

Considerable human remains were included in the Chen Chen sample, and skeletal remains were recovered from most of the 64 tombs excavated at Tumilaca la Chimba. Analysis of the human remains was undertaken by osteo-archaeologists. The human remains from Chen Chen were analyzed by Martha Rosa Palma Malaga and Maria Concepcion Gody Allende (Appendix D). The remains from Tumilaca la Chimba were analyzed by Jennifer Starbird (Appendix F).

Using the approaches detailed in 'Standards for Data Collection from Human Remains' (J. E. Buikstra and D. H. Ubelaker, 1994), all skeletal and dental remains were inventoried, and data collected on the MNI for each tomb, the age and sex of individuals, pathologies and other indicators of health, as well evidence for cranial modification. The Chen Chen sample included 20 mummified individuals. As much data as could be collected from these individuals, but this was mostly restricted to a broad age range estimate.

Radiocarbon Dating

Although ^{14}C dates exist for Chen Chen, there were none from Tumilaca la Chimba (Goldstein, 2005). Radio carbon dates were necessary for confirming that Tumilaca la Chimba dates to after the collapse of the Tiwanaku state in Moquegua. However, dates were also run from Chen Chen in order to date the particular mortuary contexts analyzed and to examine temporal change within each site.

Samples of carbon, textile, wood and maize were selected from the Chen Chen collection for radiocarbon dating. During excavations at Tumilaca la Chimba, appropriate carbon samples were identified and sampled using standard protocol. In addition, wood, textile and maize samples were taken. No human or animal bone was submitted for dating. The samples were submitted to the Accelerator Mass Spectrometry Laboratory at the University of Arizona.

APPENDIX B (continued)

PROYECTO ARQ. CERRO BAUL 2006/7
SECTOR M, TUMILACA LA CHIMBA
TOMB FORM

Unit _____ Area _____ Tomb _____

Position N: _____ Datum _____ Elevation _____

E: _____

Drawings _____ Photos _____

Archaeologist _____ Date _____

A. Tomb Type:

1. Stone lined cist

No. of stone courses _____

Mortar between stones? Yes No

2. No stone lining;

3. Partial stone lining (e.g. stone lining only on one side)

4. Urn (if an urn is present, also mark 1, 2, or 3)

Tomb superstructure: None Outer Ring Other _____

B. Condition: Intact Disturbed (mark one)

Nature of Disturbance

1. Disturbed by modern looters
2. Disturbed in antiquity (e.g. to construct another tomb)

Degree of Disturbance

Architecture: In place Disturbed

Grave Inclusions: Removed Disturbed but present Not clear

Human Remains: In place Disturbed but present Incomplete Removed

C. Spatial Association:

(describe relation with surface, with other tombs, etc)

APPENDIX B (continued)

D. Nature of Construction:

Capstone Present Absent (mark one)

If present mark one: Stone Mortar Wood Other _____
Elevation _____

Mouth Treated Untreated (mark one)

If treated mark one: Stone Mortar Stones & mortar

Elevation _____

Orientation of main opening of mouth _____

Shape of mouth _____ Diameter of mouth _____

Floor Treated Untreated (mark one)

If treated, describe:

Elevation _____

Shape of base _____ Diameter of base _____

Comments on Tomb Construction:

E. Grave Inclusions

External (location, type, quantity, orientation)

Internal (location, type (ceramic, metal, botanics, animal remains, fish remains, textile, other), quantity, orientation)

APPENDIX B (continued)

F. Human Remains

No. of individuals: _____

Relation between individuals: _____

Orientation: Head: _____ Feet: _____

Position: Flexed Semi-flexed Extended

Other _____

G. Interpretation

Map #	Specimen #	Description	Elevation beneath datum

APPENDIX B (continued)

Ceramic Codes
Chen Chen & Tumilaca la Chimba

A. Specimen number	3. Smudging 4. Unfired
B. Unit	N. Exterior Surface Treatment
C. Recinto	1. Polished
D. Quad	2. Burnished
E. Capa	3. Smoothed
F. Rasgo	4. Wiped
G. Weight (in g)	5. Rough Finish
H. No. of fragments	6. Eroded
I. Fragment Thickness (in cm)	7. No surface
J. Paste Color	O. Exterior Slip
1. red-pink	1. Slipped
2. red-yellow	2. Partially slipped (only in certain areas)
3. beige/buff	3. No slip
4. brown	P. Exterior Slip Color
5. grey	1. Red
6. black	1.1 Bright Red
7. orange	2. Dark Red
8. yellow	3. Light Red
K. Paste Texture	4. Red/Brown
1. Fine	4.1 Dark Red/Brown
2. Medium	5. Brown
3. Coarse	6. Dark Brown
4. Very Coarse	7. Light Brown
L. Paste Type (see below)	8. Orange
M. Firing Characteristics	9. Dark Orange
1. Oxidation	10. Light Orange
2. Reduction	11. Cream
	12. Cream/Yellow
	13. White
	14. Grey
	15. Black
	16. Red/Yellow
	17. Grey/Blue
	Q. Exterior Burning
	1. Soot, 2. Burning Stain

APPENDIX B (continued)

R. Interior Surface Treatment

1. Polished (IF 2, 3, 4, continue analysis)
2. Burnished
3. Smoothed
4. Wiped
5. Rough Finish
6. Eroded
7. No surface

S. Interior Slip

1. Slipped
2. Partially slipped (only in certain areas)
3. No slip

T. Interior Slip Color

1. Red
 - 1.1 Bright Red
2. Dark Red
3. Light Red
4. Red/Brown
 - 4.1 Dark Red/Brown
5. Brown
6. Dark Brown
7. Light Brown
8. Orange
9. Dark Orange
10. Light Orange
11. Cream
12. Cream/Yellow
13. White
14. Grey
15. Black
16. Red/Yellow

U. Interior Burning

1. Soot
2. Burning Stain

V. Fragment Type

1. Non diagnostic, undecorated
2. Diagnostic, undecorated
3. Non-diagnostic, decorated
4. Diagnostic, decorated

W. Vessel Form

1. Undetermined
2. Cuenco
3. Tazon
 - 3.1 Tazon with torus
4. Kero
 - 4.1 Kero with torus
 - 4.2 Coca-coca bottle kero
5. Jarra
6. Incensario
7. Vaso
 - 7.1 Vaso retrato
 - 7.2 Vaso redondo
8. Botella
9. Cantaro
10. Urna
11. Fuente
12. Olla
13. Miniatura
14. Sahumador
15. Undetermined

X. Part of Vessel

1. Complete
2. Body sherd
3. Rim
4. Neck
5. Base
6. Handle
7. Spout
8. Other

Y. Vessel Height (if complete) mm**Z. Rim Form**

1. Oval
2. Curving, beveled interior
3. Beveled interior
4. Curving, beveled exterior
5. Beveled exterior
6. Flat

APPENDIX B (continued)

- | | |
|---|---|
| <ul style="list-style-type: none"> 7. Curving, thickened interior 8. Rounded, thickened exterior 9. Beveled to a thickened exterior 10. Rounded, thickened interior 11. Interior lip with thickened, rounded exterior 12. Flat, thickened interior 13. Flat, thickened exterior 14. Flat, thickened on both sides 15. Rim with appendix <p>AA. Rim Diameter (in cm)</p> <p>AB. Rim Thickness (in cm)</p> <p>AC. Neck diameter (in cm)</p> <p>AD. Neck height (in cm)</p> <p>AE. Base Form</p> <ul style="list-style-type: none"> 1. Flat 2. Concave 3. Convex 4. Conical 5. Tripod 6. Tetrapod 7. Fragment of tripod/ tetrapod 8. Pedestal 9. Flat with central part concave 10. Other <p>AF. Base diameter (in cm)</p> <p>AG. Base thickness (in cm)</p> <p>AH. Base characteristics</p> <ul style="list-style-type: none"> 1. Crude, no slip 2. Slipped <p>AI. Handle Form</p> <ul style="list-style-type: none"> 1. Horizontal belt 2. Vertical belt | <ul style="list-style-type: none"> 3. Tubular 4. Simple appendix or protuberance 4. Fluted handle 5. Mark of handle <p>AJ. Location of handle</p> <ul style="list-style-type: none"> 1. Lip – lip 2. Lip – neck 3. Lip – body 4. Rim – body 5. Neck – body 6. Body 7. Rim – rim 8. Rim <p>AK. Number of handles</p> <ul style="list-style-type: none"> 1. 1 2. 2 3. 3 <p>AL. Exterior decoration</p> <ul style="list-style-type: none"> 1. Mono chrome painted 2. Bichrome painted 3. Polychrome painted 4. Molded 5. Modeled 6. Appendix 7. Incision 8. Perforation 9. Application 10. Painted & molded 11. Painted, molded, & modeled 12. Painted and applied 13. Painted and appendix <p>AM. Location of exterior decoration</p> <ul style="list-style-type: none"> 1. lip 2. rim 3. body 4. base 5. rim, body 6. lip, rim, body 7. lip, body, base |
|---|---|

APPENDIX B (continued)

- 8. neck
 - 9. neck, body
 - 10. body, handle
 - 11. handle
 - 12. spout
 - 13. other
- AN. Exterior designs**
- 1. geometric
 - 1.1 geometric incl circle
 - 1.2 geometric incl Tumilaca wiggly lines
 - 2. anthropomorphic
 - 3. zoomorphic (incl unnatural animals)
 - 4. geometric and anthropomorphic
 - 5. geometric and zoomorphic
- AO. Interior decoration**
- 1. Mono chrome painted
 - 2. Bichrome painted
 - 3. Polychrome painted
 - 4. Molded
 - 5. Modeled
 - 6. Appendix
 - 7. Incision
 - 8. Perforation
 - 9. Application
 - 10. Painted & molded
 - 11. Painted, molded, & modeled
 - 12. Painted and applied
- AP. Location of interior decoration**
- 1. lip
 - 2. rim
 - 3. body
 - 4. base
 - 5. rim, body
 - 6. lip, rim, body
 - 7. lip, body, base
 - 8. neck
- 9. neck, body
 - 10. body, handle
 - 11. .handle
- AQ. Interior Design type**
- 1. geometric
 - 1.1 geometric incl circle
 - 1.2 geometric incl Tumilaca wiggly lines
 - 2. anthropomorphic
 - 3. zoomorphic (incl unnatural animals)
 - 4. geometric and anthropomorphic geometric and zoomorphic
- AR. Location of post firing marks**
- 1. exterior sides
 - 2. exterior of base
 - 3. interior sides
 - 4. interior base
- AS. Marks**
- 1. Repair holes
 - 2. X
 - 3. D
 - 4. O
 - 5. Y
 - 6. I
 - 7. II
 - 8.
 - 9.
 - 10. undetermined.

APPENDIX B (continued)

PASTE TYPES

1. Paste with lots of biotite, fine texture, quite compact. Small white inclusions of quartz.
- 1.1 Paste with lots of biotite, medium texture. Small white inclusions of quartz.
2. Paste with medium quantity of biotite. Inclusions of quartz more visible. Medium paste texture.
- 2.1 Paste with less biotite. Grains of quartz. Paste is medium to thick
3. Paste with little biotite, and more quartz. Texture is medium. Some large inclusions. Paste is more granulated.
- 3.1 Paste with little biotite, and more quartz in some big inclusions. Texture is thicker, Some large inclusions of volcanic stones.
- 3.2 Fine texture, quartz and volcanic inclusions. A little biotite.
4. Paste with little biotite, fine quartz inclusions, and stones of a bright grey color. Paste is more compact and texture is fine.
- 4.1 Paste with a little biotite, quartz in very small inclusions – some are almost imperceptible. Paste is very compact and texture is fine.
5. Paste with almost no biotite. Quartz in medium sized grains, also inclusions of volcanic stone. Texture is medium to thick and is granulated.
- 5.1 Paste with very little or no biotite, little quartz and many more volcanic inclusions (bright grey stones). The texture is thick and granulated.
- 5.2 Paste with very little or no biotite, little quartz. Very small black inclusions (volcanic) – this is its most characteristic trait.
6. Paste with fine or very fine quartz inclusions. Sometimes has volcanic inclusions. Minimal biotite. Fine texture.
7. Fine paste with volcanic stone inclusions. Very homogeneous.
8. Medium paste with volcanic stone inclusions, little quartz. Compact paste, occasionally with biotite, sometimes with large inclusions. Inclusions are larger than 5.2.
9. Cream paste, occasionally with biotite. Volcanic inclusions. Texture is medium, and not compact.
10. Paste with lots of quartz and volcanic inclusions, a little biotite (some large inclusions). Compact paste, brown in color and medium texture.
11. Paste without biotite, with lots of large stone inclusions. Thick texture, compact paste of reddish color.
12. Paste with no biotite, no notable inclusions. Very fine and compact paste.
13. Medium to thick texture. Lots of volcanic inclusions. No mica, paste is compact to semi-compact.
14. Medium to thick texture. Lots of volcanic inclusions, white, black (?). No mica, very compact.
15. Orange grog, volcanic inclusions. A little quartz. No biotite. Medium texture.
- 15.1 Red stone inclusions and orange grog. Volcanic inclusions, some quartz.
- 15.2 Red stone inclusions. Volcanic inclusions and some quartz.
- 100 UNDETERMINED.

APPENDIX C

ANALYZED BURIALS FROM CHEN CHEN

The following descriptions are of the 138 burials analyzed from the site of Chen Chen. The burials are arranged by sector. As several sectors were excavated by both Pari Flores (2002) and Owen (1995), I detail those from 2002 first and then those from 1995. For each burial, I describe location, architectural data, summarize the bioarchaeological analysis and detail the cultural inclusions.

For the Pari Flores sample, information on grave architecture and the position of inclusions is derived from field forms, field drawings and the preliminary field report (Pari Flores, et al., 2002).¹⁵⁰ Architectural data for the 1995 sample is thus limited to whether a grave was deemed a cist or an unlined pit, and no information is available on positioning.

Bioarchaeological analysis of the human remains from both collections was undertaken by Martha Palma Malaga and Maria Concepción Godoy Allende. Their analysis report is Appendix D. It should be noted that in my descriptions below, I use the age categories used by Starbird for the Tumilaca la Chimba sample (Appendices E and F), and not the age categories used by Palma Malaga and Godoy Allende as this was necessary for ensuring consistency across the two sites. Human remains could not be analyzed for all contexts. A total of 18 mummies were included in the sample (13 from the 2002 collection, 5 from the 1995 collection), and thus very little information other than a rough estimate of the individual's broad age range could be gathered. In addition, human remains from a total of 32 graves could not be located for analysis.¹⁵¹ Excavators in Pari's project frequently recorded the broad age range of the individual on field forms. This rough estimate however cannot be considered equivalent with the osteological determinations made by Palma Malaga and Godoy Allende, and although described below, these burials were removed from certain statistical analyses.

The cultural inclusions from the two samples were analyzed as detailed in Appendix B. Analysis and drawings of cultural inclusions was undertaken by myself. The color code scheme used in ceramic drawings is shown in Figure 43. There was a range of artifacts, and the aridity of the middle valley contributed to the preservation of textile and botanic items. Although limited biological information could be gleaned from the mummified human remains, mummies did present an opportunity for analysis of textiles in their original placement.

¹⁵⁰ I thank Pari Flores for allowing me access to original field forms and drawings.

¹⁵¹ Human remains from 5 of these burials were listed in the Museo Contisuyo's inventory. Field forms from the other 26 recorded the presence of human remains (both skeletal and mummified) but the current location of those remains is unknown. They are not listed in the Museo Contisuyo's inventory, indicating they were never accessioned into the museum (Palacios, personal communication, 2008). Discussion with the project director and several excavators from 2002, as well as with the local INC office also failed to discover what had happened to those remains.

APPENDIX C (continued)

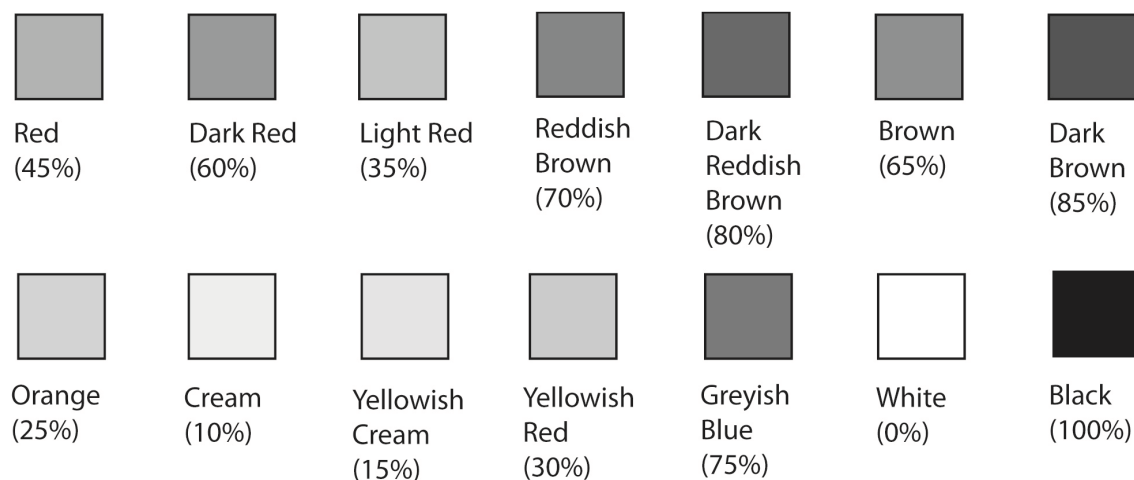


Figure 43. Color codes used in gray-scale ceramic drawings. Percentage refers to the grayscale level used.

Sector 22

Sector 22 was a small cemetery, located in the eastern area of the site. In 2002, 62 units, measuring 5 by 5 meters, covering a total of 310m² were excavated in Sector 22 and a total of 76 tombs were located. Of these, 6 were determined intact.

Tomb 1012 (2002)

Located in the northwestern corner of unit 130, Tomb 1012 was an intact stone lined cist, with one stone coursing. The capstone was missing. The circular mouth was constructed from stones and mortar and had a diameter of 35cm. The mouth was partially disturbed. The untreated floor measured 25 by 30cm. The tomb was 21cm deep.

The field form records the presence of the skeleton of a child facing east, in a fetal position but these skeletal remains were not available for analysis.

Also interred in the tomb were two ceramic vessels. One, an un-slipped *tazon* shaped vessel,¹⁵² was located to the south of the individual. There were signs of reduction during firing, and burning stains on the exterior. The vessel had originally been a *sahumador*, which had been broken off in the middle and reused as a *tazon*. The mark of a handle was still evident. The other

¹⁵² Height 4.9cm, Rim Diameter 10cm, Base Diameter 6cm.

APPENDIX C (continued)

vessel was to the west of the child. It was a burnished, red-slipped one-handed pitcher.¹⁵³ The *jarra* was decorated with a black line around the neck and 1.7cm above the base. In-between these lines were 4 rows of wiggly lines.

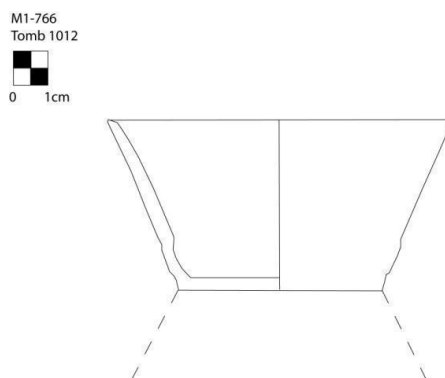


Figure 44. *Sahumador* remodeled into *tazon*, Tomb 1012.

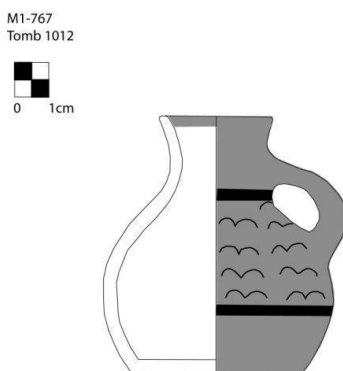


Figure 45. Red-slipped one-handed pitcher, Tomb 1012.

Tomb 1056 (2002)

Tomb 1056 was located on the east side of unit 153. It was an intact stone lined cist with one stone course. The capstone consisted of a single flat stone with mortar filled in by small

¹⁵³ Height 7.6cm, Rim Diameter 3cm, Neck Diameter 1.9cm, Base Diameter 5cm.

APPENDIX C (continued)

stones. The circular shaped mouth was constructed of stones and mortar, and had a diameter of 20cm. The floor was untreated and measured 34 by 27cm. The tomb was 32cm deep.

It contained the mummified remains of a sub-adult, in a flexed position facing east. The mummified condition of the individual prevented osteological analysis.

The individual was wrapped in two textiles; a *manta* (shawl) and *frazada* (blanket). Both were warp-faced textiles woolen textiles whose wool had been spun ZS. The *frazada* was woven of threads of interlocking brown and camel colored wool, thickly spun (5 spins per cm) and thickly woven (5 threads per cm). Only a small section of the *manta* was visible on the mummy bundle, and was woven of much finer spun and woven wool. Wrapped over the *frazada* and holding the mummy bundle in position was a braided fiber rope, 0.5cm wide and 0.2cm thick. Also recovered from the tomb was a probable camelid tibia (Kestle, personal communication, 2009). The bone was modified so that it resembled a weaving tool, but was far too large to have actually functioned as one and its purpose is unclear.

Tomb 1119 (2002)

Situated in the southwestern corner of unit 250, Tomb 1119 was an intact cist with one stone coursing. There was no capstone present. The mouth was circular, constructed of stone and mortars, and had a diameter of 45cm. On the base of the floor was a small flat stone against the west wall. The tomb was 40cm deep.

The tomb contained the partially mummified remains of an individual in a flexed position facing east. The individual was a child aged 5 years +/- 9 months, of undetermined sex. The child had tabular cranial modification. No pathologies were identified.

There were two ceramic vessels in the tomb. One was a red-slipped *kero*,¹⁵⁴ with evidence for burning on the exterior. It was decorated with black and orange bands around the middle, and black zig-zags on the exterior of the rim. There was a band of red-slip around the interior of the rim. The other vessel was a un-slipped *tazon*¹⁵⁵ with evidence for reduction during firing. There was also a set of four cane flutes of differing lengths, likely part of a panpipe. A cane, through which had been inserted a fragment of human rib, and which had human hair on one end, and red and blue woolen threads wrapped around it, was also recovered. The object resembles an atlatl, but is too small and light to have functioned as one. Given its inclusion in the grave of a child, perhaps it represents a toy. A plain wooden spoon, 13.2cm long was also found. The mummy was wrapped in a finely woven warp-faced *manta* woven from brown wool spun ZS. Fragments of fiber rope were also recovered.

¹⁵⁴ Height 17.6cm, Rim Diameter 15cm, Base Diameter 8cm.

¹⁵⁵ Height 8.4cm, Rim Diameter 13cm, Base Diameter 9cm.

M1-868
Tomb 1119

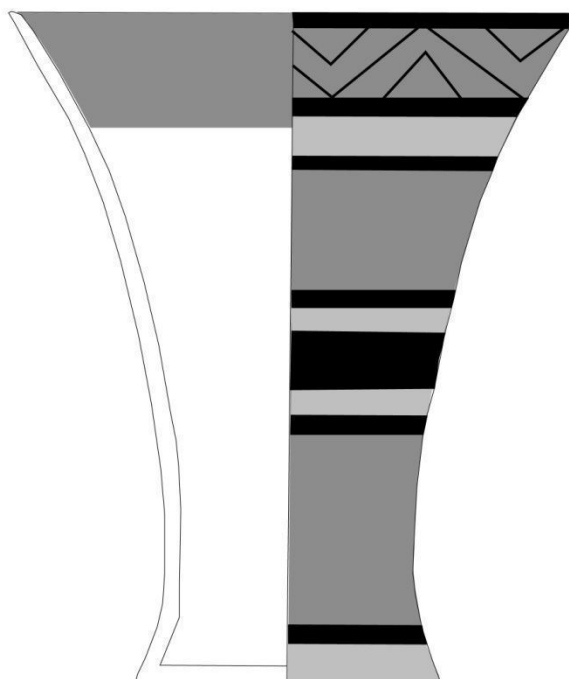


Figure 46. Red slipped *kero*, Tomb 1119.

M1-872
Tomb 1119

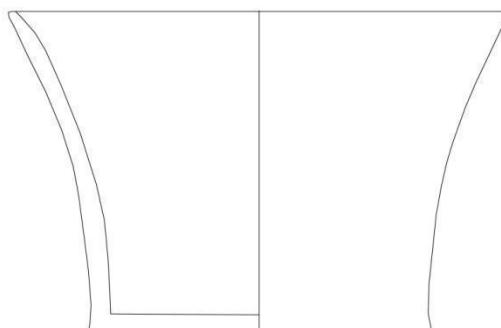


Figure 47. Un-slipped *tazon*, Tomb 1119.

APPENDIX C (continued)

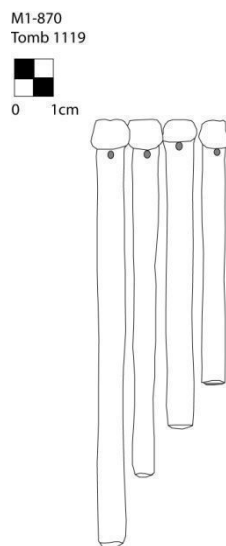


Figure 48. Panpipes, Tomb 1119.

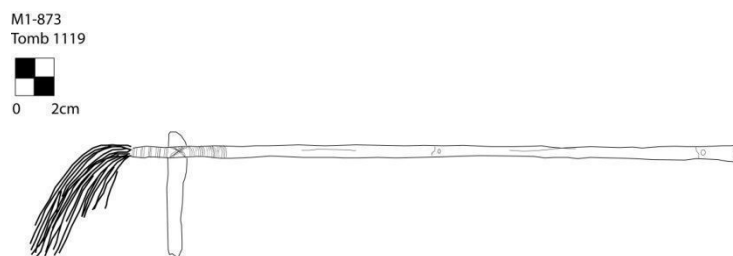


Figure 49. Possible atlatl, Tomb 1119.

APPENDIX C (continued)

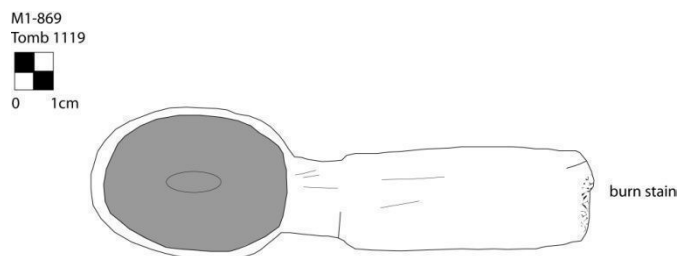


Figure 50. Wooden spoon, Tomb 1119.

Tomb 1134 (2002)

Tomb 1134 was located in the southern half of unit 259. Although described as partially disturbed in Pari's preliminary report, the tomb was recorded as an intact pit, with no stone lining. There was no capstone present. The mouth and floor were both untreated. The grave was roughly circular. The mouth measured 80 by 70cm, and the floor had a diameter of 70cm. The tomb was 53cm deep.

It contained the skeletal remains of a female, aged 20 to 24 years. The individual had tabular cranial modification. The individual had considerable dental wear, abscesses and caries, as well as pre-mortem dental loss. The skeleton was in a flexed position facing east.

Fragments of a woolen warp-faced *manta* woven from ZS spun wool were recovered from the tomb. The *manta* had been constructed by weaving two separate pieces and then sewing them together, using red, blue and yellow threads in a technique similar to *chichilla*, in which threads are simultaneously woven and sewn together.¹⁵⁶ There were strands of braided fiber rope, the longest was 13.4cm long, 0.9cm wide and 0.5cm thick.

Tomb 776 (2002)

Located in the north-eastern corner of unit 30, Tomb 776 was recorded as a partially intact pit without stone lining. There was no capstone present. The mouth was untreated, circular in shape, with a diameter of 50cm. The floor had mortar on the base, was circular in shape, with a diameter of 30cm. The tomb was 42cm deep.

The tomb contained the remains of a partially mummified individual, possibly aged 14-16 years, of indeterminate sex. The cranium displayed metopism. The individual was in a flexed position facing east.

A *manta* wrapped around the individual was woven in a warp-faced pattern in stripes of brown and camel. The wool had been spun ZS. Short fragments of twisted (ZS) fiber rope were also visible on the mummy bundle.

¹⁵⁶ Carmen Jorge Flores, personal communication, 2009.

APPENDIX C (continued)

Tomb 781 (2002)

Located in the eastern half of unit 36, Tomb 781 was an intact pit without stone lining. No capstone was present. The mouth was un-treated, circular in shape with a diameter of 45cm. The floor was un-treated with a diameter of 20cm. The tomb was 30cm deep.

The skeletal remains of a child, aged 4 years +/- 9 months, of indeterminate sex, were interred in a flexed position facing east. The child had tabular cranial modification, and the impression of one irregularly shaped pad was visible from the posterior aspect, and the impressions of two circular or oval pads were visible from the anterior aspect. Pathologies included active porotic hyperstoses in the occipital and frontal bones as well as in the lambdoid suture, and active periostitis in the right humerus. There was considerable dental wear and caries.

Accompanying the child were a ceramic vessel and a wooden spoon. The ceramic was a red-slipped *tazon*.¹⁵⁷ It was decorated with geometric designs as well as stylized trophy heads, in black, orange and grey/blue. The wooden spoon was undecorated and measured 14.2cm long. There were some possible food remains in the head of the spoon.

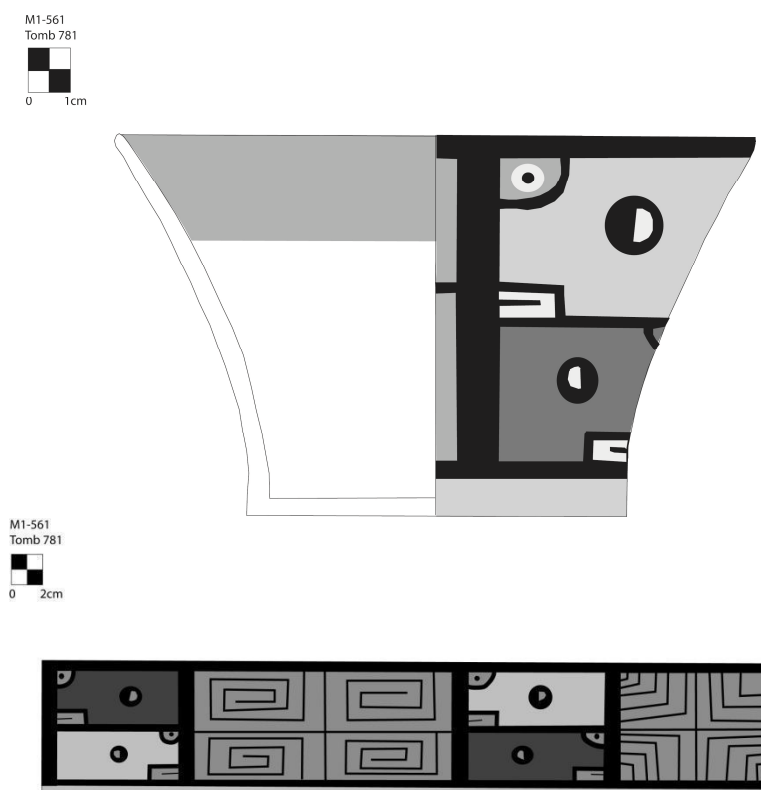


Figure 51. Red-slipped *tazon*, Tomb 781.

¹⁵⁷ Height 9.2cm, Rim Diameter 15cm, Base Diameter 9cm.

APPENDIX C (continued)

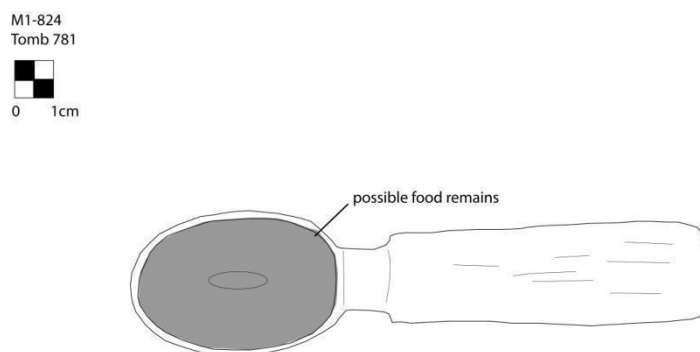


Figure 52. Wooden spoon, Tomb 781.

Sector 27

Sector 27 was a small cemetery in the northwest corner of Chen Chen. Pari did not excavate in the sector, and the following tombs were recovered by Owen in 1995. In 1995, Owen excavated one 4 by 8 meter trench, revealing 9 tombs. Of these one was an intact cist and two were pits with remains of a burial.

Tomb 1581 (1995)

Tomb 1581 was a pit burial¹⁵⁸ on the northernmost limit of trench 27-1. It contained the mummified remains of an adult female. The individual had tabular cranial modification but no pathologies were observable.

Also recovered from the tomb were fragments of at least three textiles. One was a brown textile woven of ZS spun wool in an interlocking warp/weft pattern. The textile was comprised of at least two separately woven pieces that had been sewn together. There were traces of red and dark green thread that had been sewn along the edges. The weave was thick enough to have been from a *frazada*, but was neither the spin nor the weave as thick as that in the second textile which was clearly a thickly woven blanket. The *frazada* was very thickly woven (3 warp threads per cm) using ZS spun camel colored wool, in an interlocking warp/weft pattern. Slightly finer brown threads were included along the edge of the blanket. The final textile was a much more finely woven *manta* (13 warp threads per cm), constructed from brown wool spun ZS. The weave was warp faced, and the two separate pieces had been joined together using a complex pattern of three multicolor (red, yellow, green) braids. A well preserved length (46.8cm) of braided fiber rope was recovered. The knots tying shorter lengths of rope together were evident.

¹⁵⁸ As discussed above, detailed architectural and positional information for the 1995 excavations was not available.

APPENDIX C (continued)

A single, un-decorated *tazon*¹⁵⁹ was interred in the grave. Burning stains were evident on both the interior and exterior of the vessel, and it showed evidence of use. The vessel wall was also thicker than decorated *tazones* interred in other tombs. A complete spoon (13.8cm long) was recovered. The spoon was plain, other than traces of paint on the surface. Finally several short sticks (4.2cm long) were found in the tomb, and may indicate that the mummy bundle originally had feather decorations.

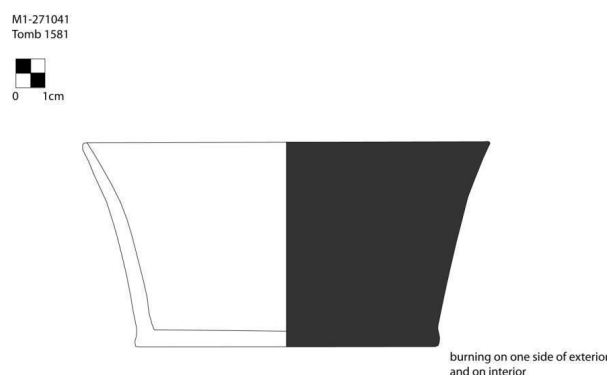


Figure 53. Undecorated *tazon*, Tomb 1581.

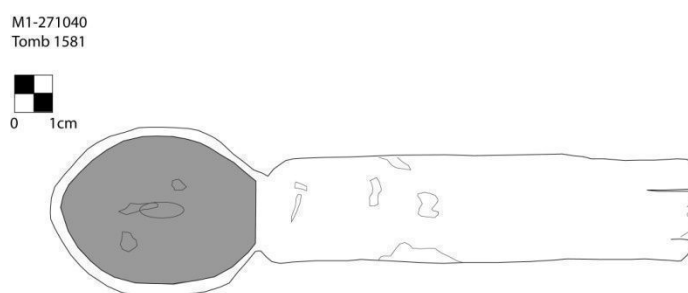


Figure 54. Wooden spoon, Tomb 1581.

Tomb 1580 (1995)

This pit burial was located to the southeast of 1581, along the eastern edge of trench 27-1. The tomb contained the skeleton of a male, aged 20-23 years. There was no cranial modification.

¹⁵⁹ Height 7cm, Rim Diameter 14cm, Base Diameter 10cm.

APPENDIX C (continued)

Pathologies included porotic hyperstoses on the occipital and parietals, as well as dental wear and caries. Fragments of both a *manta* and a *frazada* were recovered. Both textiles were brown wool, spun ZS, and woven in a warp faced pattern. Some red threads were included in the *manta*, and additionally several loose threads in dark blue and yellow may have also come from it. Two small (less than 1cm diameter) multicolored woolen balls were also recovered. Constructed by wrapping threads around each other, these are similar to decorative balls (or *bolitos*) used to adorn textiles more recently. A long fiber rope (59.1cm) consisting of shorter lengths knotted together was also interred with the body.

Eight ceramic sherds, including three rims and two decorated sherds were recovered from the grave, one with a cross etched into it after firing. A collection of wooden fragments, unrecognizable as a particular artifact, was also found in the tomb.

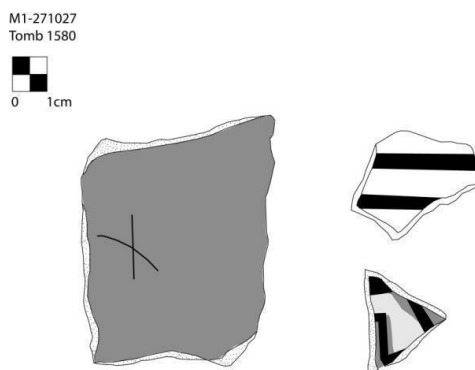


Figure 55. Ceramic sherds, Tomb 1580.

Tomb 1579 (1995)

Tomb 1579 was an intact cist located on the western side of trench 27-1. The tomb contained the skeleton of a juvenile, aged 6 years +/- 6 months, of indeterminate sex. Cranial modification could not be observed, and no pathologies were noted.

The tomb also contained ceramic sherds from at least two distinct vessels. One was a red slipped *kero*.¹⁶⁰ Only rim and upper body sherds were present and these had been decorated with black and orange paint, backward 'S' shapes and outlined circles. The other sherds came from an un-slipped *cantaro*, with burning stains on the exterior. The tomb also contained a complete wooden spoon (12.9cm long), the end of whose handle had been carved to form a notched shape.

¹⁶⁰ Rim Diameter 12cm.

APPENDIX C (continued)

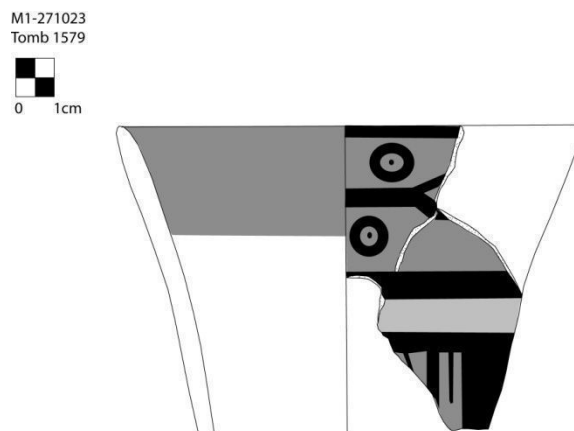


Figure 56. Fragments of red-slipped kero, Tomb 1579.

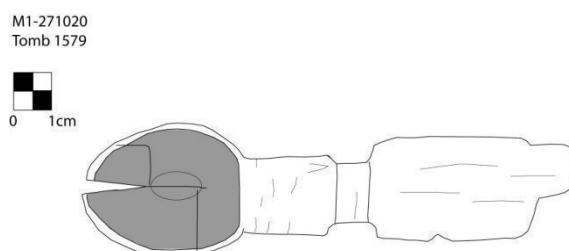


Figure 57. Wooden spoon, Tomb 1579.

Sector 28

Sector 28 was located slightly to the southwest of sector 27. Pari Flores did not excavate in the sector and the following data was recovered during Owen's 1995 excavations. Owen's team excavated three trenches in sector 28. 20 tombs identified, 18 of which were assigned context numbers. Of these, one was an intact cist and three were pits with remains of a burial.

Tomb 1490 (1995)

Located in the middle of trench 28-1, Tomb 1490 was a pit burial. It contained the mummified remains of a sub-adult, of undetermined sex. Cranial modification could not be observed.

APPENDIX C (continued)

The individual was wrapped in two textiles, a *manta* and a *frazada*. The *manta* was largely covered by the *frazada*, but a small piece was visible. The *manta* was woven from brown colored wool, spun ZS, and woven in a warp faced pattern. No decoration was evident, but the central seam was not visible, and in other specimens this was the most decorated or colored part of a *manta*. The *frazada* also had a warp faced weave. The wool was spun ZS, and the two threads plied together were brown and camel colored. The mummy bundle was held in place with a braided fiber rope which was still in position and exhibited a series of loops and knots.

Tomb 1491 (1995)

Located in the southeast corner of trench 28-1, Tomb 1491 was a pit burial. It contained the skeletal remains of a child aged 2 years +/- 6 months, of undetermined sex.

Fragments of two textiles, a *frazada* and a *manta* were also recovered from the tomb. The *manta* was woven from brown wool (spin ZS) in a warp faced weave. The weave was not as fine as in many other *mantas* (9 warp threads per cm). The *frazada* was woven from camel colored wool in an interlocking warp/weft pattern.

Tomb 1492 (1995)

Tomb 1492 was an intact cist located near the northern limit of trench 28-1. It contained the skeletal remains of at least three individuals, although none was complete. One was an infant, 12-18 months +/- 3 months, of undetermined sex. Cranial modification could not be observed, and the individual had periostitis in the right humerus. The second individual was a child, aged 5 years +/- 9 months, of undetermined sex. Again, cranial modification could not be observed and there were no observed pathologies. The final remains came from an individual, probably of pubescent age, of undetermined sex.

The only cultural material retrieved from the tomb were lengths of braided fiber rope (longest fragment 21.5cm), including knots created by wrapping a short length of rope horizontally around two others to join them together.

Tomb 1551 (1995)

Tomb 1551 was a pit burial located slightly to the southwest of the center of trench 28-3. It contained the skeletal remains of more than one individual. There was a child, aged 3 years +/- 6 months, of indeterminate sex, with bilobular tabular cranial modification. Pathologies included periostitis and lesions in the long bones, and porotic hyperstoses, as well as dental wear. The second individual was a juvenile aged 6 years +/- 9 months, of indeterminate sex, with acute tabular cranial modification. The child had caries and dental wear. Also recovered from the context were slight skeletal remains (less than 10% of each individual) of an adult female and a child aged between 3 and 5 years. The adult female had dental caries, and the child had lesions in the vertebrae, but these were obscured by soft tissue still attached to the bone.

Fragments of a striped woolen *manta* were found in the tomb. Spun ZS, the wool was woven in a warp faced weave, and the striped pattern consisted of brown, camel, and dark brown,¹⁶¹ as well as green thread along the edge.

¹⁶¹ Although interpreted as a *manta* during analysis, the striped pattern is very like that used in *costales* (bags) in more recent textile production.

APPENDIX C (continued)

Sector 30

Sector 30 was the largest of the cemeteries at Chen Chen. It was located south of sectors 27 and 28, to the west of the domestic sectors. Both Pari Flores and Owen excavated in sector 30. The 2002 project excavated 298 burial contexts, in 134 units from a total of 670m². Of these only 15 were deemed intact. The 1995 project excavated 9 trenches and recovered 67 burial contexts. Of these 25 were deemed intact.

Tomb 122 (2002)

Located in the southern half of unit 1, Tomb 122 was a stone lined cist with seven stone courses. It is unclear from the draft report or the field form if it was judged intact. There was no capstone, the mouth was constructed of stones and measured 50 by 54cm. The floor consisted of packed mortar with a diameter of 55cm. The tomb was 94cm deep.

It contained the poorly preserved mummified remains of a sub-adult, sex and exact age undetermined. Neither cranial modification nor pathologies could be observed. The individual was buried in the fetal position.

The tomb also contained two ceramic vessels. One was a tall one-handled pitcher.¹⁶² Made of a fine paste, the pitcher was red-slipped on the exterior and had a band of red slip around the interior of the rim. The neck was decorated with a patchwork design including an unusual blue-gray paint. Beneath that were alternating black and red-slipped squares. The body of the vessel was divided into four squares, in three of these was a black bird apparently flying and turning their open mouthed heads backwards. The second vessel was a red-slipped *tazon*.¹⁶³ The vessel was decorated with two black fine-line felines, which are notable for the absence of any additional blocks of color and the use of stippling black paint to fill in spaces instead. An incomplete wooden spoon was recovered. The end of the handle had been carved.

Still attached to the human remains was a brown woolen *frazada*, woven in a warp faced weave from wool spun ZS. It is possible that a *manta* was concealed beneath the *frazada* but this could not be determined without further damage to the piece.

¹⁶² Height 18.5cm, Rim Diameter 9cm, Base Diameter 8cm, Neck Height 6.5cm.

¹⁶³ Height 7.3cm, Rim Diameter 13cm, Base Diameter 9cm.

APPENDIX C (continued)

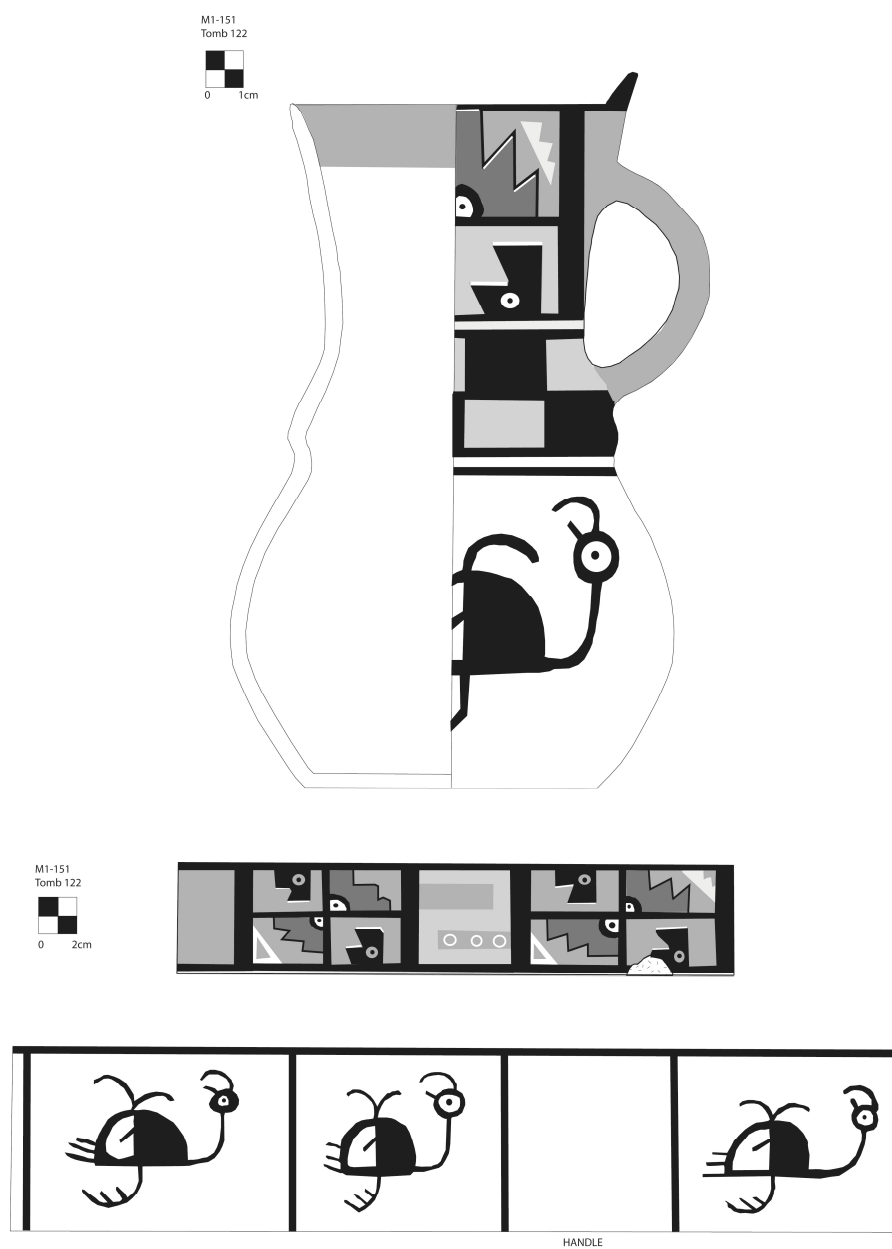


Figure 58. One-handed pitcher, Tomb 122.

APPENDIX C (continued)

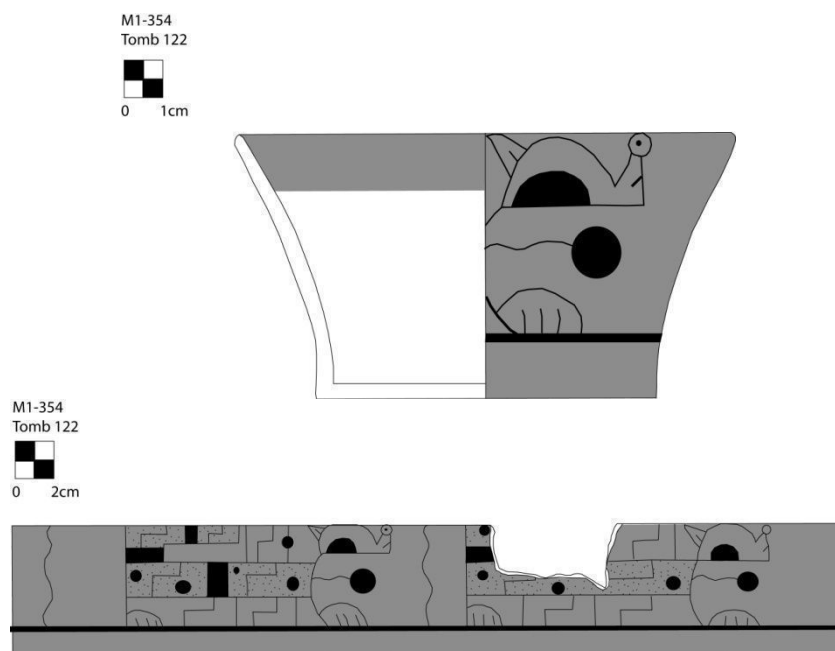
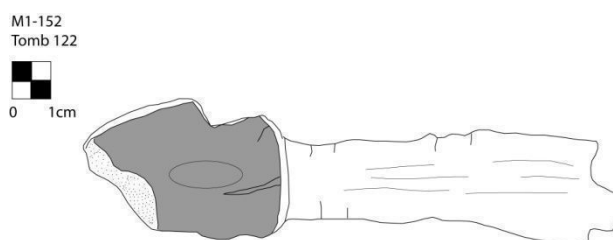
Figure 59. Red-slipped *tazon*, Tomb 122.

Figure 60. Wooden spoon, Tomb 122.

Tomb 103 (2002)

Tomb 103 was an intact stone lined cist located in the southeastern corner of unit 3. Both the capstone and mouth were constructed of stone and mortar. The mouth measured 32 by 30cm. The prepared floor had a diameter of 30cm. The tomb had 6 stone coursings and was 68cm deep.

APPENDIX C (continued)

The tomb contained the skeleton of a juvenile, aged 7 years +/- 9 months, of indeterminate sex. The juvenile had tabular cranial modification. There were dental caries and tartar. No other pathologies were observed. The individual was in a fetal position facing north.

The tomb contained a ceramic *kero*.¹⁶⁴ Made from a medium paste, the *kero* had burning stains on the interior and exterior. The exterior was red-slipped and the upper flaring portion of the vessel was decorated with three birds. One of these was almost completely absent where a large portion of the vessel was missing. The other two appear to be different types of bird. The lower portion of the vessel was decorated with bands of black and orange.

Also recovered from the tomb was a brown woolen *manta*, that had been very finely woven in a warp faced pattern from wool spun ZS.

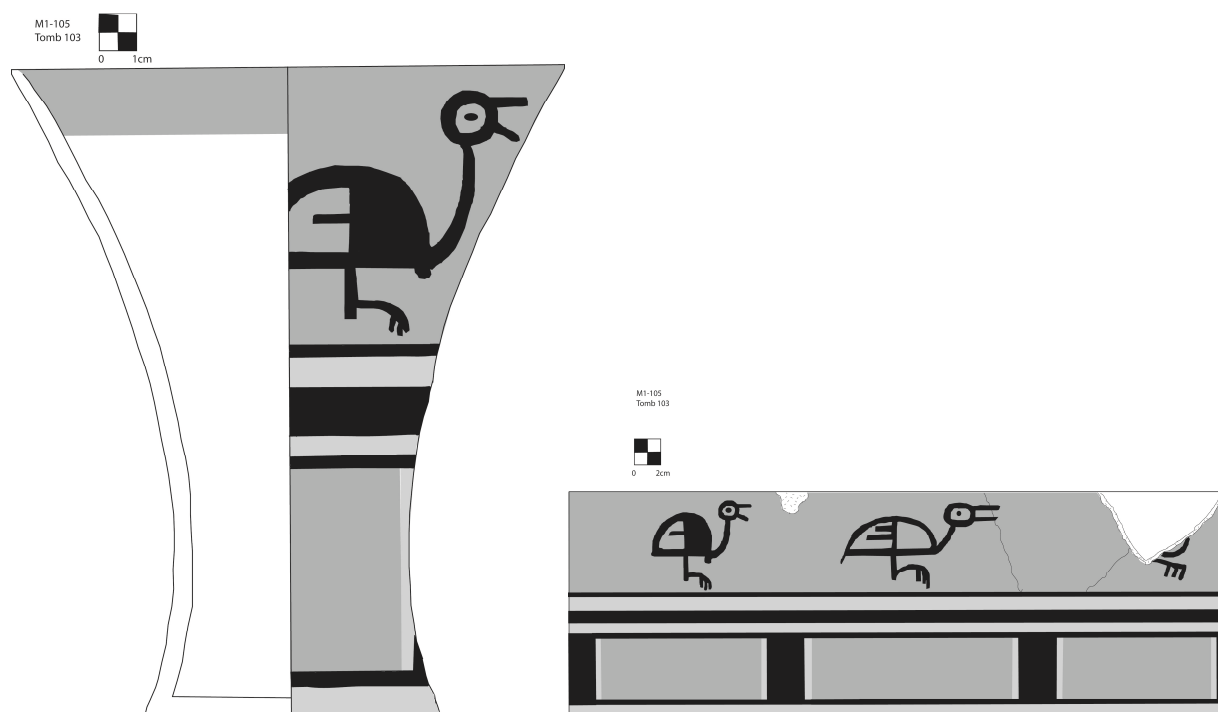


Figure 61. Red-slipped *kero*, Tomb 103.

¹⁶⁴ Height 17.5cm, Rim Diameter 15cm, Base Diameter 8cm.

APPENDIX C (continued)

Tomb 152 (2002)

Tomb 152 was a stone lined cist located in unit 12 with five stone courses. The capstone was not present. The mouth was constructed from stones and mortar and measured 45 by 50cm. The floor had a diameter of 47cm and a small, flat stone had been placed on the base. The tomb was 80cm deep.

The tomb contained the skeleton of an older adult female, aged at least 29 years. The individual had tabular oblique cranial modification. Numerous pathologies included premortem dental loss, dental caries, arthritis and arthropathy, and a broken nose. The female was flexed, facing east.

The individual was accompanied by a complete wooden spoon (17cm long) with subtle carving on the end of the handle, a two-compartment wooden box with 'feet' (5.4 by 2.3cm), a spindle whorl, an incomplete gourd vessel (8.6cm tall) and the incomplete remains of a fiber basket (only a fragment from near the center of the base remained).

Rodent bones were also recovered from the tomb (these were not analyzed by a specialist).

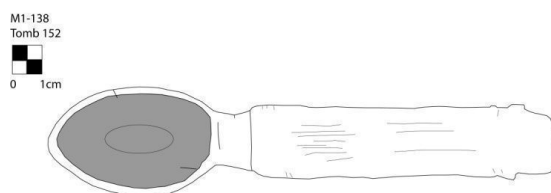


Figure 62. Wooden spoon, Tomb 152.

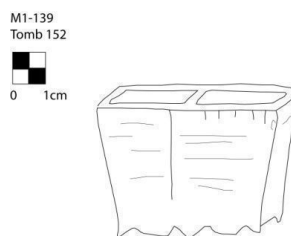


Figure 63. Wooden box, Tomb 152.

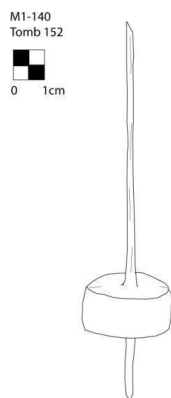


Figure 64. Spindle whorl, Tomb 152

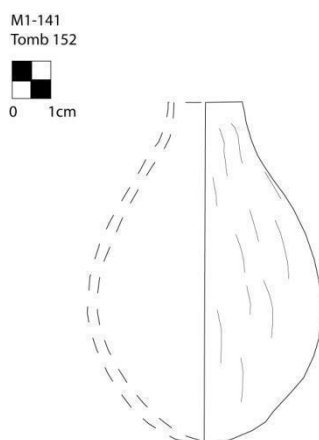


Figure 65. Incomplete gourd vessel, Tomb 152.

Tomb 143 (2002)

Tomb 143 was an intact stone lined cist located on the eastern side of unit 14. The capstone was constructed from stone and mortar, and the mouth was partially constructed of stones, measuring 32 by 26cm. The prepared floor was 28 by 33cm. There were 5 stone courses with mortar in between and the tomb was 54cm deep.

It contained the very well preserved mummy bundle of a sub-adult, sex and exact age undetermined. Neither cranial modification nor pathologies could be observed. A few wisps of brown hair were visible from the mummy bundle. The sub-adult was in a flexed position

The textile and fiber rope were in an excellent state of preservation. The only textile observed was a multi-colored *manta*. The fiber rope was wrapped directly over this, suggesting that there may never have been a *frazada*, as in other cases the *frazada* was placed between the *manta* and rope. The *manta* was woven from wool spun ZS in a warp faced weave. In addition to the standard brown, the *manta* had stripes of red, orange, yellow and blue. The stripes varied in

APPENDIX C (continued)

width from 0.2 to 1.4cm. The differently colored threads had been spun to very similar degrees (between 10 and 13 re-spins per cm). The fiber rope (0.5cm thick, 0.3cm wide) was braided and still wrapped and knotted around the individual.

Tomb 163 (2002)

Tomb 163 was an intact stone lined cist¹⁶⁵ located in unit 20. The capstone consisted of several irregularly shaped, angular stones piled on-top of a mouth made of stone and mortar. The mouth had a diameter of 34cm. The floor was untreated. Neither floor diameter nor tomb depth was recorded.

The tomb contained the disturbed and poorly preserved mummified remains of a child, aged 4 years +/- 1 year, of indeterminate sex. Neither cranial modification nor pathologies could be observed. The field form records the child as being in a flexed position. Excavators had bagged few strands of brown hair separately from the individual.

The child was buried with both a *manta* and a *frazada*. Both were largely intact but in a poor condition and still mingled with the human remains. Both were made from brown wool, spun ZS and woven in a warp faced weave. Braided fiber rope (0.5cm wide, 0.4cm thick) was still wrapped around the disturbed mummy bundle.

Tomb 176 (2002)

Tomb 176 was an intact stone lined cist located in unit 20. There was no capstone. The mouth was constructed of stones, and measured 45 by 52cm. Neither floor diameter nor tomb depth was recorded. There was a layer of ash near the top of the tomb, suggesting that its contents had not been disturbed since AD 1600.

The tomb contained the poorly preserved skeletal remains (only 30% of the skeleton was present) of a middle adult, a probable male. Neither cranial modification nor pathologies could be observed. The position of the individual could not be observed.

Three ceramic vessels were buried with the individual. There was a plainware *olla*¹⁶⁶ with two handles. The vessel was made of a medium paste, with signs of reduction during firing. It was un-slipped and had soot on the exterior and burning stains on the interior. A red-slipped *tazon*¹⁶⁷ was decorated with thick black step stair motifs and orange outlined circles. Finally, there was a bottle¹⁶⁸ with red slip on the exterior only, decorated with black step stair motifs and an orange and black bands around the base. The vessel appeared to have been shaved off at the rim. There was also an incomplete and broken wooden spoon, with no signs of carving or other decoration.

¹⁶⁵ This is not entirely clear from either the draft report or the field form. Only one 'wall' is listed and no profile drawing was available to confirm that this was a stone wall.

¹⁶⁶ Height 19.2cm, Rim Diameter 10cm, Base Diameter 8cm, Neck Height 3.6cm.

¹⁶⁷ Height 9cm, Rim Diameter 16cm, Base Diameter 10cm.

¹⁶⁸ Height 11cm, Rim Diameter 3cm, Base Diameter 6cm.

APPENDIX C (continued)

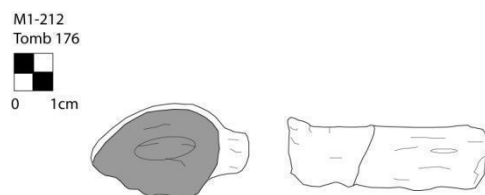
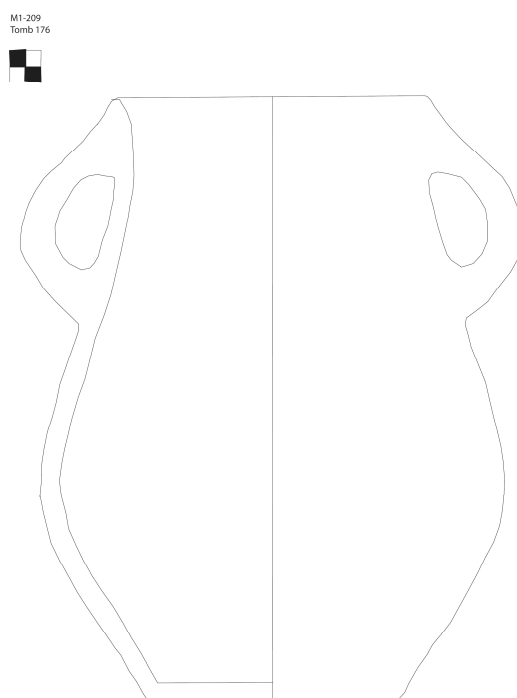
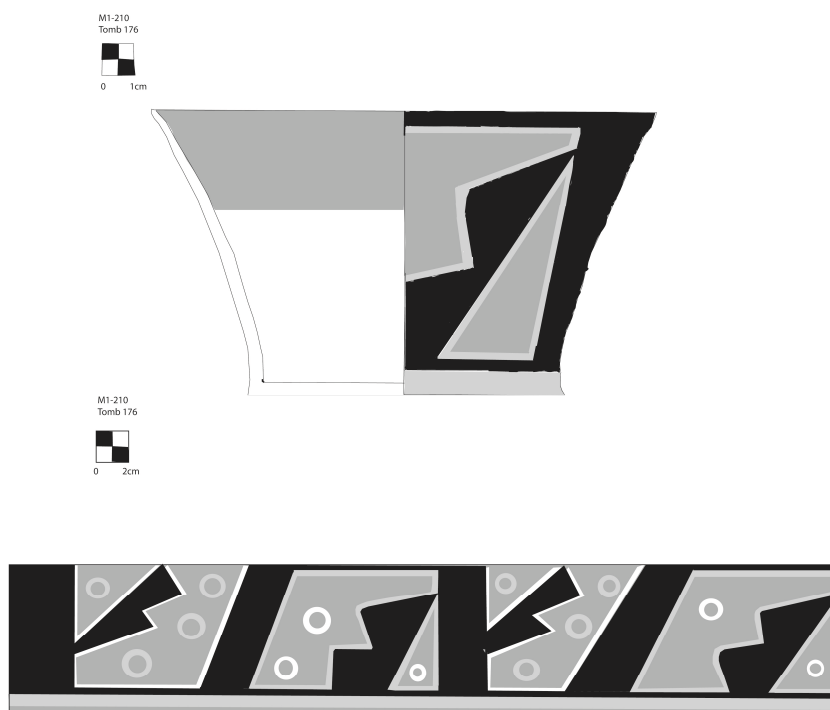


Figure 66. Wooden spoon, Tomb 176.

Figure 67. *Olla*, Tomb 176.

APPENDIX C (continued)

Figure 68. Red-slipped *tazon*, Tomb 176.

APPENDIX C (continued)

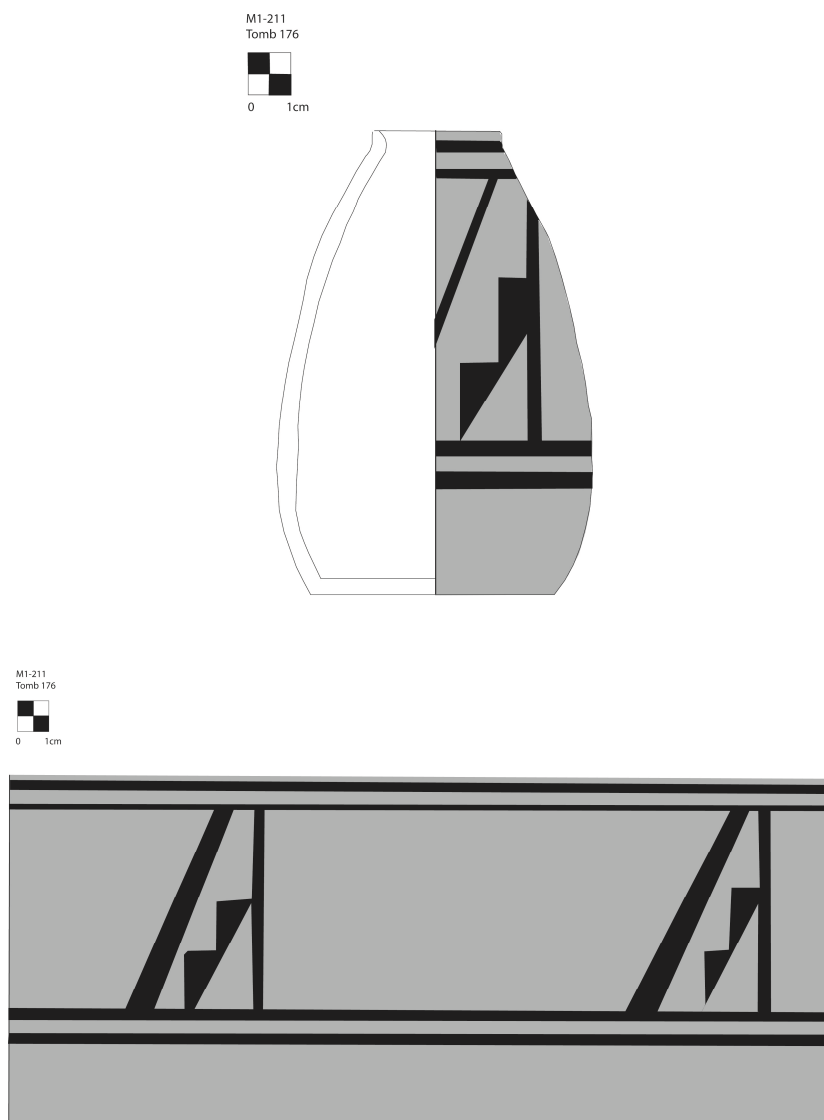


Figure 69. Red-slipped bottle, Tomb 176

Tomb 168 (2002)

Tomb 168 was located in the southern half of unit 21. An intact partially stone lined cist, with five courses of stone on one side, the capstone was missing. The mouth of the tomb was constructed of stones and mortar and measured 46 by 50cm. The floor was prepared and had a diameter of 38cm. The tomb was 46cm deep.

APPENDIX C (continued)

It contained the mummy of a young child, of indeterminate sex. The cranium was skeletal. It had not been modified. Pathologies could not be observed. The child was in a flexed position, facing north.

The child was still wrapped in a woolen textile. The wool was spun ZS and woven in a warp faced weave. Probably a *frazada*, due to the thread-count (7 per cm in the warp, 3 per cm in the weft), the textile consisted of stripes of brown and camel, approximately 8cm thick. A braided fiber rope (1.0cm wide, 0.3cm thick) remained wrapped around the individual.

Also recovered from the tomb was a pair of leather sandals, whose strap consisted of a length of leather and 2 strands of S spun brown wool. Part of the base of a basket, made of the same fibers as the rope, and with evidence of some food remains was found in the tomb.

Tomb 204 (2002)

Tomb 204 was an intact stone lined cist located in the southwestern corner of unit 23. The tomb consisted of one course of stones on one side, and three on the other. There was no capstone. The circular mouth consisted of stones and measured 32 by 43 cm. A small flat stone was placed on the floor of the tomb which had a diameter of 29cm. The tomb was 26cm deep.

It contained the skeletal remains of a child, aged 2 to 3 years, +/- 9 months, of indeterminate sex. The child was placed in the tomb in a fetal position with the arms crossed over the body. The bones had deteriorated due to poor conditions of preservation and only 55% of the skeleton was available for analysis. Neither cranial modification nor pathologies could be observed.

Two ceramics were found in the tomb. One was a red-slipped cup.¹⁶⁹ The exterior of the vessel had been divided into four panels, separated by thick black lines. Two of these panels were decorated by five horizontal wiggly lines in white. The other two were decorated with stylized trophy heads in orange, black and white. The interior of the rim was decorated with a band of red slip. The other vessel was a *tazon*,¹⁷⁰ intact aside from one fragment from the rim. The exterior was covered in a light red slip decorated with bands of orange and black, and very stylized trophy heads, drawn in an almost fine line style.

¹⁶⁹ Height 9.4cm, Rim Diameter 8cm, Base Diameter 6cm.

¹⁷⁰ Height 8.2cm, Rim Diameter 16cm, Base Diameter 10cm.

APPENDIX C (continued)

M1-193
Tomb 204
0 1cm

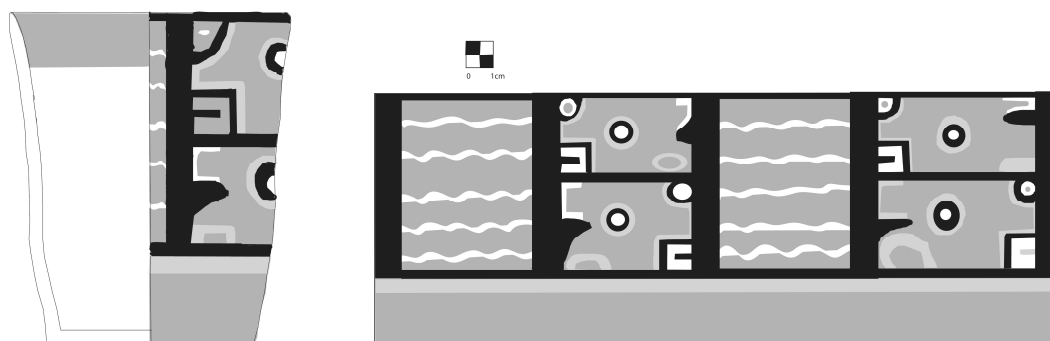
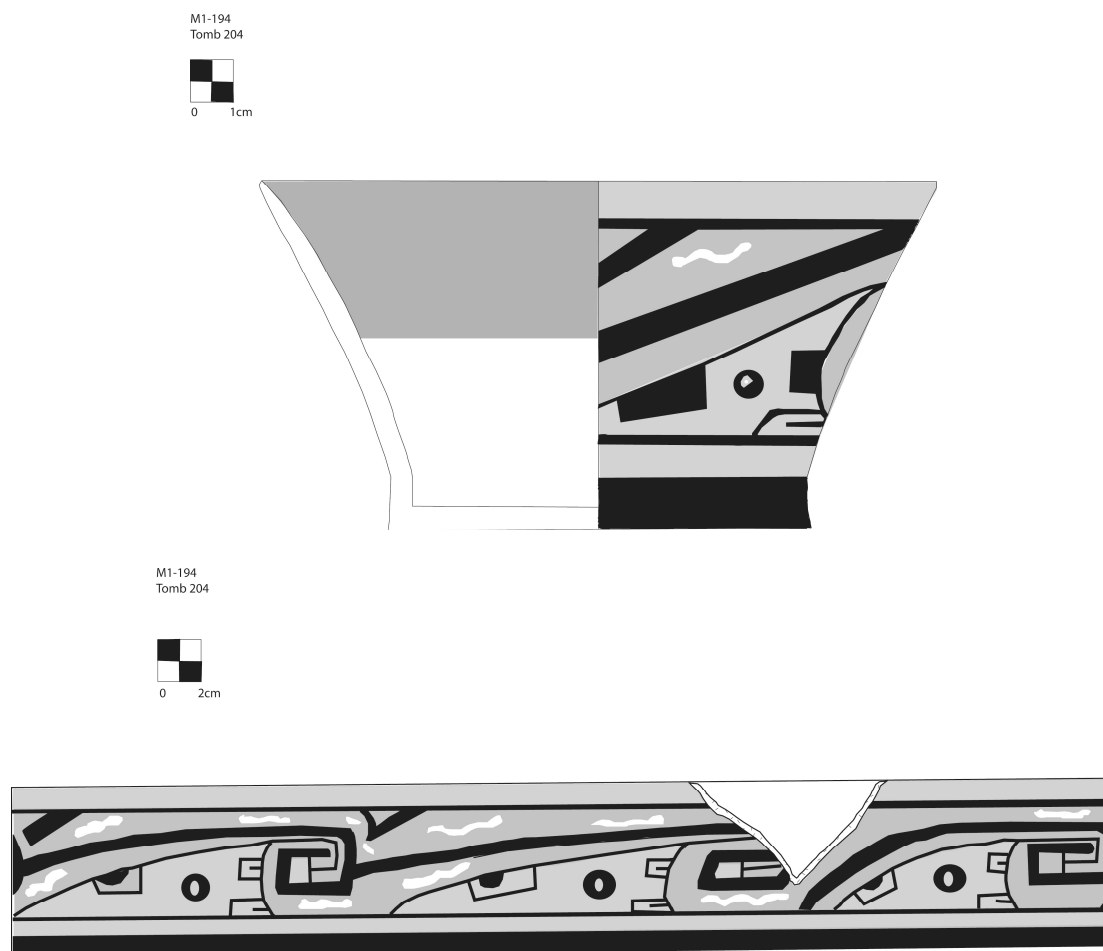


Figure 70. Red-slipped cup, Tomb 204.

APPENDIX C (continued)

Figure 71. Light red-slipped *tazon*, Tomb 204.***Tomb 185 (2002)***

Tomb 185 was a circular pit burial located almost in the center of unit 24. It had no capstone, and the mouth was untreated, and measured 40 by 41 cm. The floor was un-prepared and had a diameter of 36 cm. The tomb was 12 cm deep.

It contained the skeleton of an infant, aged 6 months +/- 2 months, of indeterminate sex. Cranial modification could not be observed. Pathologies included periostitis in both humeri, both radii, and the left femur and right tibia. There also appeared to be hypervascularization in the muscle attachments. There was active macroporosity in the endocranial surface of the occipital bone. The infant was in a fetal position facing east.

APPENDIX C (continued)

Tomb 181 (2002)

Tomb 181 was an intact, stone lined cist, consisting of 4 stone courses, situated along the western limit of unit 26. There was no capstone. The mouth was constructed of stones and mortar and measured 90 by 99cm. The floor consisted of packed soil with a diameter of 60cm. The tomb was 86cm deep.

It contained the mummified remains of an adult, sex and exact age undetermined. The individual had tabular cranial modification, but pathologies could not be observed. Braided brown hair was visible on the skull. The adult had been placed in the tomb in the fetal position facing south.

The remains of two textiles, a *manta* and a *frazada*, were still attached to the individual. The *manta* was warp faced, and woven from ZS spun wool. Dirt obscured much of the weave, but it appeared to have been woven principally in brown, with narrow (0.3cm) camel colored stripes. Only small fragments of *frazada* were preserved. The weave was warp faced, using ZS spun camel colored wool. A braided fiber rope (0.4cm wide, 0.2cm thick) was still knotted around the mummy bundle.

Tomb 237 (2002)

Tomb 237 was an intact, stone lined cist located in the northeastern corner of unit 34. The tomb walls had four courses of stone held in place by mortar. The capstone consisted of one large flat stone, sitting on a mouth constructed of stones and mortar. The mouth was roughly circular and measured 80 by 75cm. The floor was made of compacted earth, with a diameter of 47cm. The tomb was 90cm deep.

It contained the mummified remains of a probable sub-adult, of indeterminate sex. Neither cranial modification nor pathologies could be observed. Loose brown hair was visible on the top of the cranium. The individual was in a fetal position facing east.

The individual was still wrapped in two textiles, a *manta* and a *frazada*. Both were woven in a warp faced pattern from brown wool spun ZS. The thread-count of the *frazada* was particularly thick (3 per cm in the warp, 2 per cm in the weft). Well preserved braided fiber rope was still holding the mummy bundle together.

Two ceramics were recovered from the grave. There was an un-slipped one-handled pitcher¹⁷¹ whose base slopes to a point. The pitcher was made of a paste of medium texture, notable for the presence of quartz. The exterior and interior surfaces were roughly finished, and there were burning stains on the exterior. The other ceramic was a *tazon*.¹⁷² It was made of a medium texture paste, instead of a fine paste and the walls were thicker than in most *tazones*. The exterior was dark red-slipped and decorated with three zoomorphic figures, possibly camelids.¹⁷³ These appear to be upside down with their legs in the air. A complete wooden spoon, with subtle carving on the edges of the middle of the handle was also recovered.

¹⁷¹ Height 8.5cm, Rim Diameter 5cm, Base Diameter 2cm.

¹⁷² Height 7cm, Rim Diameter 12cm, Base Diameter 8cm.

¹⁷³ The figures resemble camelids rolling on their backs, modern domestic alpacas have been observed enjoying this (B. Williams, alpaca breeder, personal communication 2010).

APPENDIX C (continued)

M1-254
Tomb 237

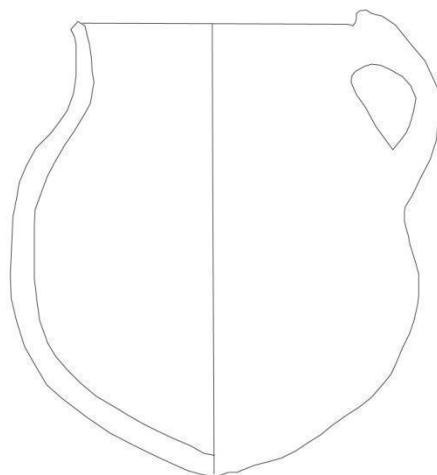


Figure 72. Undecorated one-handed pitcher, Tomb 237.

M1-255
Tomb 237

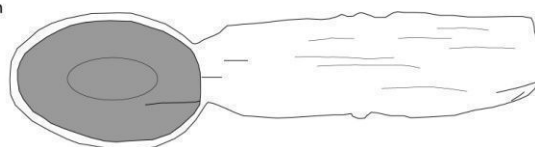
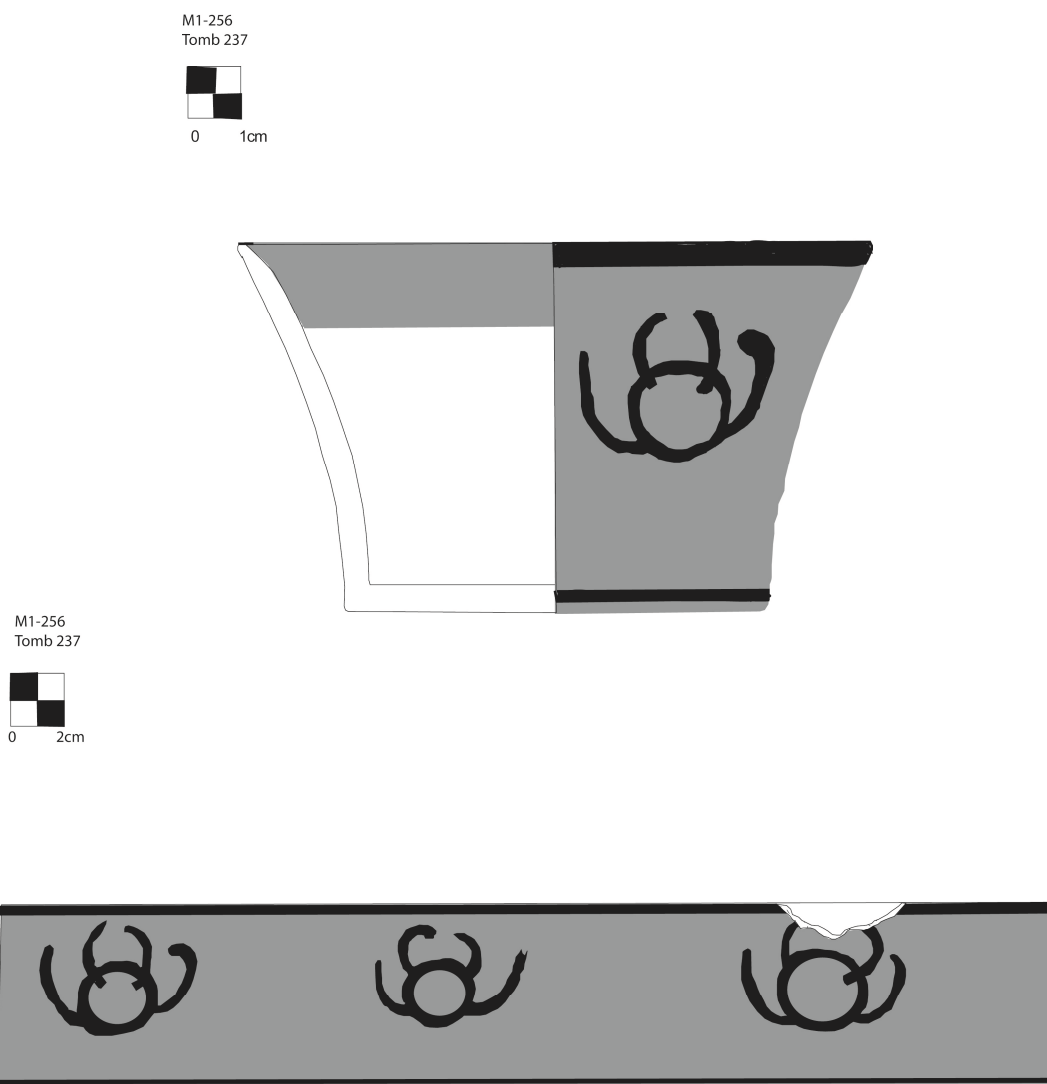


Figure 73. Wooden spoon, Tomb 237.

APPENDIX C (continued)

Figure 74. Dark red-slipped *tazon*, Tomb 237.

APPENDIX C (continued)

Tomb 239 (2002)

Tomb 239 was a boot-tomb¹⁷⁴ located in unit 43. The tomb was an unlined pit, with no capstone. The mouth had a diameter of 18cm, and was constructed of stones and mortar. At the base of the shaft, the tomb opened up into a chamber with a diameter of 45cm, hence ‘boot-tomb.’ It was in this chamber that the human and cultural remains were found. The tomb was 60cm deep.

The human remains represented an adult female, aged at least 25 years. There was no cranial modification. There was lipping on the left clavicle, and erosion on the sacrum. Strong muscle attachments were present on the humeri, the radial tuberosities, and the fibula and clavicle. The individual was in a fetal position facing northeast.

The tomb also contained bulbous, highly polished black vessel.¹⁷⁵ This shape and the polished black ware are both unusual for the tomb, and coupled with the unexpected boot-shape of the tomb make for an interesting context. The vessel also had a post-firing cross etched on the base. An incomplete cactus spine was recovered. This was possibly a needle but the eye was broken off.

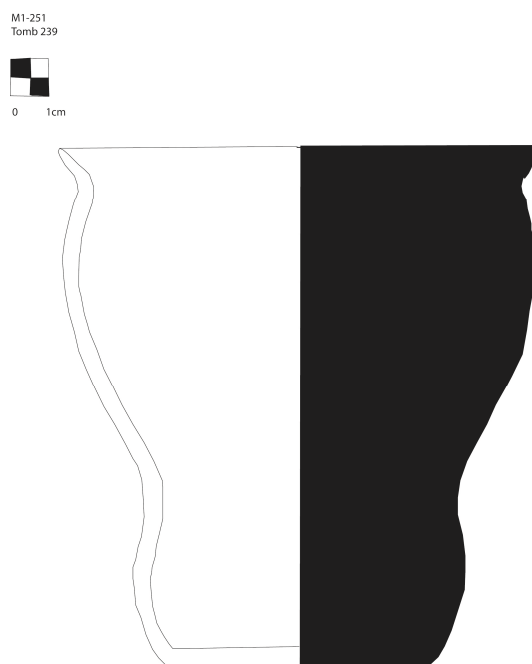


Figure 75. Black vessel, Tomb 239.

¹⁷⁴ Boot tombs have been associated with the Formative Period Huaracane culture who occupied the Moquegua Valley before the Tiwanaku arrived, although 6 are recorded at the Omo complex (Buikstra 1995).

¹⁷⁵ Height 14cm, Rim Diameter 13cm, Base Diameter 7cm.

APPENDIX C (continued)

Tomb 268 (2002)

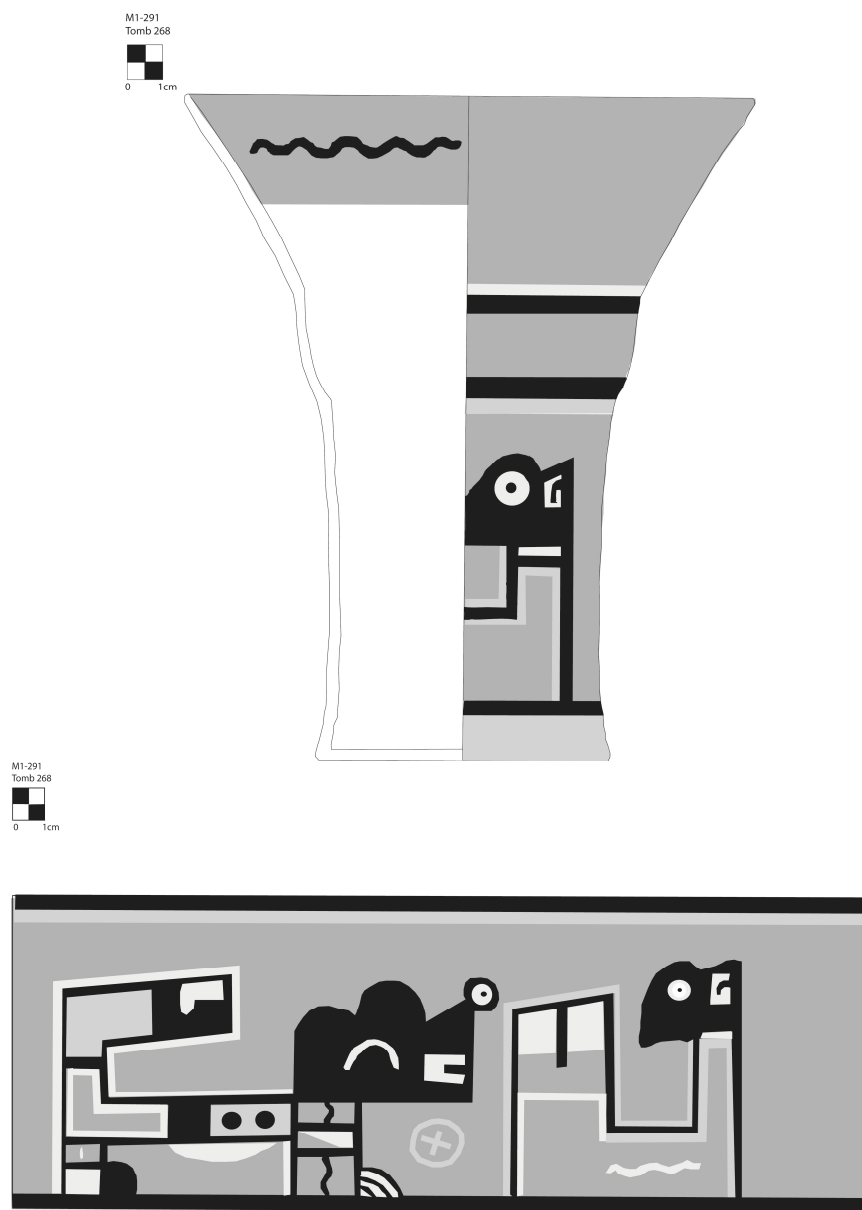
Tomb 268 was an intact stone lined tomb, with nine stone courses, located in the northern half of unit 49. The capstone consisted of a stone mortared in place, sitting on a mouth of stones and mortar with a diameter of 30cm. The floor consisted of packed earth, and had a diameter of 31cm. The tomb was 63cm deep.

It contained the skeletal remains of an infant aged 18 months +/- 3 months, of indeterminate sex. The remains were in excellent condition. The infant had tabular (possibly oblique) cranial modification. No pathologies were observed. The infant was in a fetal position facing east.

Accompanying the infant was a *kero*.¹⁷⁶ It is unclear whether this vessel was located inside or outside the tomb (the field form indicates it was an external offering, the draft report states it was found inside). The *kero* had a *torus* and was red-slipped. The lower portion of the vessel was decorated with two figures; a feline and a condor.

¹⁷⁶ Height 18.5cm, Rim Diameter 16cm, Base Diameter 8cm.

APPENDIX C (continued)

Figure 76. *Kero*, Tomb 268.***Tomb 292 (2002)***

Tomb 292 was a partially intact stone lined cist in the western half of unit 58. There was no capstone, the mouth was of stones and mortar and measured 52 by 70cm. There were five stone coursings. The floor was untreated and measured 57 by 62cm. The tomb was 103cm deep. The tomb had been disturbed but before AD 1600, as it was full of volcanic ash.

APPENDIX C (continued)

No human remains were recovered. The tomb did contain two ceramic vessels, a one-handled pitcher and a *tazon*. The pitcher¹⁷⁷ was made of medium texture paste, was red-slipped with burning stains on the exterior. It was decorated with a pattern that gives the impression of stylized anthropomorphic or zoomorphic faces. The *tazon*¹⁷⁸ had a bright red slip, and a simple geometric design in black.

Also recovered from the tomb was a complete wooden spoon with a carved camelid on the end of the handle, and two complete cactus spine needles.

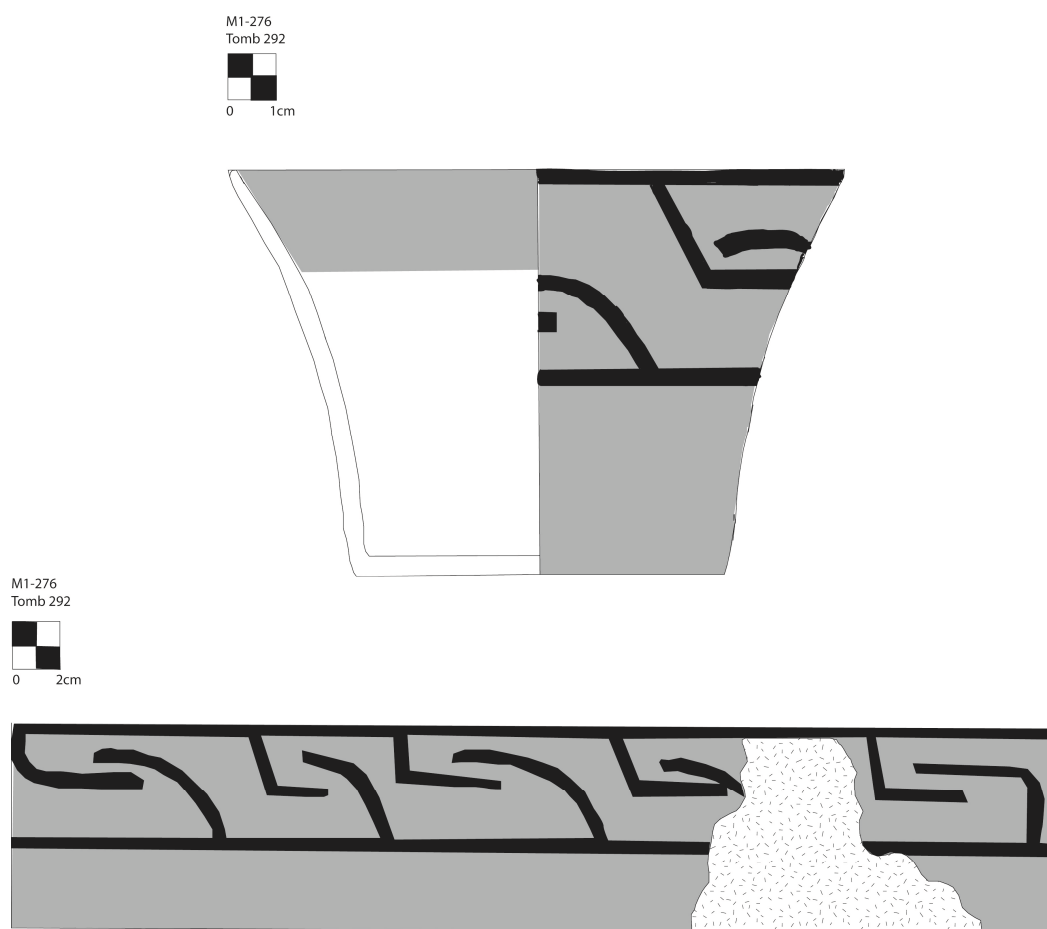


Figure 77. *Tazon*, Tomb 292.

¹⁷⁷ Height 17.9cm, Rim Diameter 10cm, Base Diameter 10cm, Neck Height 3.1cm.

¹⁷⁸ Height 8.5cm, Rim Diameter 13cm, Base Diameter 8cm.

APPENDIX C (continued)

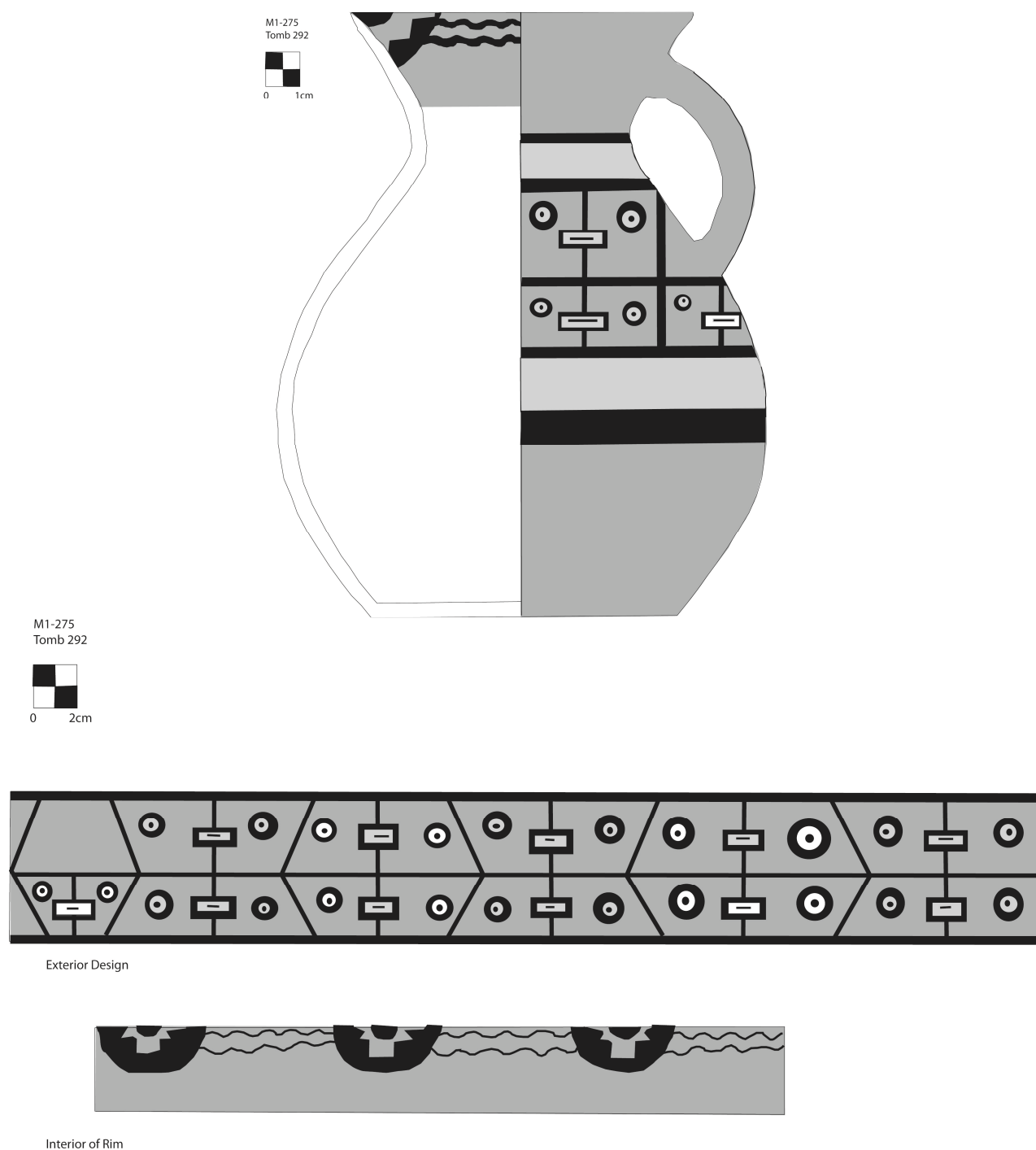


Figure 78. One-handed pitcher, Tomb 292.

APPENDIX C (continued)

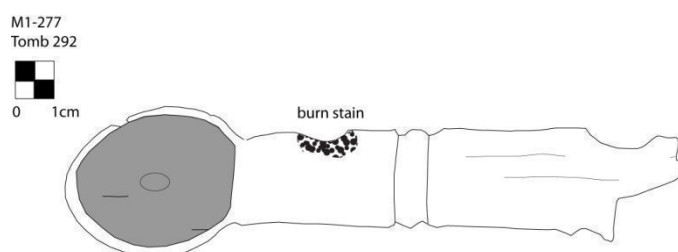


Figure 79. Wooden spoon, Tomb 292.



Figure 80. Cactus needles, Tomb 292.

Tomb 300 (2002)

Tomb 300 was an intact stone lined cist located to the north of 292. The cap was made of stone and mortar, as was the mouth which had a diameter of 32cm. There were 3 stone courses in the walls and the floor was untreated with a diameter of 30cm. The tomb was 53cm deep.

It contained skeletal remains of a fetal individual, of undetermined sex. Pathologies and cranial modification could not be observed.

The individual was accompanied by a plainware *tazon*.¹⁷⁹ Constructed from medium texture paste, the vessel was not slipped or decorated. The rim was very roughly finished, and there were burning stains on the exterior. The field form listed the presence of two needles but these were not located in the collections.

¹⁷⁹ Height 5.9cm, Rim Diameter 11cm, Base Diameter 7cm.

APPENDIX C (continued)

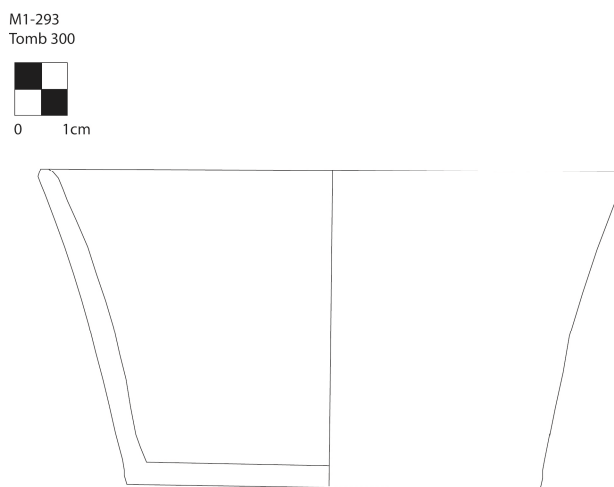


Figure 81. Tazon, Tomb 300.

Tomb 1731 (1995)

Tomb 1731 was a pit burial located in the southwestern corner of trench 30-8. It contained the skeletal remains of a child, aged 2 years +/- 6 months, of indeterminate sex. The cranium was too fragmentary to determine cranial modification style, but modification was possible given the presence of pads on the frontal bones. The child had dental caries.

By the time of analysis the bones were completely disarticulated but also recovered from the tomb were pieces of at least two woolen textiles. The wool of both was spun ZS with a warp faced weave. One textile had a dark camel colored warp and a brown weft. The warp of the second textile was tighter (10 threads per cm, instead of 7) and was gray, as was the weft. The weft appears in the second textile appeared to have been only spun, not re-spun as is common.¹⁸⁰ The weave of both textiles was loose enough to constitute likely *frazadas* and not *mantas*. Very well preserved fiber rope was also recovered. The rope had been braided, and consisted of a coil at least 1.5m in length, 0.8cm thick, and 0.5cm wide. A single ceramic vessel was interred with

¹⁸⁰ Discussions with weavers in the Moquegua region who continue to use similar materials and techniques as those utilized in the production of the Chen Chen textiles explained that frequently wool that is to be used for the weft, not visible in warp-faced piece, will only be partially or very loosely re-spun. One explanation of this would be that doing so would save time and labor.

APPENDIX C (continued)

the individual. It was a one handled pitcher,¹⁸¹ although the handle was missing. The body of the pitcher flared out sharply to the widest point. Several chips were missing from the rim. The pitcher was made of a fine paste, the exterior was covered in a reddish brown slip, and decorated with stylized trophy heads. Small cane sticks, possibly originally used in decoration were also in the tomb, as was a thicker unidentified stick.

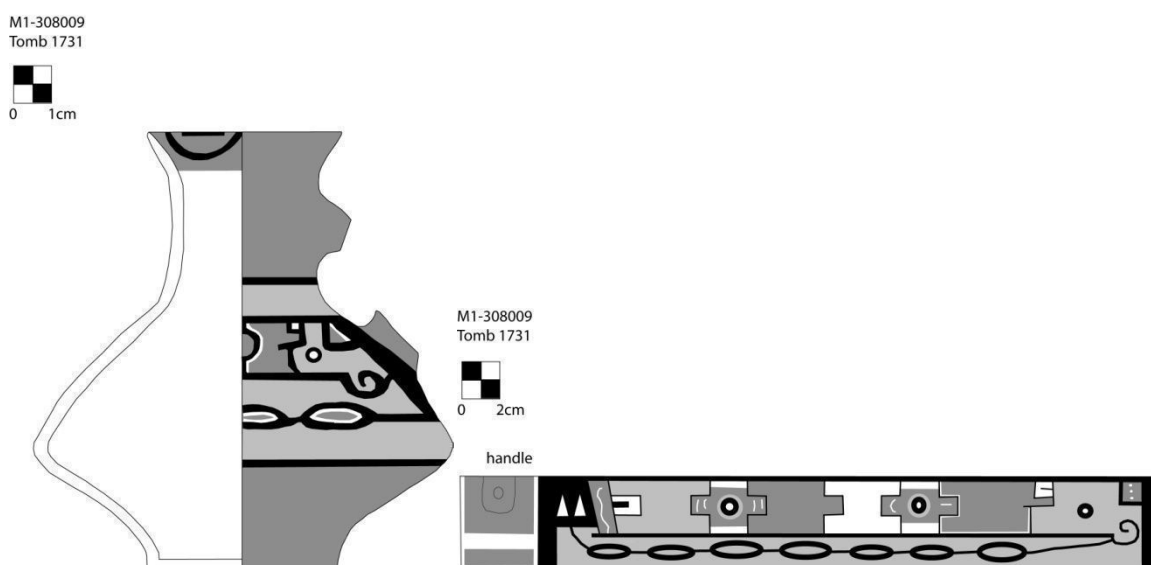


Figure 82. One-handed pitcher, Tomb 1731.

Tomb 1680 (1995)

Tomb 1680 was a pit burial located along the southern edge of trench 30-6. The tomb contained mummified human remains. Due to earlier disturbance to the remains, the head had been separated from the body and some data could be recovered. They represented a child, aged 3 years +/- 6 months, of indeterminate sex. The child had slight tabular cranial modification. No pathologies were identified, although much of the post-cranial remains were in poor condition and mixed with textile.

Two different textiles were represented, a *frazada* and a *manta*. Both were woven from brown wool, spun ZS. The weft of the *frazada* was spun, not re-spun. Several complete strands of braided fiber rope, exhibiting loops, were also recovered from the tomb.

¹⁸¹ Height 11.5cm, Rim Diameter 5cm, Base Diameter 5cm, Neck Height 4cm.

APPENDIX C (continued)

Tomb 1318 (1995)

Tomb 1318 was a pit burial located near the southwestern corner of trench 30-2. It contained the mummified remains of a sub-adult, age and sex undetermined. Strands of brown hair were visible on the head.

The mummy was wrapped in a warp-faced *frazada*, woven from ZS spun brown wool. The effect of raised stripes had been created by alternately using fine and thicker wools in the warp. Each stripe was approximately 0.3cm wide. Several strands of partially re-spun blue wool were attached to the textile near the head of the individual, perhaps for decorative purposes. The *frazada* was intact and completely enveloped the individual. Although impossible to determine, it seems likely that a *manta* was underneath but if so it was obscured. Fiber rope was still wrapped around the individual but was too fragmentary to determine whether it was twisted or braided.

Tomb 1646 (1995)

Tomb 1646 was a stone lined cist, located on the southern limit of trench 30-5. It contained the mummified remains of a child, aged 4 years +/- 9 months. The child's genitalia were mummified and the individual was identified as female. The upper body was skeletal. The child had slight tabular cranial modification. No pathologies were identified. Loose brown hair had been bagged separately from the individual.¹⁸²

The child was wrapped in a poorly preserved *frazada*¹⁸³ woven in a warp faced pattern using ZS spun brown wool. No fragments of a finely woven *manta* were identified. Lengths of braided fiber rope (longest 17.5cm), 0.4cm wide and 0.3cm thick were recovered.

Two ceramics were found in the tomb. The first was an unusual un-slipped anthropomorphic vessel¹⁸⁴ with a narrow neck depicting the face and hair of an individual, and the globular body representing the torso. The face had been created by incising and modeling the clay. The eyes were almond shaped, and the mouth open. Red streaks of paint ran down the face from the eyes. Braids on either side of the head have been taken as evidence that the vessel depicts a female (Goldstein, 2007), although breasts or other defining female characteristics are not apparent. The individual is possibly carrying a bundle on her back, suggested by the modeled hunch back. Ears and arms had been created by attaching modeled clay to the vessel, although both the right arm and right ear were missing. The left ear had a pierced hole in it. The vessel had extensive burning stains particularly on the back. The second vessel was a *kero*.¹⁸⁵ The vessel

¹⁸² A sample of this hair was taken in anticipation of a strontium isotope study by Karen Gardner in 2008.

¹⁸³ As in several cases, the human remains had been boxed and stored with textile and fiber rope still mixing in, with implications for analysis of both biological and textile materials. In this case, the textile was extremely dirty and accurate measurements of the textile could not be made.

¹⁸⁴ Height 16.5cm, Rim Diameter 5cm, Base Diameter undetermined.

¹⁸⁵ Height 12cm, Rim Diameter 11cm, Base Diameter 6cm.

APPENDIX C (continued)

was constructed from a fine paste and showed signs of oxidation during firing. The exterior had a reddish brown slip, and a band of brown slip had been applied around the interior of the rim. Extensive burning stains largely obscured the exterior decoration but it appears to have consisted of simple geometric patterning, involving a wide horizontal band around the vessel and a thinner one at the base.

Finally, half a shell was recovered from the tomb. The species was *Olivia peruviana*, used frequently in Middle Horizon beads (Barrionuevo, personal communication 2008). However, aside from the division of the shell in half, no modifications were identified.

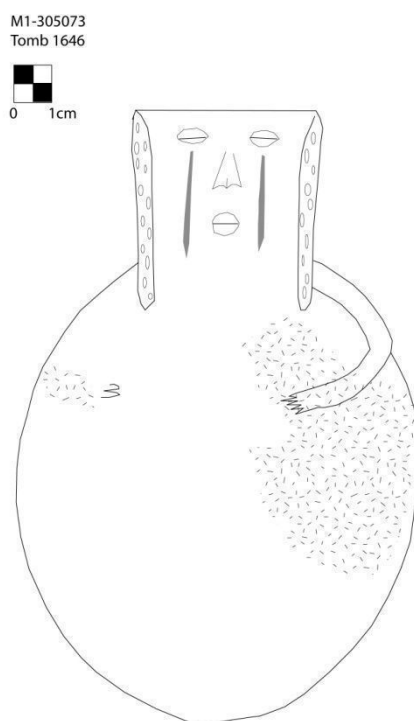
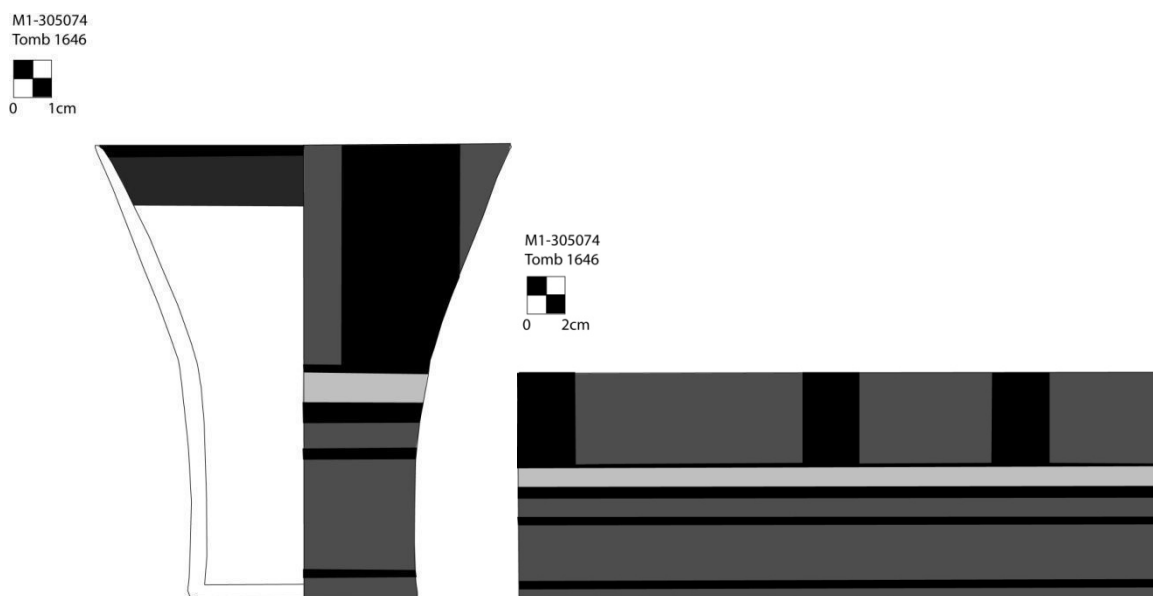


Figure 83. Anthropomorphic vessel, Tomb 1646.

APPENDIX C (continued)

Figure 84. *Kero*, Tomb 1646.***Tomb 1710 (1995)***

Tomb 1710 was a pit tomb located in the northern half of trench 30-7. It contained the skeleton of an adult female, aged 25 to 29 years. Cranial modification could not be observed. The individual had dental caries, as well as moderate to advanced dental wear and some pre-mortem tooth loss. There were strong deltoid muscle attachments on both humeri. There was some erosion on the 4th lumbar vertebra.

The female was accompanied by a woolen *manta*. The absence of a border made it difficult to determine if the textile was warp or weft faced, but it was not an interlocking pattern. The frequent presence of warp faced and absence of weft faced lends support to the definition of the textile as warp faced. The wool was spun ZS but as with several other pieces, the probably weft threads were spun far more loosely than the probably warp threads. The background (*pampa*) of the *manta* was brown, and it was decorated with green and red stripes (0.8 and 0.3cm wide respectively).

Also recovered from the tomb was a ceramic body sherd. It was made of a thick paste and un-slipped. Two cactus 'needles' were found. One was complete, including the 'eye.' The head of the other had been broken off and was classified as a pin by excavators. A non-diagnostic twig was included in the tomb's collection, as were fragments of a gourd vessel. Finally, a small lump of clay had been inventoried as 'ochre.'

APPENDIX C (continued)

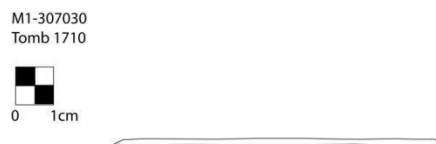


Figure 85. Cactus needle, Tomb 1710.

Tomb 1645 (1995)

Tomb 1645 was a pit tomb located along the southeastern side of trench 30-5. The tomb contained only 15% of the skeleton of a child, aged between 1 and 2 years, of indeterminate sex. Neither cranial modification nor pathologies could be observed.

The tomb also contained fragments of a brown, woolen *frazada*, either warp or weft faced. The wool was spun ZS. Several fragments had green ‘warp’ and brown ‘weft.’ Fragments of fiber rope (braided or twisted undetermined) were also found.

Tomb 1758 (1995)

Tomb 1758 was a pit tomb located on the eastern side of trench 30-9. It contained the skeleton of an older adult female. The individual had ‘circumferential’ cranial modification. There were very robust muscle attachments on the humeri, erosions on the 2nd to 5th lumbar vertebrae, active and healed porotic hyperostosis in the cranium, and the spinous processes were missing on a lumbar vertebra.

No textile fragments survived but short fragments of braided fiber rope were located around the body.¹⁸⁶ A large one-handled pitcher,¹⁸⁷ with a red-slip and trophy head motifs was found in the tomb. Also recovered were six ceramic sherds. Two of these came from a small pitcher.¹⁸⁸ The exterior was red-slipped with black upside down triangles painted around the neck. There was a sherd of a red-slipped *tazon*¹⁸⁹ decorated with geometric spirals near the rim. Two sherds of a light red-slipped *sahumador* and an undecorated body sherd were also recovered.

A burnt corn cob was found in the tomb. There were also cactus fragments and wooden sticks that may have been part of the tomb superstructure.

¹⁸⁶ Bruce Owen ran a radiocarbon date on a sample of this rope, the results are pending.

¹⁸⁷ Height 15.5cm, Rim Diameter 8cm, Base Diameter 7cm.

¹⁸⁸ Height 6.4cm, Rim Diameter 7cm, Base Diameter 6cm.

¹⁸⁹ Rim Diameter 14cm.

APPENDIX C (continued)

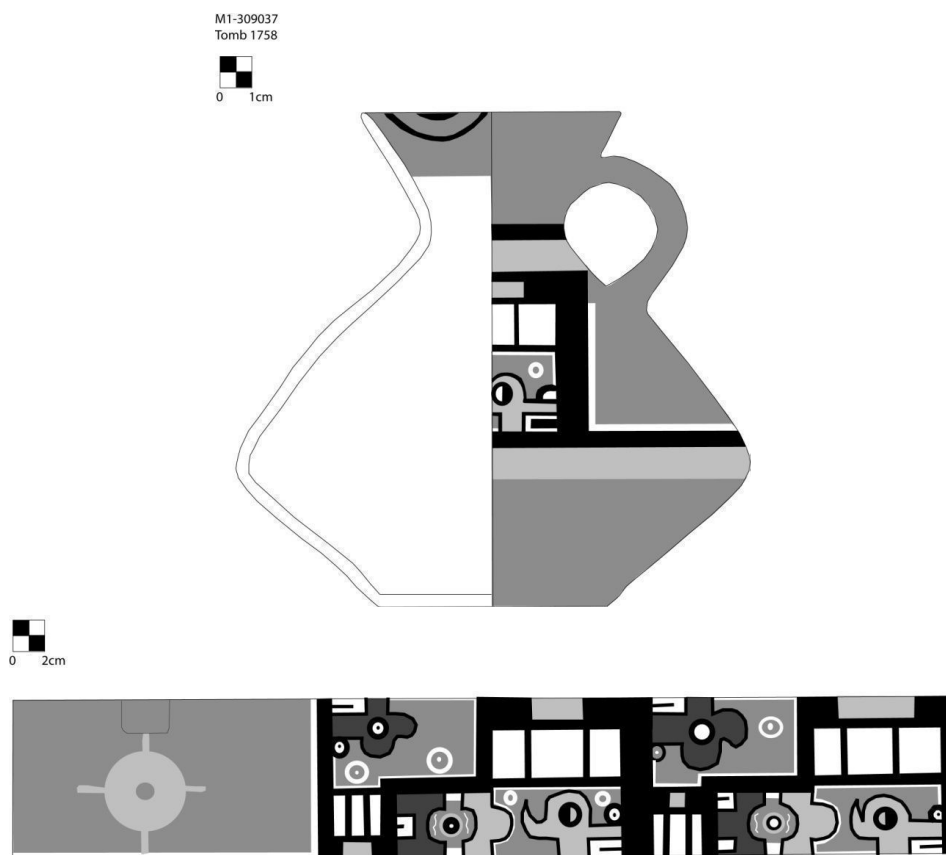


Figure 86. Red-slipped pitcher, Tomb 1758.

APPENDIX C (continued)

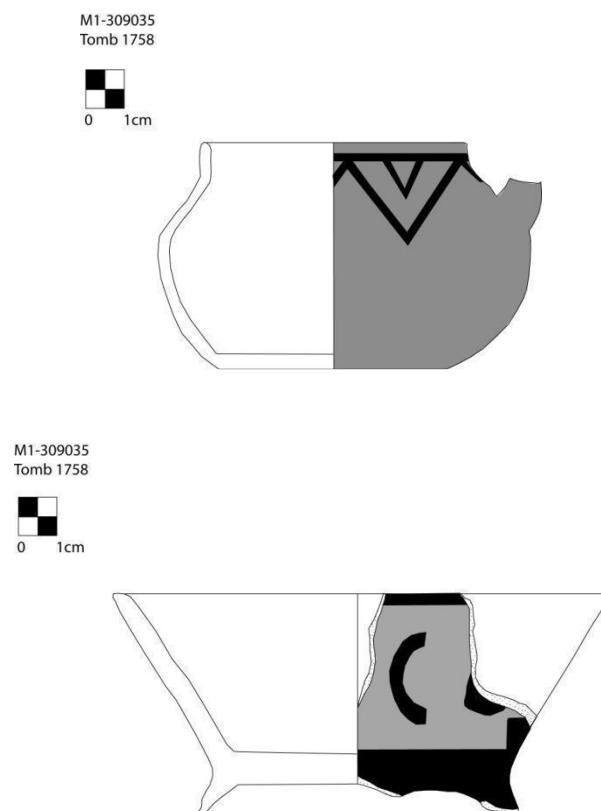


Figure 87. Ceramic sherds, including fragments of a small pitcher and a *sahumador*, Tomb 1758.

Tomb 1705 (1995)

Tomb 1705 was a pit tomb located near the center of trench 30-7. It contained the poorly preserved skeleton of a child, aged between 1 and 2 years, of indeterminate sex. Cranial modification could not be observed. Both femurs had osteomyelitis focused on the distal end.

Short fragments of braided rope with knots in them were recovered. Cactus fragments were also inventoried with the tomb.

Tomb 1709 (1995)

Tomb 1709 was a pit tomb located in the northwestern side of trench 30-7. It contained the skeleton of an older adult female. Cranial modification could not be observed. The female had dental caries as well as erosion and lipping on the lumbar vertebrae.

Very poorly preserved textile fragments were recovered. It was tentatively identified as woolen and with either a warp or weft faced weave. Brown in color, the piece could not be firmly categorized as either a *frazada* or a *manta*. Tiny fragments of fiber rope were recovered.

APPENDIX C (continued)

Also in the tomb were fragments of a gourd vessel, a cactus spine pin or needle, and four faunal inclusions. Of these three were worked, one resembled a *wichuna*, another a *hawkana* (both implements used in weaving), and another had been worked into a thick disc, perhaps an unfinished spindle whorl. The fourth was unidentified.

Three stones were included in the tomb's inventory. One was a very smooth, jasper colored pebble. The other two were greenish. I question the integrity of these as grave inclusions. In addition, a small collection of sticks was recovered which may have formed part of the tomb structure.

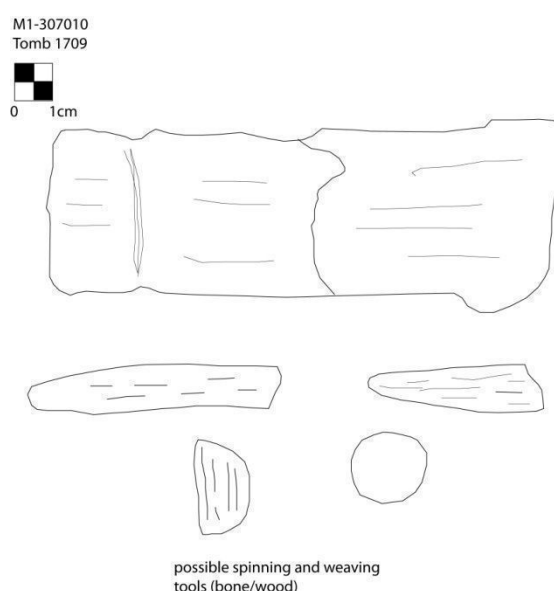


Figure 88. Wood and bone tools, Tomb 1709.

Tomb 1730 (1995)

Tomb 1730 was a pit burial located in the center of trench 30-8. It contained only 20% of the skeleton of an infant, aged 12 months or younger, of indeterminate sex. Cranial modification could not be observed. The infant had active lytic lesions on the muscle attachments of the femori and ulna, active periostitis in a humerus, fibula and tibia, and a thickened diaphysis on a femur.

Fragments of one woollen textile, woven in brown and camel in an interlocking pattern were recovered. The weave was loose, suggesting that it was a *frazada*, but this could also have been a result of its poor preservation. Strands of braided fiber rope (longest 3.9cm, 0.9cm thick, 0.2cm wide) including knots were also found. Tiny cane fragments were recovered.

APPENDIX C (continued)

Tomb 1314 (1995)

Tomb 1314 was a pit tomb located in the southern half of trench 30-2. It contained only 10% of the skeleton of a child, aged between 1 and 2 years, of indeterminate sex. Neither cranial modification nor pathologies could be observed.

Fragments of a woolen *manta*, woven in an interlocking pattern from wool spun ZS were recovered. The warp was green, but the weft was brown. There were also thin lines (possibly the ‘cumbre’ marking the shoulder) in camel and red. The finished edge was in camel and had been completed by braiding the wool. Several complete lengths of braided fiber rope (longest 13.5cm, 1.3cm wide, 0.4cm thick) were also found. The original knotting and looping together of rope lengths were displayed. Pieces of cactus, perhaps part of the tomb superstructure, were also recovered.

Tomb 1698 (1995)

Tomb 1698 was a pit tomb in the northeastern corner of trench 30-7. It contained the remains of at least two individuals.¹⁹⁰ One was a juvenile, aged 9 years +/- 9 months, of indeterminate sex. Cranial modification could not be observed. There were caries in one of the permanent molars, and active lytic lesions in the popliteal lines of the left and right tibias. The other individual represented (only 12% of skeleton was present) was an adult, exact age and sex undetermined. Cranial modification could not be observed on this individual either. Pathologies included macroposities on the glenoid cavity and lipping on several vertebrae. There were also robust muscle attachments on the right humerus and a facet on one phalange associated with frequent flexing.

Very poorly preserved fragments of fiber rope were retrieved. There were four broken fragments of cane flutes, at least two canes were represented and the mouth holes were preserved.

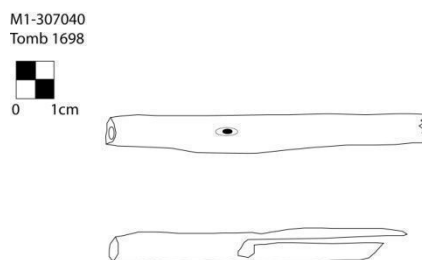


Figure 89. Cane flutes, Tomb 1698.

¹⁹⁰ These had been stored as three separate bags, and the osteological analysis respected this and assigned an inventory number to all three. However, at least two of the bags likely contained remains of the same individual, a child aged approximately 9 years.

APPENDIX C (continued)

Tomb 1308 (1995)

Tomb 1308 was an intact stone cist located on the eastern limit of trench 30-2. It contained the skeleton of a juvenile, aged 9 years +/- 9 months, of undetermined sex. Cranial modification could not be observed. There were dental wear and cracks in several teeth.

Small fragments of a brown woolen manta (shawl), woven in a warp faced pattern from ZS spun wool were recovered as well as short lengths of braided fiber rope.

The juvenile was accompanied by two ceramic vessels. There was a reddish-brown slipped *tazon*¹⁹¹ which was unusual because the interior wall was completely slipped, instead of just a band of slip near the rim. It was decorated with black step stair motifs and white wiggly lines. The other vessel was a one-handed pitcher.¹⁹² It was covered in a reddish-brown slip and decorated with orange bands and a cross design executed in black.

There was also a complete wooden spoon, decorated with an incised geometric pattern on the handle.

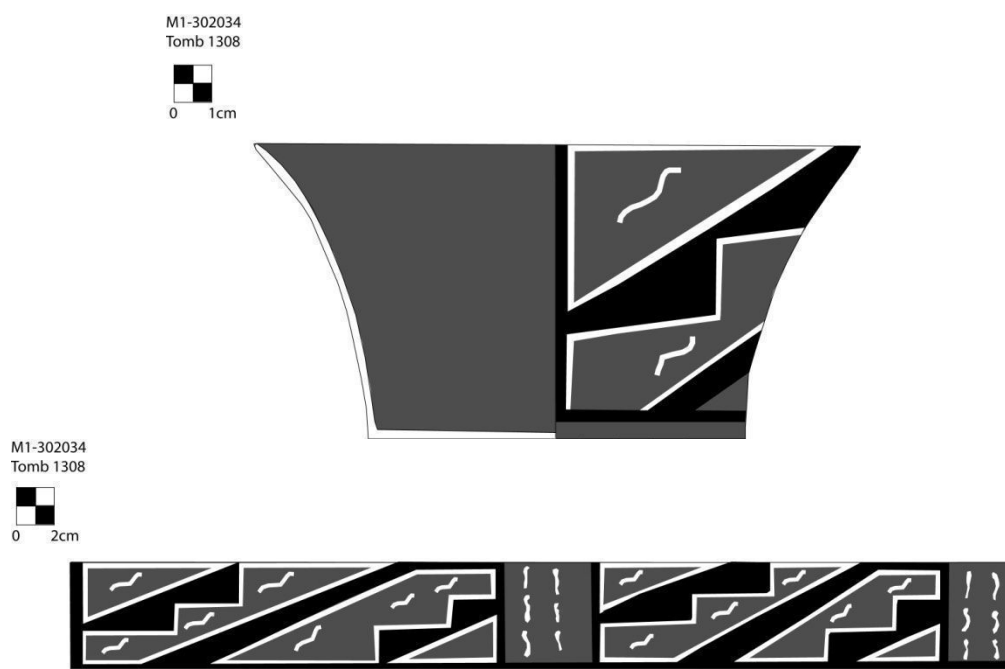


Figure 90. *Tazon*, Tomb 1308.

¹⁹¹ Height 7.8cm, Rim Diameter 16cm, Base Diameter 10cm.

¹⁹² Height 13.7cm, Rim Diameter 9cm, Base Diameter 8cm.

APPENDIX C (continued)

M1-302033
Tomb 1308
0 1cm

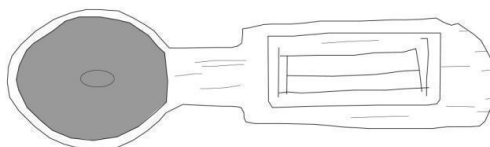
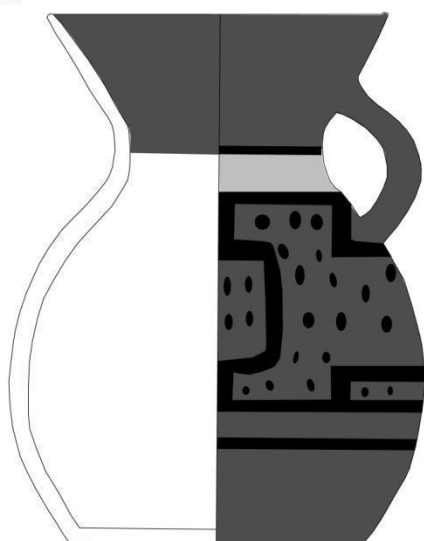


Figure 91. Wooden spoon, Tomb 1308.

M1-302041
Tomb 1308
0 1cm



M1-302041
Tomb 1308
0 2cm



Figure 92. One-handed pitcher, Tomb 1308.

Tomb 1311 (1995)

Tomb 1311 was an intact stone lined cist located along the eastern edge of trench 30-2. It contained the skeleton of a child aged 4 years +/- 9 months, of undetermined sex. Cranial modification could not be observed. There were dental caries and wear in several teeth.

Half of a gourd vessel was also recovered. In the neck of the vessel were four small, regularly arranged holes, perhaps for hanging the vessel.

APPENDIX C (continued)

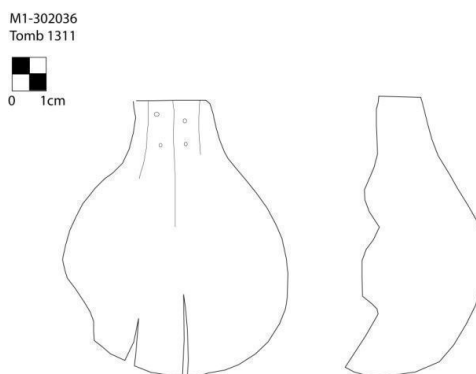


Figure 93. Gourd vessel, Tomb 1311.

Tomb 1313 (1995)

Tomb 1313 was an intact stone lined cist, located in the center of trench 30-2. Human remains were recorded in the project report and listed in the inventory but could not be located for analysis. The very small size of the tomb, based on project maps, suggests that it was that of an infant or small child.

Poorly preserved fragments of fiber rope were recovered and a fragment of the shell *Choromytilus chorus*. Small cane sticks were also inventoried as part of this tomb but are unidentifiable as a particular artifact.

Tomb 1315 (1995)

Tomb 1315 was an intact stone lined cist, located on the western side of trench 30-2. Human remains from two individuals were recovered. One was a juvenile, aged 6 years +/- 9 months, of undetermined sex. Cranial modification could not be observed. The juvenile had dental caries, dental wear and tartar. The other individual was an older female. Cranial modification could not be observed. There was a fracture in the left forearm, lipping on the lumbar vertebrae, and slight vertebral bodies. There was also arthropathy in the tarsals and strong muscle attachments in the humeri.

Also recovered was a decorated rim sherd from a red slipped *tazon*¹⁹³ and a complete wooden spoon (18.7cm long), decorated with incised carving and possibly paint on the handle.

¹⁹³ Rim Diameter 14cm.

APPENDIX C (continued)

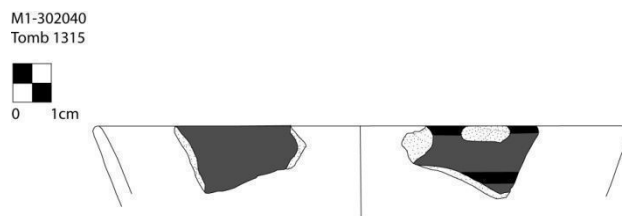
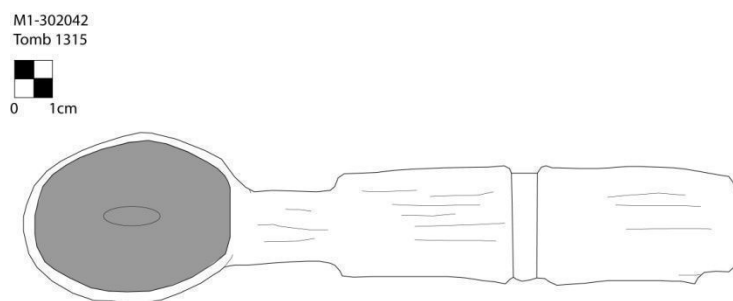
Figure 94. Rim fragment of *tazon*, Tomb 1315.

Figure 95. Wooden spoon, Tomb 1315.

Tomb 1319 (1995)

Tomb 1319 was a stone lined cist, located on the southern limit of trench 30-2. It contained the skeleton of a female, a middle adult. Cranial modification could not be observed. The female had dental wear and caries. There was moderate OP in the vertebral bodies. There was also evidence of parturition.

Fragments of a brown *manta* and a camel colored *frazada*, both woven in a warp-faced pattern using ZS spun wool were found. The individual was found wrapped up in thin braids of fiber rope (longest length 55.1cm, 0.8cm wide, 0.3cm thick)

26 ceramic sherds were recovered. These included fragments of a *kero* with a torus,¹⁹⁴ a *tazon*¹⁹⁵ and a zoomorphic *incensario*. The *kero* was red-slipped and decorated with a geometric pattern. The *tazon* was also red-slipped and decorated with black wiggly lines. The *incensario*

¹⁹⁴ Rim Diameter 15cm

¹⁹⁵ Height 7.6cm, Rim Diameter 16cm, Base Diameter 10cm.

APPENDIX C (continued)

was badly eroded but depicted a feline face. Unidentified cane sticks were inventoried with the tomb.

M1-302012
Tomb 1319

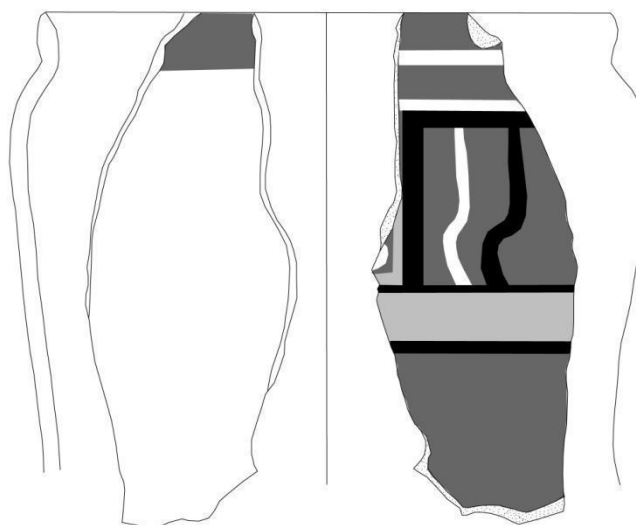


Figure 96. Fragment of *kero* with torus, Tomb 1319.

APPENDIX C (continued)

M1-302012
Tomb 1319

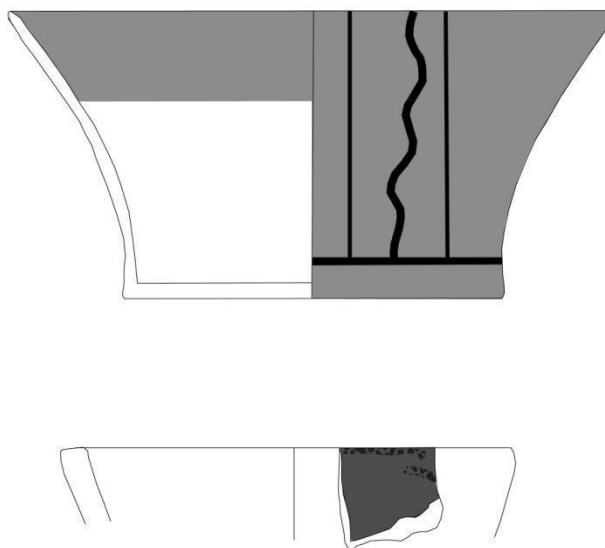


Figure 97. Fragments of *tazon* and *cuenco*, Tomb 1319.

M1-302012
Tomb 1319

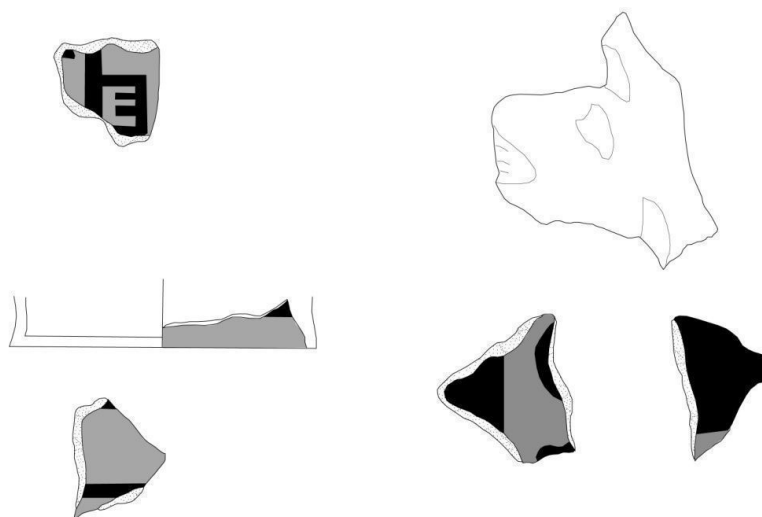


Figure 98. Ceramic sherds, including fragment of feline *incensario*, Tomb 1319.

APPENDIX C (continued)

Tomb 1278 (1995)

Tomb 1278 was an intact stone lined cist located in the northern half of trench 30-3. It contained the skeleton of a male middle adult. Cranial modification could not be observed. There was active periostitis in the tibiae and ulnas.

Also in the tomb were two complete ceramic vessels and several ceramic sherds. A red-slipped *tazon*¹⁹⁶ was decorated with a pattern of black horizontal zig-zags around the upper portion of the exterior. A red-slipped *kero* with a torus¹⁹⁷ was decorated by black and orange bands and four zoomorphic, probably camelid, figures. The sherds included either a spout or a tail from an *incensario*.

An incomplete wooden spoon, identified as made of cactus, was found as were several unidentified sticks.

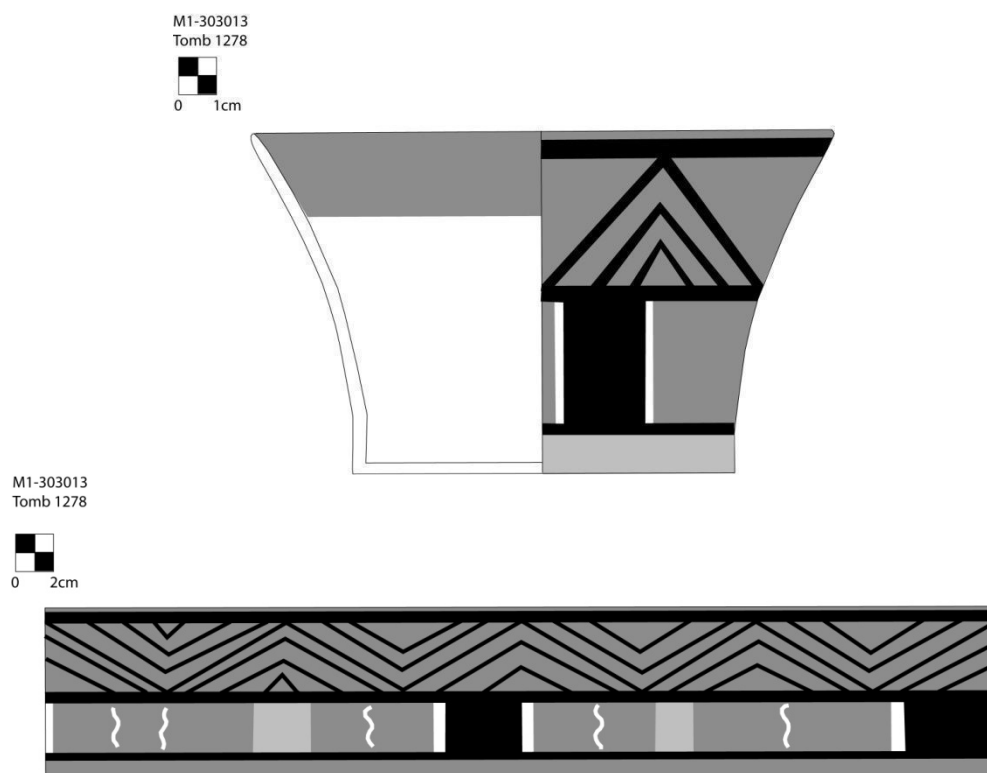
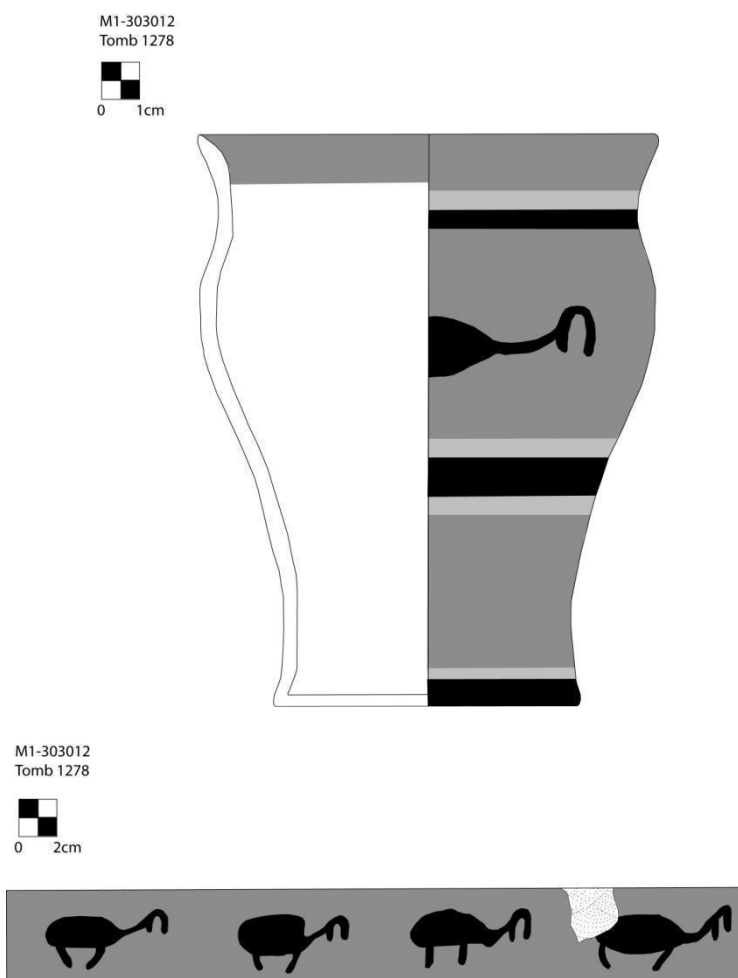


Figure 99. Red-slipped *tazon*, Tomb 1278.

¹⁹⁶ Height 9.1cm, Rim Diameter 15cm, Base Diameter 10cm.

¹⁹⁷ Height 15.1cm, Rim Diameter 12cm, Base Diameter 8cm.

APPENDIX C (continued)

Figure 100. Red-slipped *kero* with *torus*, Tomb 1278.

APPENDIX C (continued)

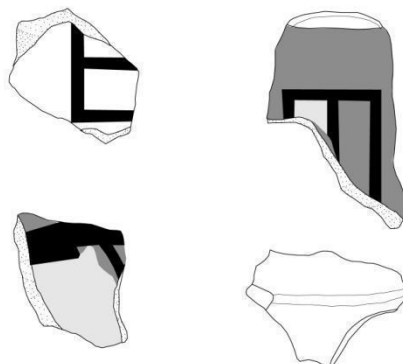
M1-303011
Tomb 1278

Figure 101. Ceramic sherds, Tomb 1278.

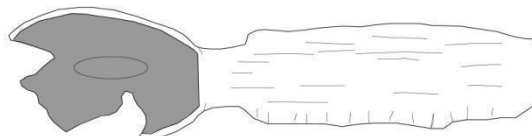
M1-303017
Tomb 1278

Figure 102. Wooden spoon, Tomb 1278.

Tomb 1281 (1995)

Tomb 1281 was an intact stone lined cist located in the center of trench 30-3. It contained the skeleton of a male middle adult. The individual had tabular cranial modification. There was advanced dental wear and caries. There were squatting facets on the femurs and erosion on the posterior cruciate ligament, and spiculars on the left ulna muscle attachment.

Two intact ceramic vessels were recovered from the tomb. A red-slipped *kero*¹⁹⁸ decorated with black and orange bands and a repeated pattern of diamonds, was identical to a

¹⁹⁸ Height 16.6cm, Rim Diameter 15cm, Base Diameter 8cm.

APPENDIX C (continued)

smaller *kero* recovered from tomb 870 in sector 34. The other vessel was a red-slipped *tazon*¹⁹⁹ decorated with black and orange vertical wiggly lines.

Tiny fragments of poorly preserved fiber rope and lengths of cane (possibly tomb superstructure) were recovered as well as a complete wooden spoon (17.2cm long).

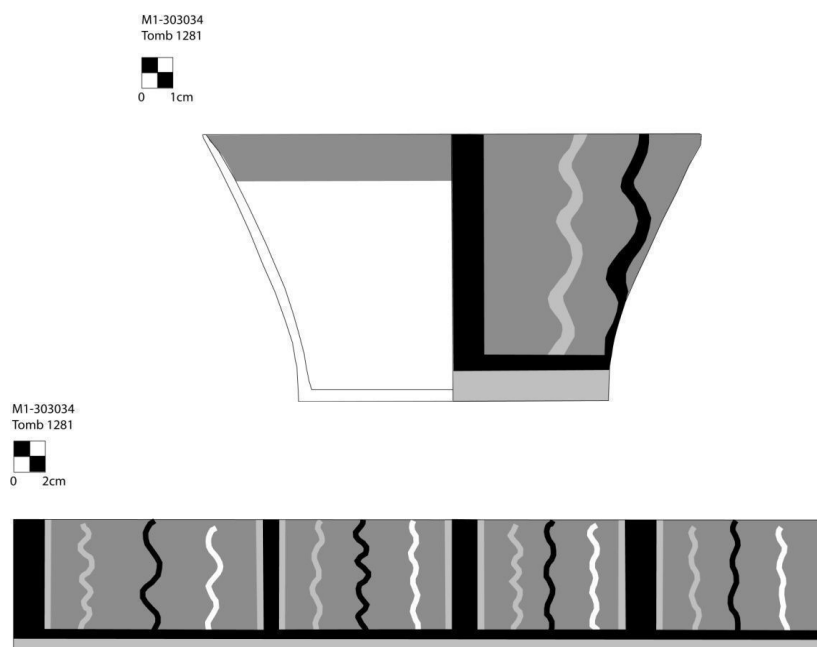
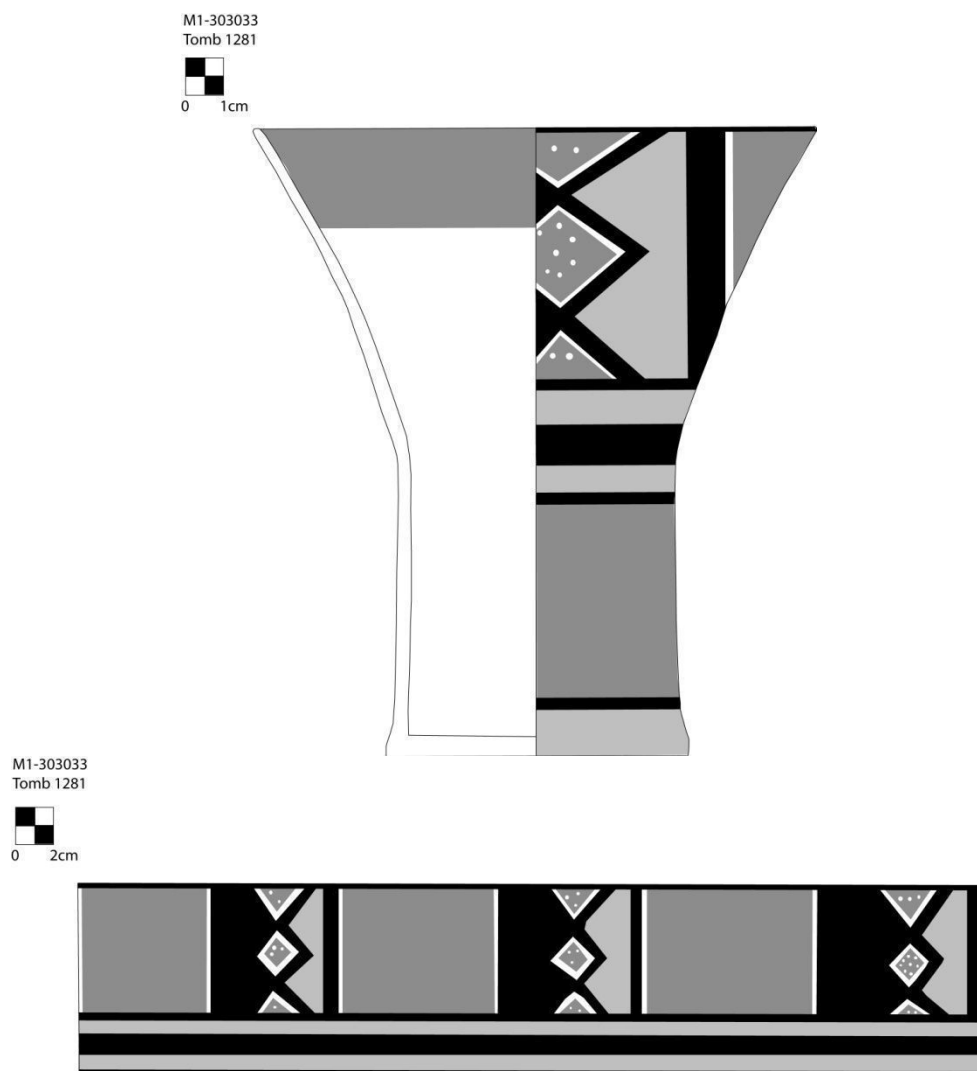


Figure 103. Red-slipped *tazon*, Tomb 1281.

¹⁹⁹ Height 8.8cm, Rim Diameter 16cm, Base Diameter 10cm.

APPENDIX C (continued)

Figure 104. Red-slipped *kero*, Tomb 1281.

APPENDIX C (continued)

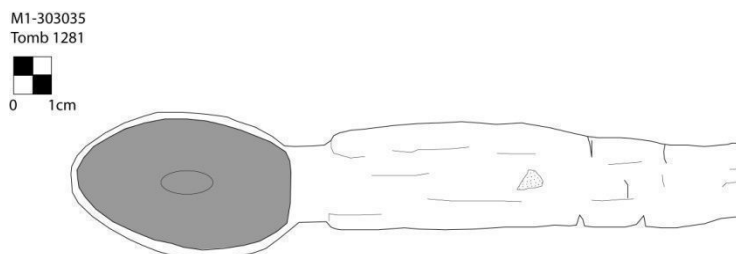


Figure 105. Wooden spoon, Tomb 1281.

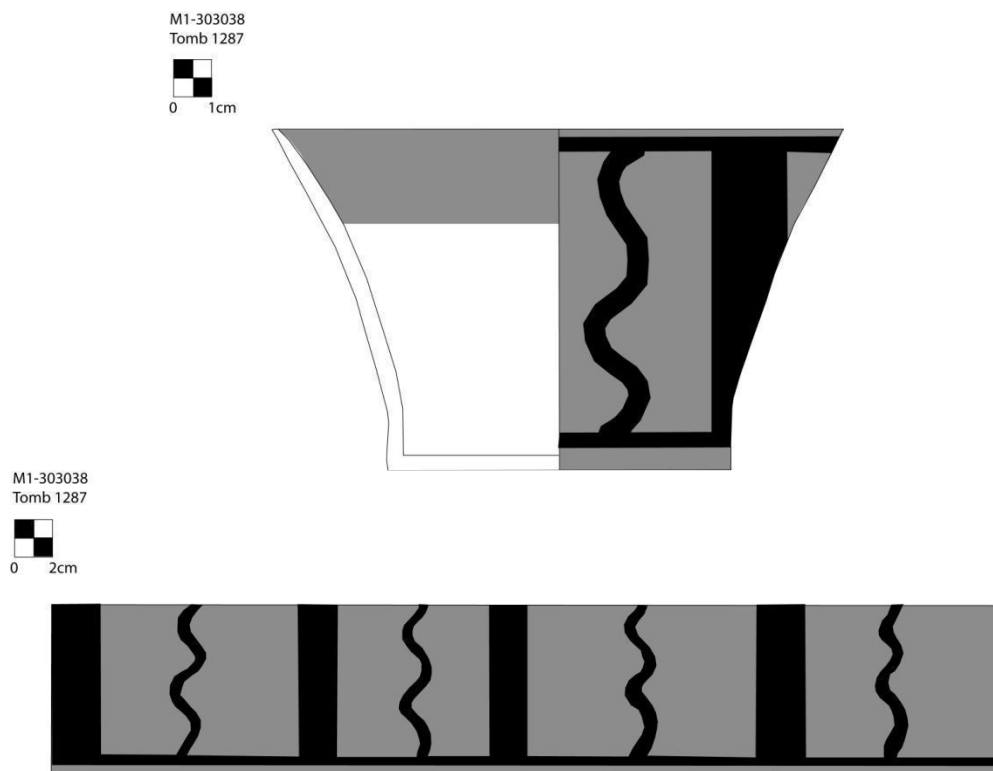
Tomb 1287 (1995)

Tomb 1287 was a stone lined cist located in the northwestern section of trench 30-3. It contained the skeletal remains of three individuals. The first was an infant, aged 18 months \pm 3 months, of undetermined sex. Cranial modification could not be observed. There were porotic hyperostosis in the occipital and parietal bones, most of it active, and macroposity in the muscle attachments of the ulna, radii, and humeri. The second individual was a middle adult of undetermined sex. Only 10% of the individual was present and cranial modification could not be observed. The only pathology noted was dental caries. The final individual represented was a child aged 3 to 4 years, of undetermined sex. Only 20% of the individual was present, and neither cranial modification nor pathologies could be observed.

A red-slipped *tazon* was recovered from the grave.²⁰⁰ It had burning stains on the interior and was decorated by dividing the exterior into four panels, separated by a thick black line, each with a vertical black wiggly line in the center. Another ceramic sherd was also recovered. Tiny fragments of fiber rope were found.

²⁰⁰ Height 8.9cm, Rim Diameter 15cm, Base Diameter 9cm.

APPENDIX C (continued)

Figure 106. Red-slipped *tazon*, Tomb 1287.***Tomb 1702 (1995)***

Tomb 1702 was an intact stone lined cist located along the western limit of trench 30-7. It contained the skeleton of a child, aged 4 years +/- 9 months, of undetermined sex. The remains were in a poor condition and neither cranial modification nor pathologies could be observed.

No cultural materials were recovered.

Tomb 1704 (1995)

Tomb 1704 was an intact stone lined cist located to the east of tomb 1702 in trench 30-7. It contained the skeleton of an infant, aged 18 months +/- 3 months, of undetermined sex. Cranial modification could not be observed. The only pathology observed were caries in the upper right incisor.

Accompanying the infant was a red-slipped *kero*.²⁰¹ The interior was decorated with a band of red slip around the rim. The vessel had a shallow double torus at the top of the *kero*

²⁰¹ Height 12.5cm, Rim Diameter 11cm, Base Diameter 6cm.

APPENDIX C (continued)

stem. The flaring upper portion of the *kero* was decorated with two feline figures executed in black. Two cane flutes, the longest measuring 17cm, with mouth holes still evident were also found in the tomb. Lengths of fiber rope (longest 34.1cm, 2.6cm wide, 1.1cm thick) were recovered. Most of this rope was braided and lengths were knotted together. In addition there was one length of tightly Z twisted rope.

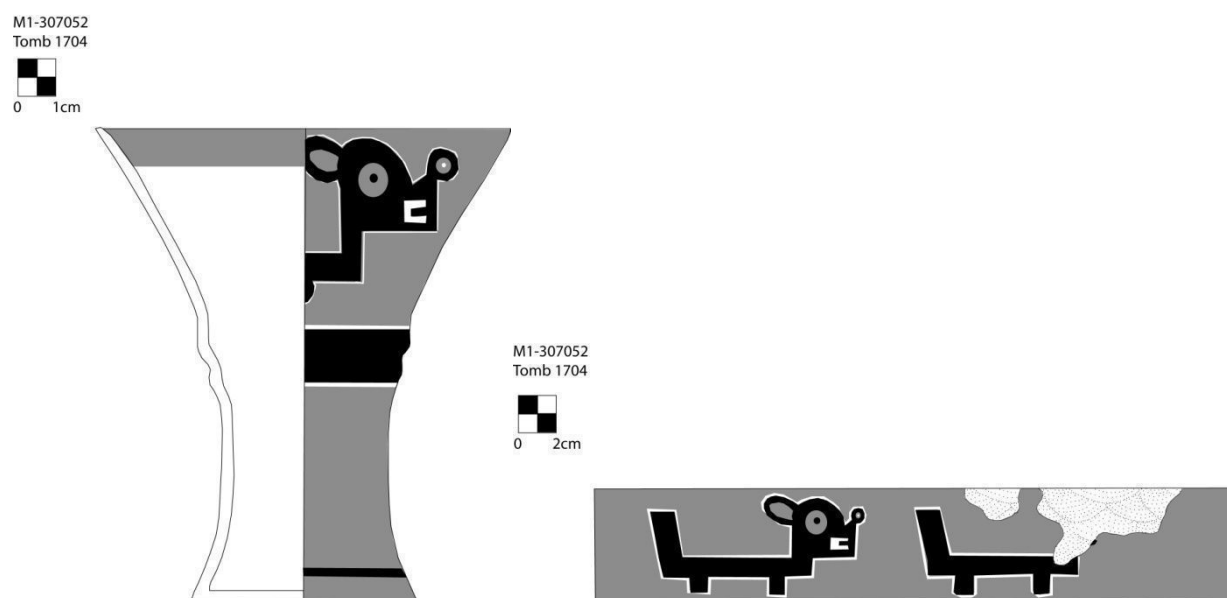


Figure 107. Red-slipped *kero*, Tomb 1704.

Tomb 1759 (1995)

Tomb 1759 was an intact stone lined cist located near the center of trench 30-9. It contained the incomplete remains of an infant, aged less than 1 year, of undetermined sex. There was no cranial modification but there were signs of periostitis in both humeri and tibiae. The right radius and left femur were both enlarged.

The only cultural materials recovered were a few threads of brown wool. No woven textile survived and the threads were too fragmentary to determine spin direction or tightness.

Tomb 1762 (1995)

Tomb 1762 was an intact stone lined cist in the southern half of trench 30-9. It contained the skeleton of a middle adult female. Some skin was present on the cranium, forearms, hands and feet. There was no cranial modification. The female had suffered pre-mortem loss of several

APPENDIX C (continued)

teeth, and caries and dental abscesses. A fracture on the occipital bone was in the process of remodeling. There was also a healed fracture on a right rib, and a fractured apophysis on the 3rd lumbar vertebrae.

Fragments of a thickly woven brown woolen textile, likely a blanket were recovered. There were also three spirals of spun, but unwoven wool. The wool had been spun and the re-spun, and each re-spun thread consisted of five separate spun threads. I suggest that this might be how threads were stored, they are wrapped in such a way that they could have been wrapped around a spindle and then pulled off and kept in the spiral. However, the threads are noteworthy because they were spun SZ (instead of the usual ZS). Spinning SZ has been associated with witchcraft in the Andes. Among altiplano Ayamara communities in the mid-19th Century, a ritual called '*cekarpayana*' was used to get rid of bad spirits (La Barre, 1948). This translates to 'left handify' and involved spinning backwards, or SZ. Fiber rope (longest 14.4cm long, 0.9cm wide, 0.6cm thick) was recovered. Some of the rope was braided, but there were also shorted strands that had been Z twisted.

An incomplete, very fragmentary basket was found in the tomb. In addition there were unidentified sticks inventoried with the tomb.

Tomb 1763 (1995)

Tomb 1763 was an intact stone lined cist located near the southern limit of trench 30-9. It contained the skeleton of a neonate. Cranial modification could not be observed. There was evidence for new bone formation on the mandible, femurs, ulnas and tibiae.

Short fragments of braided fiber rope (2.4cm long, 1.1cm wide, 0.4cm thick) with several knots still present were recovered.

Sector 32

Sector 32 was a very small cemetery located south of the domestic sectors. Owen excavated one trench in 1995. Seven burials were excavated in the trench, only one of which was deemed intact. None of the 41 burials excavated in 32 units by Pari's project in 2002 were intact.

Tomb 1014 (1995)

Tomb 1014 was an intact stone lined cist, located near the southeastern corner of trench 32-1. It contained the skeleton of a child aged 2 years, +/- 6 months, of undetermined sex. Cranial modification could not be observed. The child had periostitis in the long bones

Two light-brown slipped ceramic sherds, one a rim fragment, were recovered from the tomb. There was also braided fiber rope (longest 12.6cm, 0.7cm wide, 0.5cm thick), and two unidentified sticks, one of which was possibly the handle of a spoon.

APPENDIX C (continued)

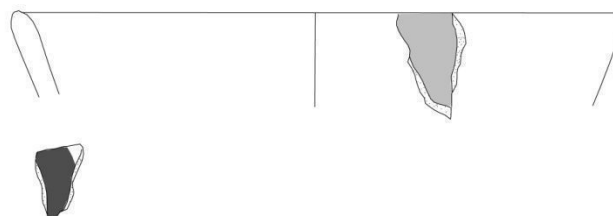
M1-321036
Tomb 1014

Figure 108. Ceramic sherds, including rim fragment, Tomb 1014.

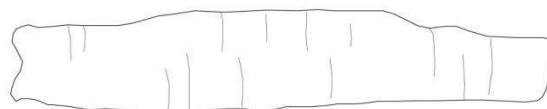
M1-321037
Tomb 1014

Figure 109. Possible spoon handle, Tomb 1014.

Sector 33

Sector 33 was another small cemetery, located to the east of sector 32. Owen excavated two trenches, recovering 11 tombs (three of which were un-numbered). Of these, three were deemed intact. Pari excavated 20 units, recovering 44 tombs, none of which were intact.

Tomb 1041 (1995)

Tomb 1041 was a pit burial, located on the western side of trench 33-1. It contained the incomplete remains of a middle adult female. Cranial modification could not be observed. There were signs of lumbarization and a healed fracture on the left humerus.

Fragments of a red-slipped *tazon*²⁰² were recovered. The *tazon* had been decorated with white and black paint, although too little of the vessel was represented to be able to determine the design. A wooden spoon was recovered from the tomb. There was also small sliver of

²⁰² Rim Diameter 16cm.

APPENDIX C (continued)

Choromylitus chorus, but it was unclear if this had been intentionally modified. There was also an incomplete corn cob, and unidentified botanical remains.

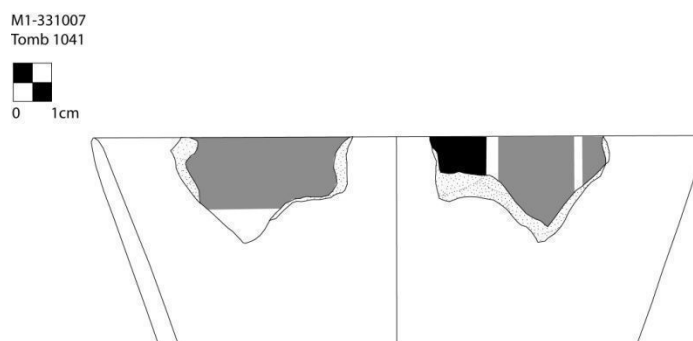


Figure 110. Fragments of *tazon*, Tomb 1041.

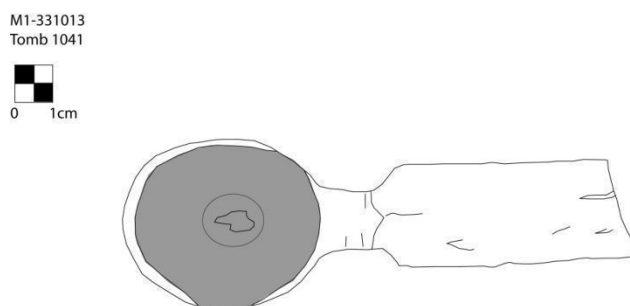


Figure 111. Wooden spoon, Tomb 1041.

Tomb 1072 (1995)

Tomb 1072 was an intact stone lined cist located in the eastern part of trench 33-2. It contained the skeleton of a juvenile aged 6 years +/- 9 months, of undetermined sex. Cranial modification could not be observed. There was active macro and microposity in the left tibia, possibly periostitis. The juvenile also had advanced dental wear.

APPENDIX C (continued)

Twelve red-slipped ceramic sherds were recovered from the tomb. They included fragments of a rim.²⁰³ There was also an incomplete corn cob, an incomplete gourd vessel and a small carbon deposit. Fragments of fiber rope, including one short Z twisted length were found.

Tomb 1039 (1995)

Tomb 1039 was a pit burial located near the center of trench 33-1. It contained the skeleton of an infant, aged 18 months +/- 3 months, of undetermined sex. Neither cranial modification nor pathologies could be observed.

The only cultural remains recovered from the tomb were poorly preserved fragments of a brown, woolen textile woven in a warp faced pattern. The weft threads appear to have been only semi re-spun, as apparent in several other examples.

Sector 34

Sector 34 was a small cemetery located to the east of sector 33, and separated from those areas by the stretch of land disturbed by the Pasto Grande canal. Both Pari and Owen's projects excavated in sector 34. In 2002, 134 units were excavated in sector 34. Pari's project collectively referred to sectors 21, 22, 23 and 34 as Hipolito Palito, and recovered 261 burials from the four sectors. Of those in sector 34, 41 tombs were deemed intact and studied in this project. In 1995, Owen excavated two trenches, identifying 14 tombs. Of these, five were analyzed in this project.

Tomb 810 (2002)

Tomb 810 was an intact stone lined cist, located near the northern limit of unit 39.²⁰⁴ There was a stone and mortar capstone, the mouth was also constructed of stone and mortar and measured 40 by 48cm. There were six stone courses, with mortar in-between. A small stone was placed on the floor of the tomb, which measured 56 by 58cm. The tomb was 105cm deep.

It contained the skeleton of an older male, with tabular cranial modification. The individual had moderate arthritis, healed macroposity in the parietals, and a healed fracture in the second left rib. The male was in a flexed position facing north-east.

Also recovered from the tomb were a complete wooden spoon (14.2cm long), decorated with an incised pattern of 7 triangles, and the remains of two baskets (with rim diameters of 11 and 14cm), one of which contained un-spun dark brown wool.

²⁰³ Rim Diameter 14cm.

²⁰⁴ This tomb is not described in the draft report, and so my discussion draws on the field-form only.

APPENDIX C (continued)

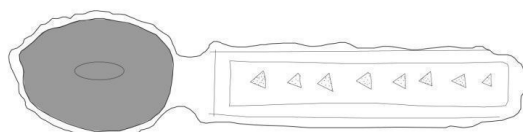
M1-596
Tomb 810

Figure 112. Wooden spoon, Tomb 810.

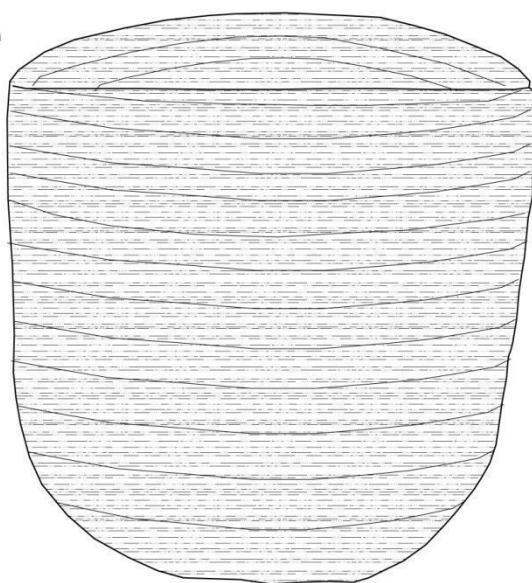
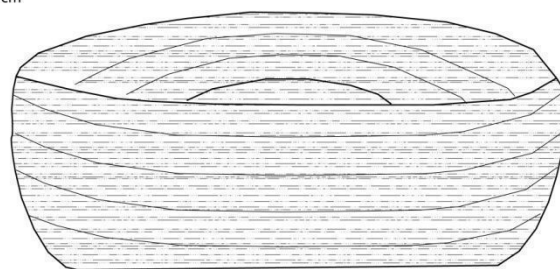
M1-594
Tomb 810M1-595
Tomb 810

Figure 113. Baskets, Tomb 810.

Tomb 782 (2002)

Tomb 782 was an intact pit tomb located in the southern half of unit 40. There was no capstone, the mouth was untreated and measured 60 by 54cm. The floor was untreated and measured 42 by 30cm. The tomb was 40cm deep.

APPENDIX C (continued)

The tomb contained the skeleton of an older female, aged 50 to 59 years. Cranial modification could not be observed. The female had dental caries, wear and some pre-mortem tooth loss. There was also evidence of osteoarthritis. The female was flexed, facing south-east.

The individual was facing southeast and buried with two vessels. One was a broken *tazon*.²⁰⁵ The vessel was red-slipped and decorated with a simple design of orange bands, and black straight and wiggly lines. The other vessel was a modified *kero*. The flaring portion of the *kero* was absent and the top of the shaft had been smoothed off just above the torus to create a small vase or cup shape.²⁰⁶ The vessel was red-slipped with black and orange bands. A complete wooden spoon (16.4cm long) decorated with a carved camelid facing right on the end of the handle was found in the tomb. Half of a gourd vessel was also recovered.

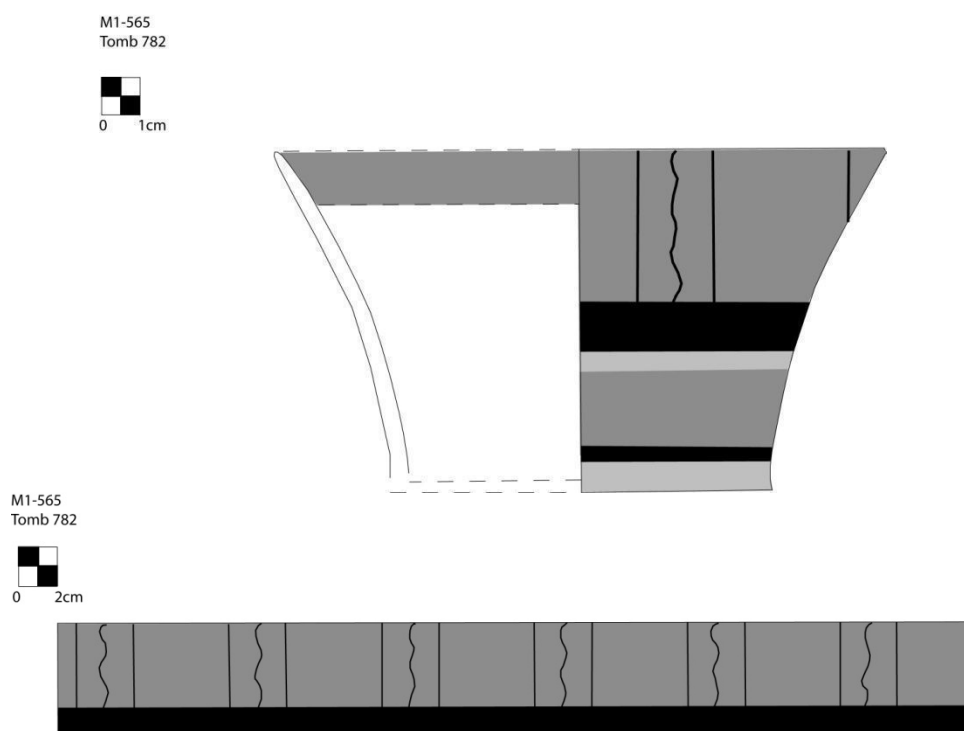


Figure 114. Red-slipped *tazon*, Tomb 782.

²⁰⁵ Height 9cm, Rim Diameter 16cm, Base Diameter 10cm.

²⁰⁶ Height 10cm, Rim Diameter 9cm, Base Diameter 8cm.

APPENDIX C (continued)

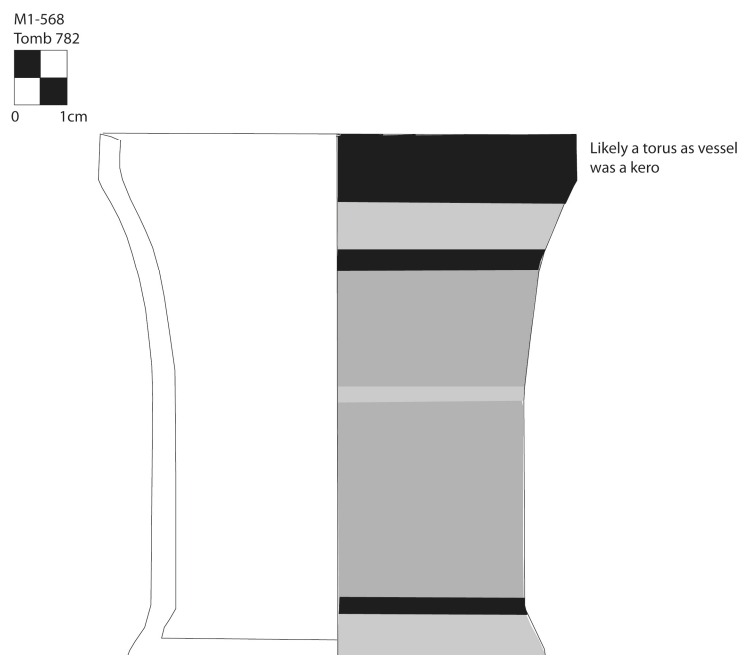
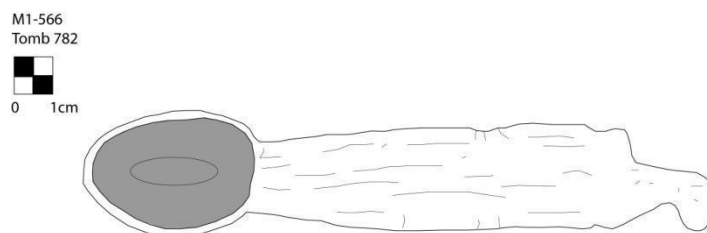
Figure 115. Modified *kero*, Tomb 782.

Figure 116. Wooden spoon, Tomb 782.

APPENDIX C (continued)

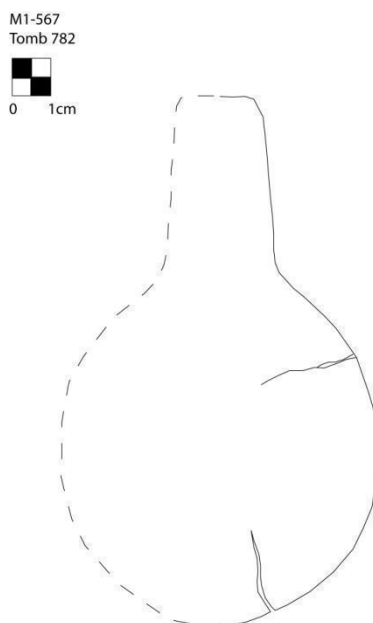


Figure 117. Incomplete gourd vessel, Tomb 782.

Tomb 783 (2002)

Tomb 783 was described as a partially intact pit tomb located to the east of tomb 782. There was no capstone, but the mouth was constructed of stone and measured 85 by 55cm. The floor was unprepared and measured 50 by 50cm. The tomb was 63cm deep.

It contained the skeleton of a female, aged 60+ years. The individual had slight tabular cranial modification. The individual had dental caries, abscesses, advanced dental wear and some pre-mortem tooth loss. There was osteoarthritis in the lumbar vertebrae, some bone loss in the vertebrae, and a healed fracture in the right clavicle. The female was in a flexed position.

The individual was facing east and accompanied by three ceramic vessels and several fragments from other vessels. There was a gently flaring dark red-slipped *kero*²⁰⁷ which was decorated with black step stair motifs and black and orange wiggly lines, and which had burning stains on the exterior. A red-slipped *tazon*²⁰⁸ was so heavily sooted that the designs were obscured. A large fragment was missing from the rim and there were repair holes on either side

²⁰⁷ Height 18.6cm, Rim Diameter 17cm, Base Diameter 9cm.

²⁰⁸ Height 10cm, Rim Diameter 16cm, Base Diameter 10cm.

APPENDIX C (continued)

of it. A second red-slipped *tazon*²⁰⁹ was decorated with black triangles. The ceramic sherds included a large fragment of another red-slipped *tazon*, and a body sherd of an *olla* or pitcher. A complete wooden spoon (14.9cm long) decorated with an incised geometric pattern was also recovered.

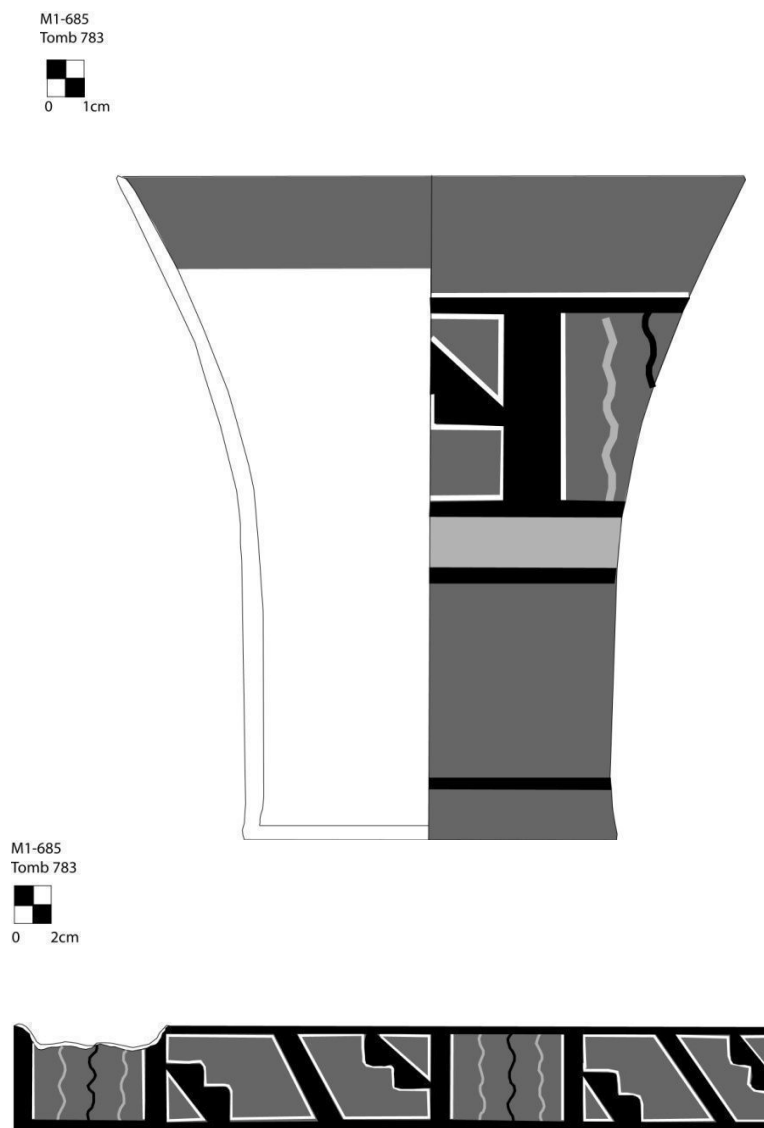


Figure 118. Dark red-slipped *kero*, Tomb 783.

²⁰⁹ Height 10.6cm, Rim Diameter 16cm, Base Diameter 9cm.

APPENDIX C (continued)

M1-686
Tomb 783

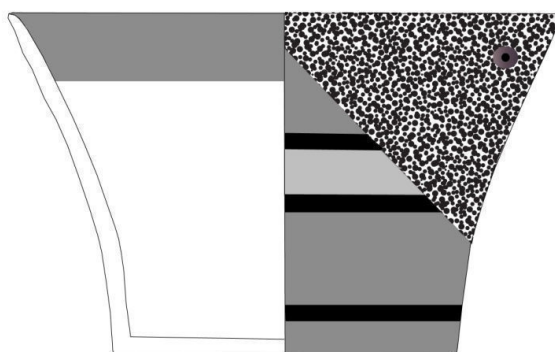
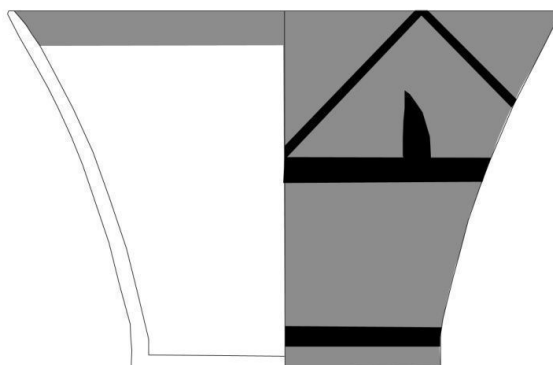


Figure 119. *Tazon* with extensive soot, Tomb 783.

M1-687
Tomb 683



M1-687
Tomb 783



Figure 120. Red-slipped *tazon*, Tomb 783.

APPENDIX C (continued)

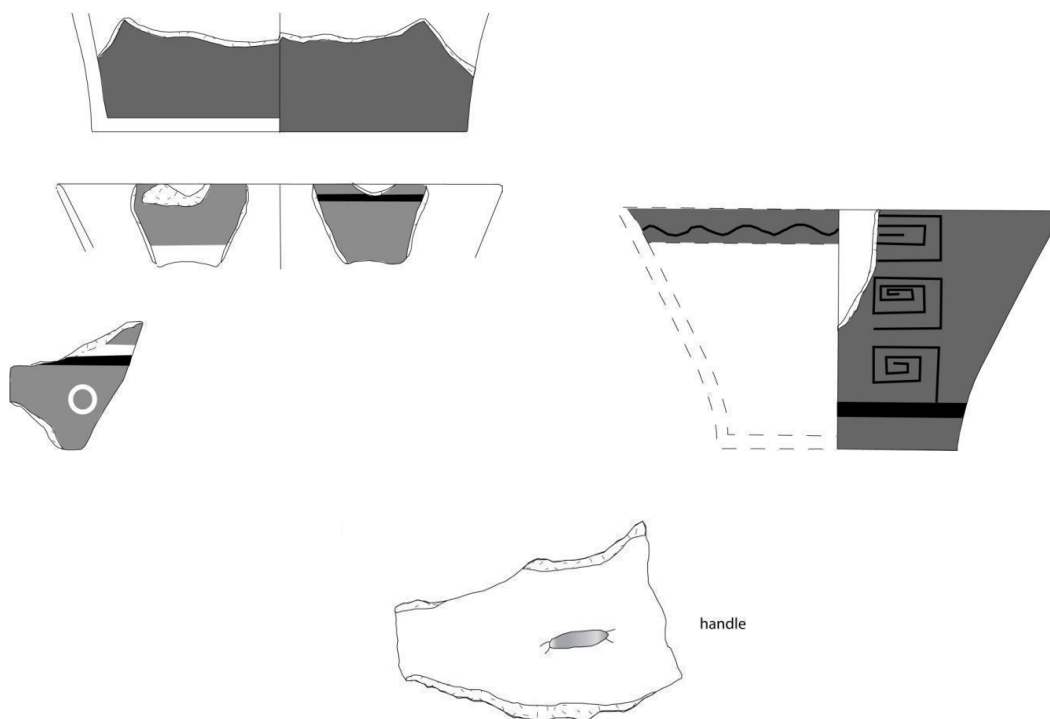
M1-685
Tomb 783

Figure 121. Ceramic sherds, Tomb 783.

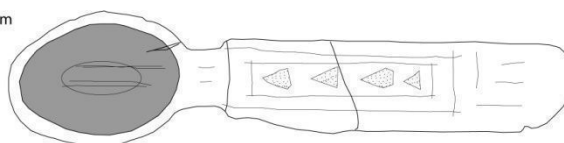
M1-688
Tomb 783

Figure 122. Wooden spoon, Tomb 783.

APPENDIX C (continued)

Tomb 791 (2002)

Tomb 791 was an intact pit burial located in unit 42. There was no capstone, the mouth was constructed of earth and measured 65 by 70cm. The floor was untreated and had a diameter of 40cm. The tomb was 30cm deep.

It contained the skeleton of a child, aged 2 years +/- 6 months, of undetermined sex. There was no evidence of cranial modification, and no pathologies were observed.

The child was in a fetal position facing east. It was accompanied by a red-slipped *tazon*.²¹⁰ There were burning marks on the exterior which was decorated with three unidentified designs – each consisted of a circle, with a dot in the center and four lines curving out from the circle. There was also a circle with a cross through it on the interior of the rim. Four fragments of a light red slipped *cuenco*²¹¹ were also found. There was a complete wooden spoon (16.7cm long). The spoon was sufficiently worn that it was impossible to determine the geometric patterning. Fragments of braided rope, including on length consisting of shorter strands knotted together (0.8cm wide, 0.3cm thick) were found.

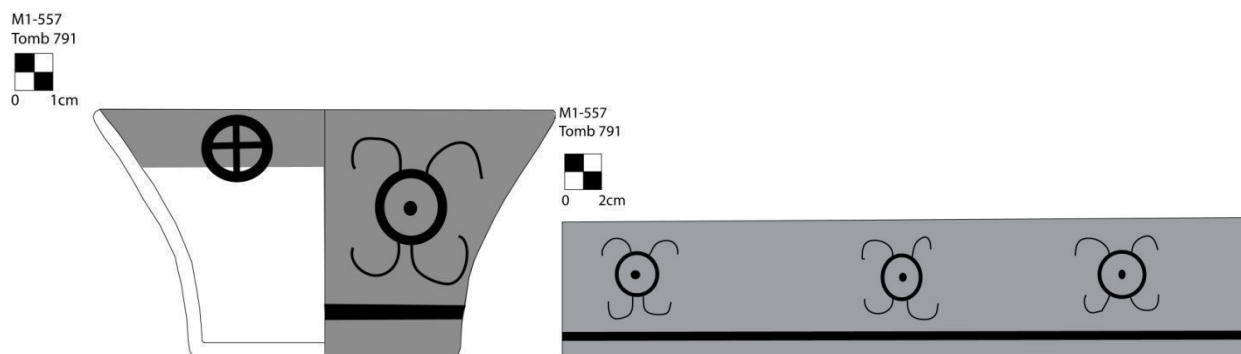


Figure 123. Red-slipped *tazon*, Tomb 791.

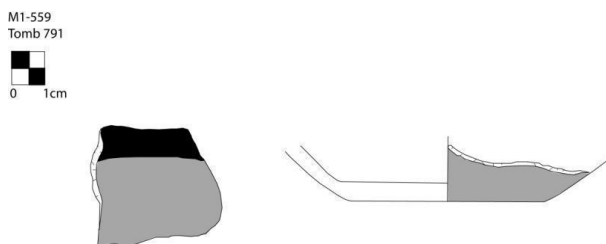


Figure 124. Ceramic sherds, Tomb 791.

²¹⁰ Height 6.5cm, Rim Diameter 12cm, Base Diameter 7cm.

²¹¹ Base Diameter 6cm.

APPENDIX C (continued)

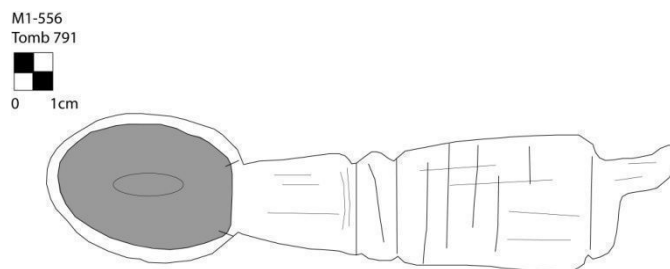


Figure 125. Wooden spoon, Tomb 791.

Tomb 787 (2002)

Tomb 787 was a pit burial, that had suffered some disturbance,²¹² located in unit 44. There was no capstone. The roughly circular mouth measured 85 by 72cm. A stone covered 40% of the floor, which measured 48 by 47cm. The tomb was 45 cm deep.

It contained the skeleton of a child aged 2 years +/- 6 months, of undetermined sex. There was mild dental wear, and porotic hyperostosis on the squamous portion of the occipital bone. The child was in flexed position facing south-east.

Accompanying the child was a plain-ware two handled *olla*.²¹³ One handle was missing, the vessel was un-slipped and heavily sooted. Poorly preserved fragments of a brown blanket, woven in a warp faced pattern from ZS spun wool were recovered, as well as a finely woven woolen manta. The *pampa* was warp faced and woven in ZS spun brown wool. In addition there were two fragments displaying five raised lines. The middle three lines were a picture of blue and red wool, the outer two were just blue. These raised colored lines appear to have been woven into the main warp of the textile, as is done in the contemporary technique of *chichilla*. As the piece is incomplete, it is unclear where on the textile they were, but they could have served as 'la union' or seam joining two separate woven pieces together. Lengths of braided fiber rope (longest 43.5cm, 1.9cm wide, 1.1cm thick) were also recovered.

There was an incomplete wooden spoon (20.3cm long) with a carved handle further decorated by incised triangles and rectangles. The ceramic vessel and spoon were located to the southeast of the body. Cactus sticks were also recovered from tomb 787.

²¹² It is recorded as intact in the draft report.

²¹³ Height 11cm, Rim Diameter 8cm, Base Diameter 5cm.

APPENDIX C (continued)

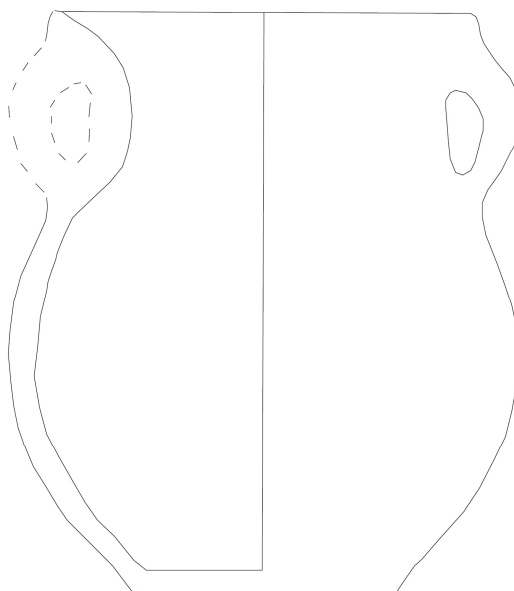
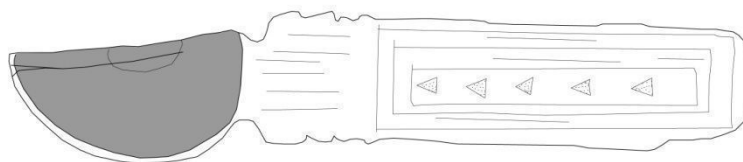
M1-553
Tomb 787Figure 126. *Olla*, Tomb 787.M1-554
Tomb 787

Figure 127. Wooden spoon, Tomb 787.

APPENDIX C (continued)

Tomb 790 (2002)

Tomb 790 was an intact pit burial located in the center of unit 45. There was no capstone but the roughly circular mouth was made of stones and measured 90 by 70cm. The floor was untreated, measured 40 by 45 cm, and the tomb was 52cm deep.

Tomb 790 contained the mummified remains of an adult. The mummy bundle had been disturbed and the individual was identified as a female. There was no cranial modification. Pathologies could not be observed. Strands of unbraided brown hair were visible on top of the head. The female was flexed, facing east.

Fragments of a brown woolen *manta* were still attached to the individual. The weave was warp faced and the spin ZS. The textile was notable, however, for the use of threads of varying thickness (20mm and 8mm) in the warp. This created a patterned ridged effect, with 0.5cm of fine warp, 0.5cm of thick warp, 0.5cm of fine warp and so on. Short lengths of braided fiber rope (1.1cm wide, 0.8cm thick) were also still attached to the body.

A pair of leather sandals were recovered from the tomb. As with others, these consisted of a flat sole, with straps that crossed the top of the foot. Instead of a sling-back effect, as seen in other examples, the back of this pair had a vertical piece of leather that covered the back of the heel. The sole of one sandal had been patched. The patch was worn suggesting either that this was not done specifically for burial, or that worn leather was used for repair. In addition there was a complete wooden spoon (17.5cm long) with slight carving on the edge of the handle, and a wooden comb which had been made by inserting flat pieces of wood through a thicker, rounded piece and securing it with braided leather.

M1-545
Tomb 790
0 1cm

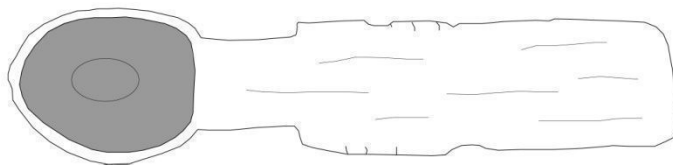


Figure 128. Wooden spoon, Tomb 790.

APPENDIX C (continued)

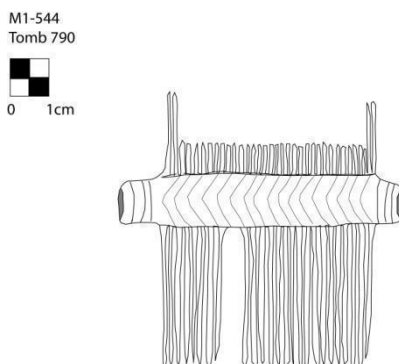


Figure 129. Comb, Tomb 790.

Tomb 793 (2002)

Tomb 793 was an intact stone lined cist, located in the center of unit 51. There was a stone capstone sitting on a roughly circular mouth made of stone and earth, measuring 52 by 46cm. There were six stone courses in the walls, held in place with mortar. The floor consisted of packed earth and measured 53 by 48cm. The floor was 97cm deep.

It contained the poorly preserved skeleton of an adult, sex and exact age could not be determined. Neither cranial modification nor pathologies could be observed.

A *kero*²¹⁴ and a *tazon*²¹⁵ were recovered from the tomb. The *kero* was red-slipped and decorated with black and orange bands, as well as a design of step-stair motifs, wiggly lines and crosses. A cross was etched into the side of the vessel after firing. The *tazon* had a light red slip, and was decorated with three birds, possibly flamingoes. There was also an undecorated wooden spoon (15.2cm long).

A seed had been inventoried with the tomb, although this has been tentatively identified as from a peach, and as such is likely not from the original context.

²¹⁴ Height 15.3cm, Rim Diameter 15cm, Base Diameter 7cm.

²¹⁵ Height 8.5cm, Rim Diameter 15cm, Base Diameter 9cm.

APPENDIX C (continued)

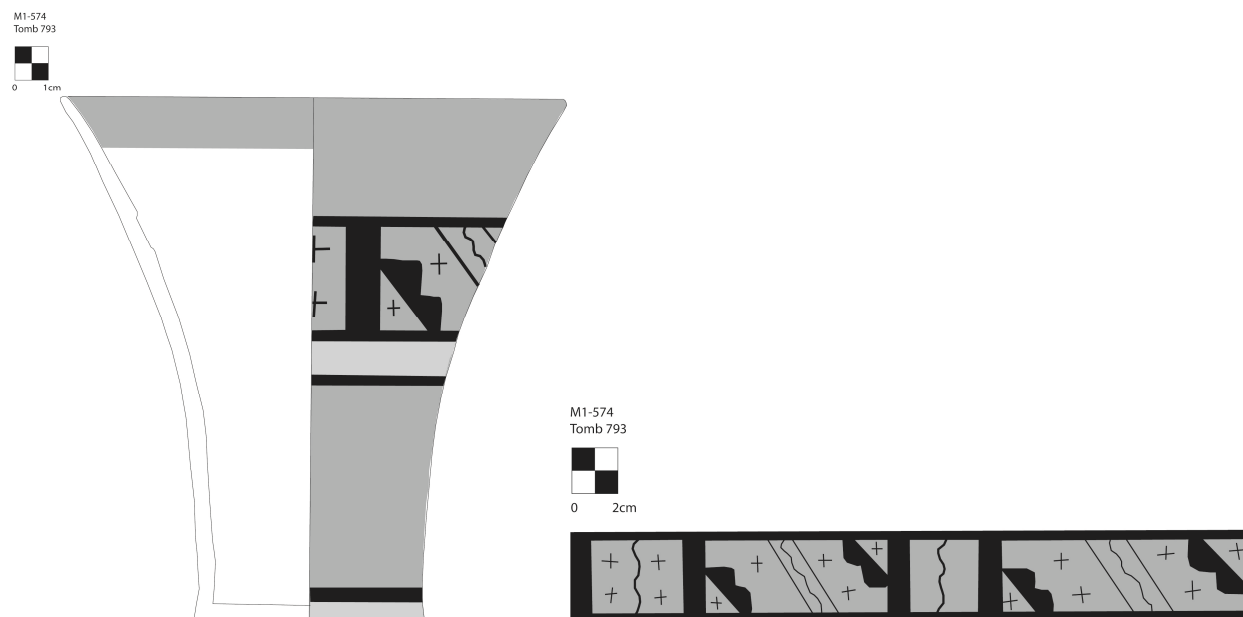
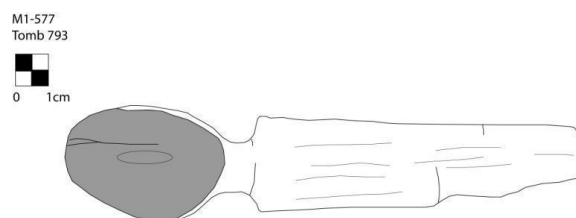
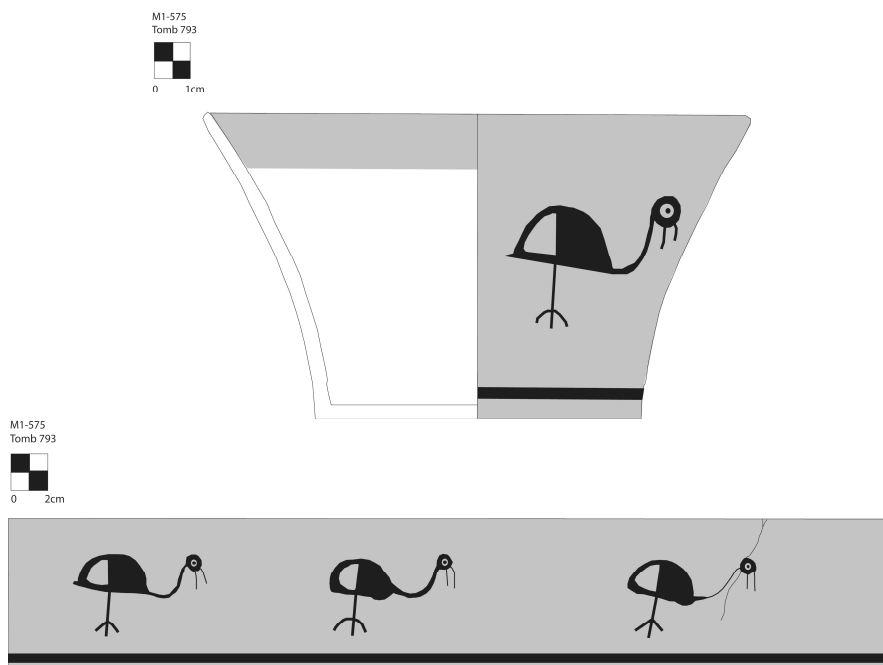
Figure 130. Red-slipped *kero*, Tomb 793.

Figure 131. Wooden spoon, Tomb 793.

APPENDIX C (continued)

Figure 132. Light red-slipped *tazon*, Tomb 793.***Tomb 802 (2002)***


Tomb 802 was a partially disturbed pit tomb in the northeastern corner of unit 52. There was no cap. The mouth was untreated and measured 65 by 55cm. The floor was also unprepared and measured 42 by 47cm. The tomb was 43cm deep.

It contained the skeleton of a child, aged 3 years +/- 6 months, of undetermined sex. The child had probable tabular cranial modification. There was slight dental wear and porotic hyperstosis in the cranium. The child was flexed, facing north-east.

Two textiles, both woven thickly enough to be identified as *frazadas*, were represented. One was light brown, in a warp faced pattern, although the pattern was slightly off from the vertical orientation of the textile. The other piece was woven in an interlocking pattern. The piece was cream with thick (2.2cm) brown stripes. The warp threads were solid colors, but some of the weft threads were re-spun with brown and cream. Again, the weave was slightly off a direct vertical alignment. Long strands (longest 99.5cm, 0.6cm wide, 0.3cm thick) of braided fiber rope were recovered, as well as a pair of sandals. This was the best preserved example from the collection. Each shoe was made by taking a flat piece of leather, puncturing a hole in each front corner, into which was tied a strip of leather. These strips crossed each other and then tied

APPENDIX C (continued)

onto a hole on each corner at the back of the shoe. Attached to these holes was another short piece of leather, which acted as a sling-back.

M1-573
Tomb 802

0 1cm

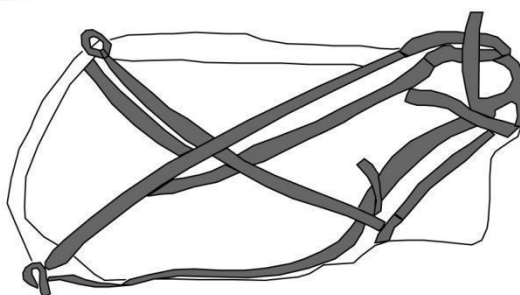


Figure 133. Leather sandal, Tomb 802.

Tomb 809 (2002)

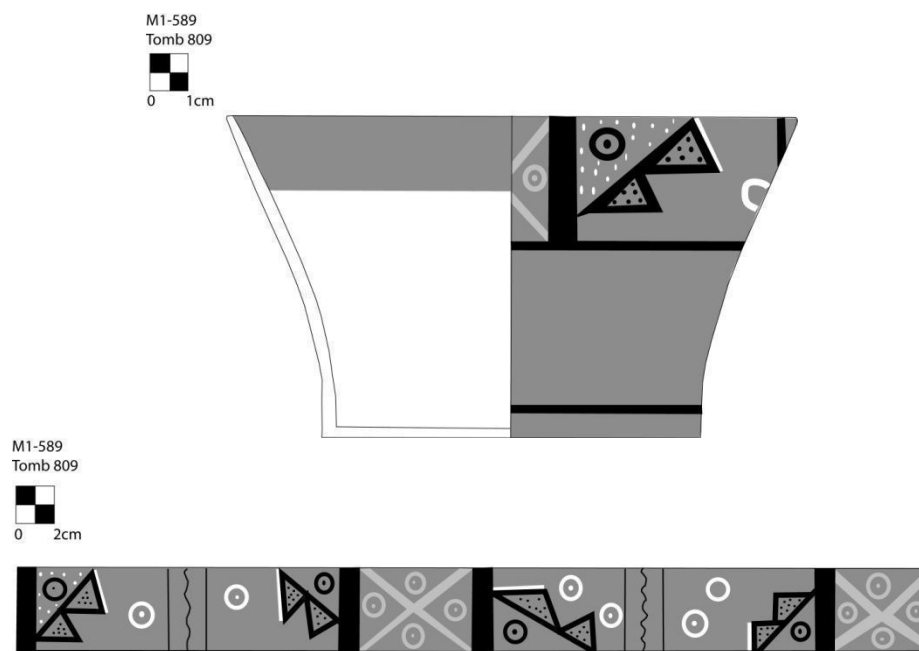
Tomb 809 was an intact pit tomb in the northwest corner of unit 55. There was no capstone, the circular mouth was made of earth with a diameter of 60cm. The floor was untreated and had a diameter of 33cm. The tomb was 48cm deep.

It contained the skeleton of a child aged 4 years +/- 9 months, of undetermined sex. The child had tabular oblique cranial modification. The child had a fracture in its cranium that was in the process of healing, and probably the result of blunt force trauma. There was another fracture in the process of remodeling on the sixth left rib. There was active periostitis in several of the ribs, six of which showed signs of an earlier fracture. There was dental wear, caries and porosity in the mouth palate.

A bright red-slipped *tazon*²¹⁶ decorated with step stair motifs, circles and crosses, and with burning stains on the exterior, was recovered from the tomb. A piece of leather was identified as a sandal in the inventory, but could not be confirmed as such.

²¹⁶ Height 8.7cm, Rim Diameter 15cm, Base Diameter 10cm.

APPENDIX C (continued)

Figure 134. Bright red-slipped *tazon*, Tomb 809.***Tomb 830 (2002)***

Tomb 830 was an intact stone lined cist²¹⁷ located along the southern limit of unit 64. There was no capstone. The circular mouth was made of stones and earth and measured 52 by 45cm. There were three stone courses with mortar. The floor was prepared with stone, although measurements were not recorded. The tomb was 82cm deep.

An adult skeleton was noted on the field form, but these remains were not available for analysis. There was a red-slipped *tazon*²¹⁸ that had burning stains on the exterior. It had been decorated with a black band at the top and base of the exterior and three roughly executed and irregularly spaced black birds. A complete wooden spoon (15.8cm) was decorated with a carved camelid facing right on the end of the handle.

²¹⁷ It is listed as having suffered disturbance in the past, but as intact without a capstone in the draft report.

²¹⁸ Height 7.2cm, Rim Diameter 14cm, Base Diameter 7cm.

APPENDIX C (continued)

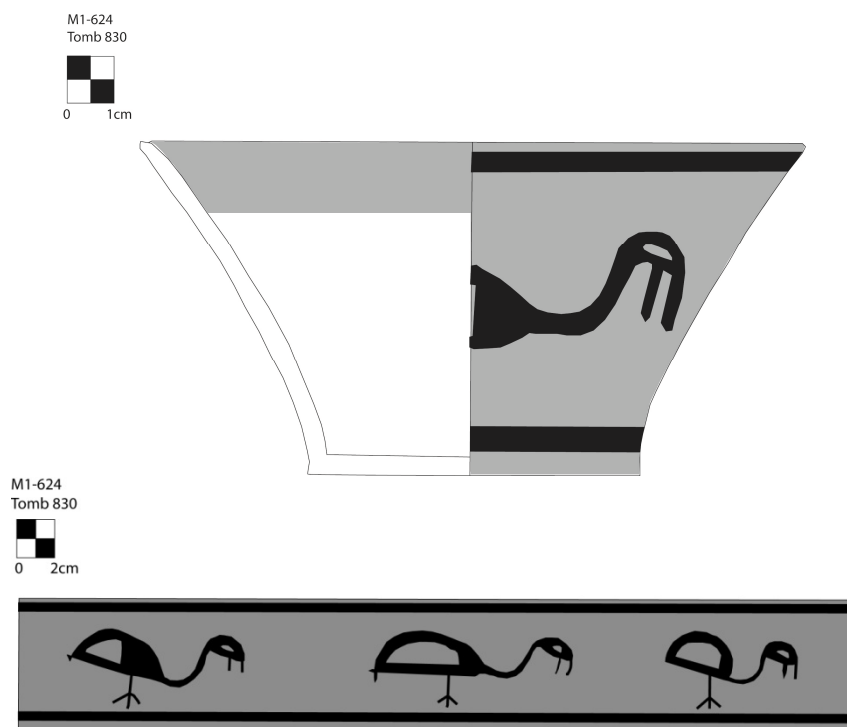
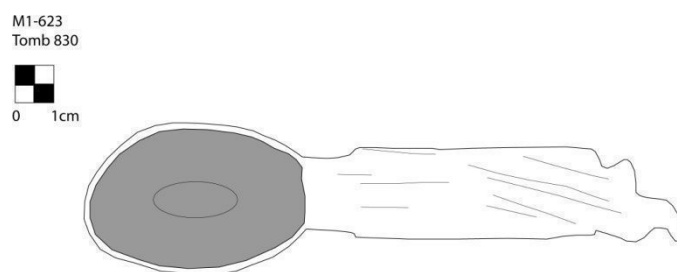
Figure 135. Red-slipped *tazon*, Tomb 830.

Figure 136. Wooden spoon, Tomb 830.

APPENDIX C (continued)

Tomb 831 (2002)

Tomb 831 was a partially disturbed stone lined cist located to the west of tomb 830. The mouth was made of stones and earth, and measured 54 by 50cm. There were six stone courses in the walls. The floor was not prepared and measured 60 by 55cm. The floor was 104cm deep.

No human remains were recovered from the tomb. On the east side of the tomb were two ceramic vessels. One was a cup, similar to Goldstein's (1985) flowerpot form.²¹⁹ It had a reddish-brown slip. The upper portion of the vessel was decorated with stylized trophy heads in orange and grayish/blue and the lower with a zig-zag pattern. There was also a reddish-brown slipped *tazon*²²⁰ which was decorated with miniature step stair motifs and circles. An incomplete wooden spoon was decorated with two panels of incised geometric designs on the handle.

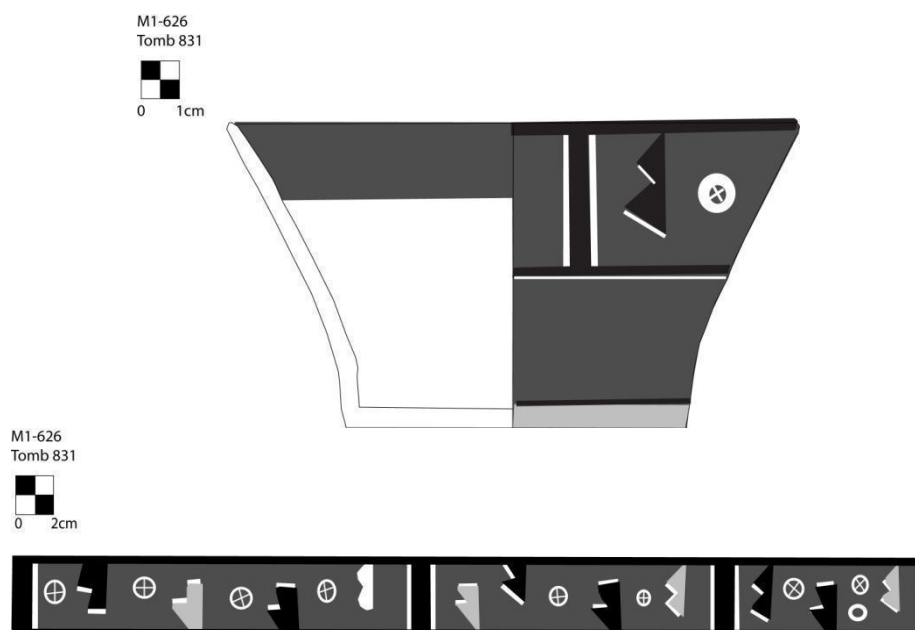


Figure 137. Reddish-brown slipped *tazon*, Tomb 831.

²¹⁹ Height 16.5cm, Rim Diameter 13cm, Base Diameter 7cm.

²²⁰ Height 8cm, Rim Diameter 15cm, Base Diameter 9cm.

APPENDIX C (continued)

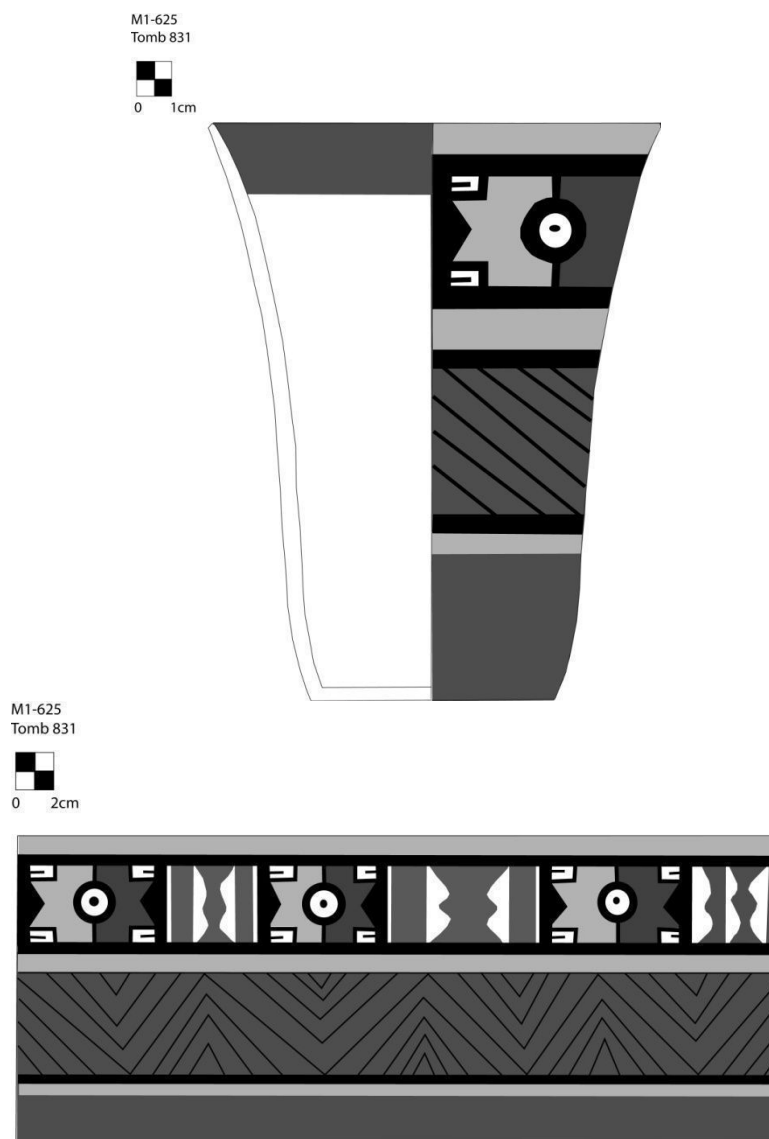


Figure 138. 'Flowerpot', Tomb 831.

APPENDIX C (continued)

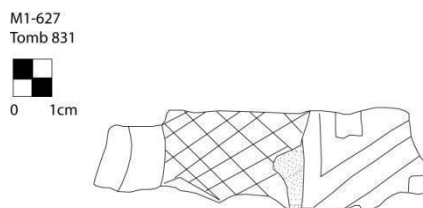


Figure 139. Handle of wooden spoon, Tomb 831.

Tomb 847 (2002)

Tomb 847 was an intact pit tomb in the northwestern corner of unit 69. There was no capstone, the mouth was untreated and measured 58 by 100cm. A small flat stone (34 by 29cm) was on the floor of the tomb, which measured 42 by 53cm. The tomb was 48cm deep.

The field form records the presence of a skeleton flexed, facing northeast and wrapped in a poorly preserved textile and wrapped in fiber rope. The skeleton, textile and rope were not available for analysis.²²¹

Tomb 846 (2002)

Tomb 846 was an intact pit tomb located in the northwest corner of unit 74. There was no capstone. The mouth was made of earth and measured 47 by 45cm. The floor was untreated and measured 30 by 29cm. The tomb was 26cm deep.

The tomb contained the skeleton of an infant aged 18 months +/- 3 months, of undetermined sex. Cranial modification could not be observed. There were dental caries in several teeth. The infant was in a flexed position.

The field form listed the presence of a ceramic vase but this was not available for analysis.

Tomb 869 (2002)

Tomb 869 was an intact stone lined cist in unit 78. There was no capstone, the mouth was constructed from stones and earth, and measured 42 by 44cm. There were four stone courses. The floor was untreated and measured 35 by 40cm. The tomb was 48cm deep.

According to the field form the tomb contained the skeleton of a child, in a flexed position facing east, but these remains were not available for analysis.

Two ceramic vessels were recovered from the tomb. One was a small *tazon*.²²² The shape of the *tazon* was slightly unusual, rising vertically and then flaring out, instead of flaring out

²²¹ A comment on the field form states “El esqueleto al ser levantado se fue desasiendo, por la antigüedad del mismo, por el cual no se trajo a gabinete.”

APPENDIX C (continued)

from the base. It was red-slipped with burning stains on the exterior, and decorated with four black reverse S figures.²²³ It was red-slipped and decorated with black fine line oval shapes and cream bands. A shell pendant made of *spondylus* was also recovered from the tomb.

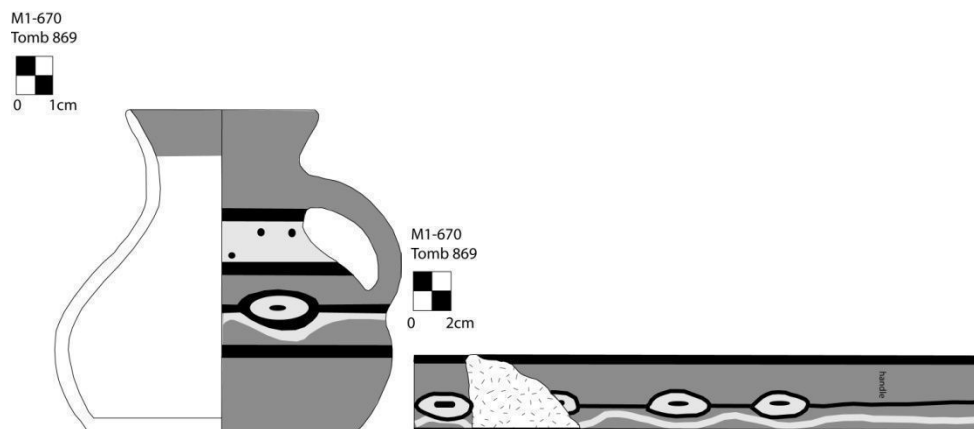


Figure 140. Red-slipped pitcher, Tomb 869.

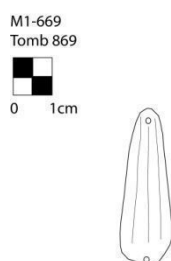
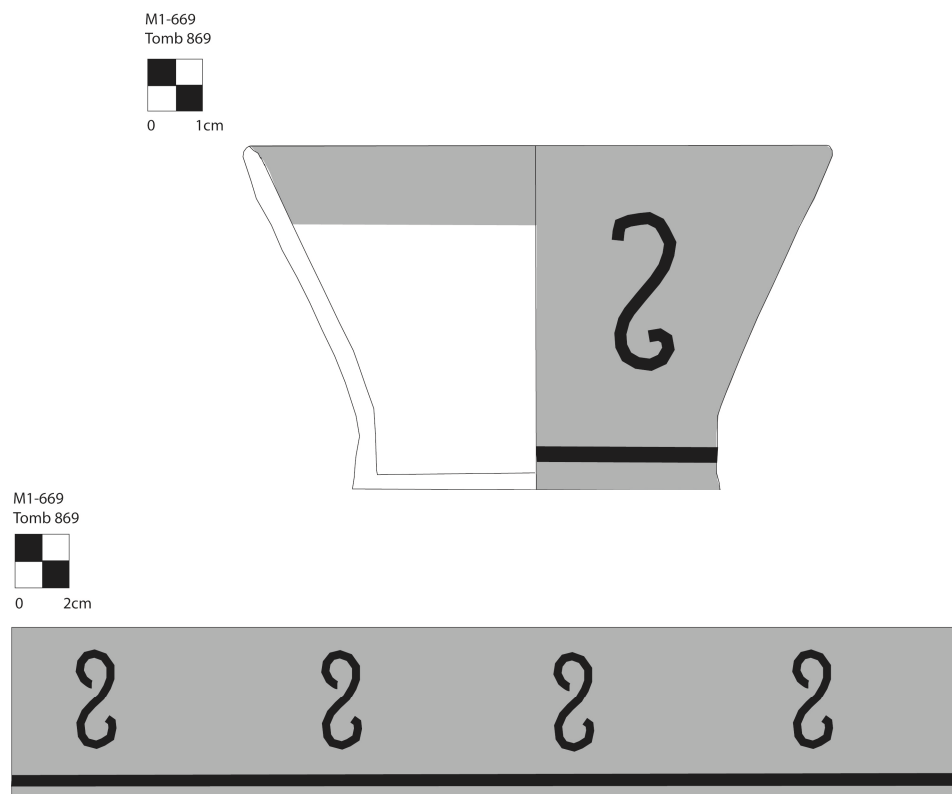


Figure 141. *Spondylus* bead, Tomb 869.

²²² Height 6.4cm, Rim Diameter 11cm, Base Diameter 7cm.

²²³ Height 8.7cm, Rim Diameter 5cm, Base Diameter 7cm, Neck Height 1.5cm.

APPENDIX C (continued)

Figure 142. Red-slipped *tazon*, Tomb 869.***Tomb 870 (2002)***

Tomb 870 was an intact stone lined cist in unit 78. There was no capstone. The stone and earth mouth measured 51 by 53cm. There were three stone courses with mortar. A flat stone was placed on the floor which measured 41 by 43cm. The tomb was 50cm deep.

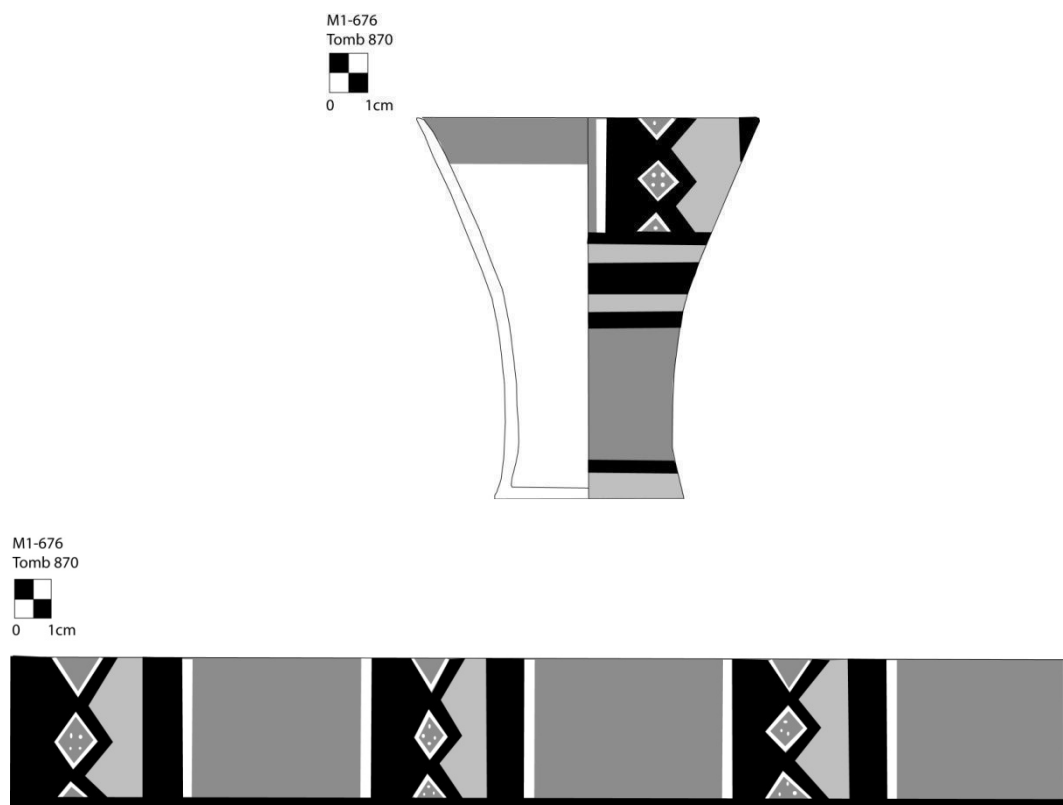
The field form records the poorly preserved skeleton of a child, facing east. These remains were not available for analysis.

A *kero*²²⁴ and a *tazon*²²⁵ were buried in the tomb. Both were red-slipped. The *kero* had burning stains on the exterior and was identical to a larger *kero* located in tomb 1281, Sector 30, from Owen's 1995 excavations. The *tazon* was decorated with small step-stair motifs and circles.

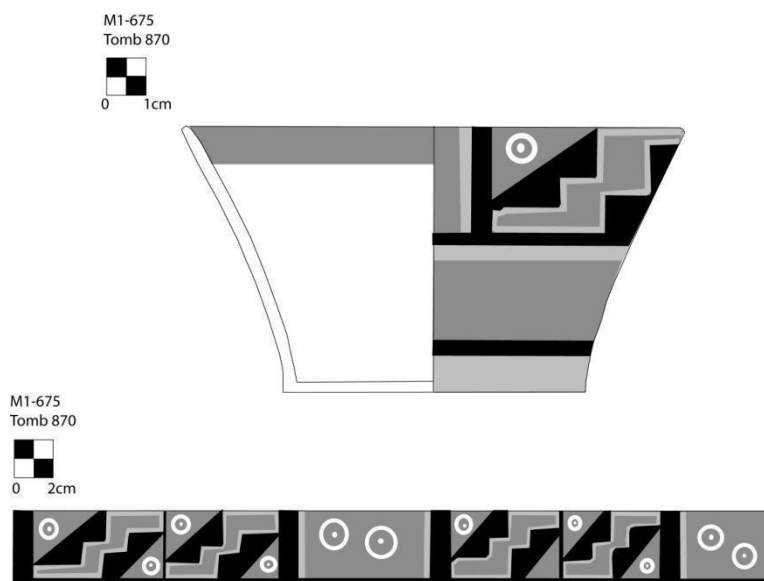
²²⁴ Height 10.2cm, Rim Diameter 9cm, Base Diameter 5cm.

²²⁵ Height 7cm, Rim Diameter 13cm, Base Diameter 8cm.

APPENDIX C (continued)

Figure 143. Red-slipped *kero*, Tomb 870.

APPENDIX C (continued)

Figure 144. Red-slipped *tazon*, Tomb 870.***Tomb 854 (2002)***

Tomb 854 was an intact²²⁶ stone lined cist located near the southern limit of unit 79. There was no capstone. The mouth was made of stone and earth, and measured 53 by 56cm. There were four stone courses. The floor measured 55 by 50cm. The tomb was 92cm deep.

According to the field form, a single skeleton was found in the tomb, but this was not available for analysis. The skeleton was placed on the west side of the tomb.

There was a decorated *kero*,²²⁷ which flared out directly from the base. It was red-slipped and decorated with a simple design of black stair-step motifs. There was also a red-slipped *tazon*.²²⁸ It was made of a medium texture paste and had not been decorated. The slip was badly worn, and there were burning stains on the interior and exterior. A complete wooden spoon (11.9cm long) with incised crosses in the handle and seven short lengths of cane, possibly part of a 'panpipe' were found.

²²⁶ Intact according to the draft report, disturbed in the past according to the field form.

²²⁷ Height 18.1cm, Rim Diameter 15cm, Base Diameter 9cm.

²²⁸ Height 7.6cm, Rim Diameter 15cm, Base Diameter 9cm.

APPENDIX C (continued)

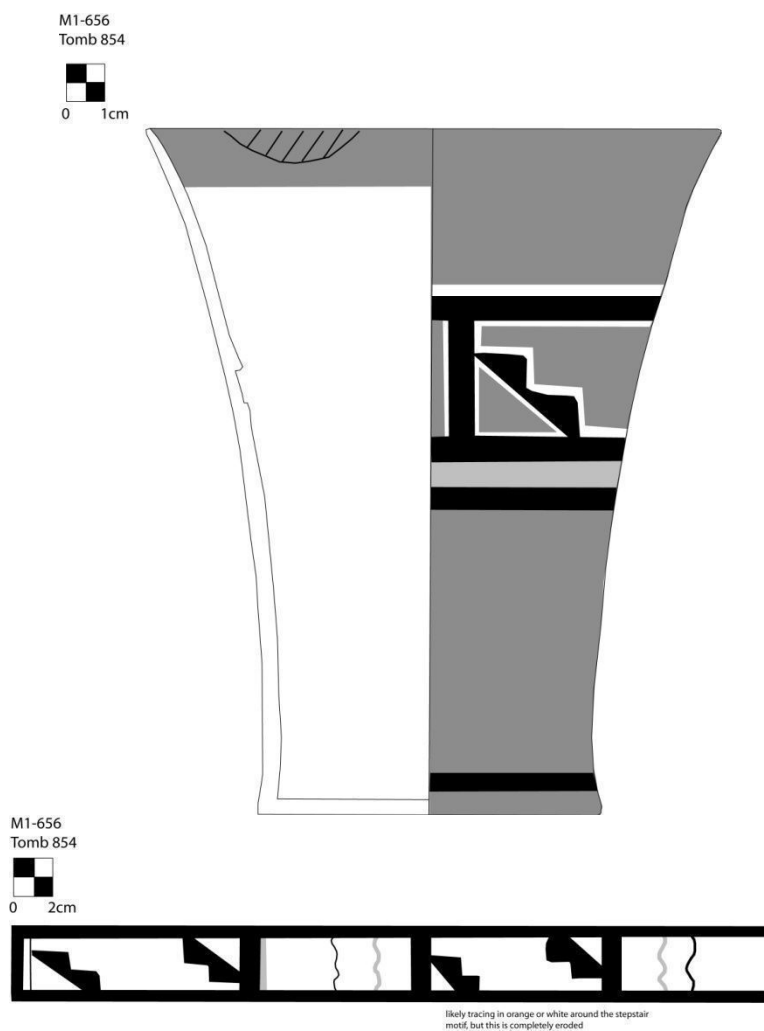
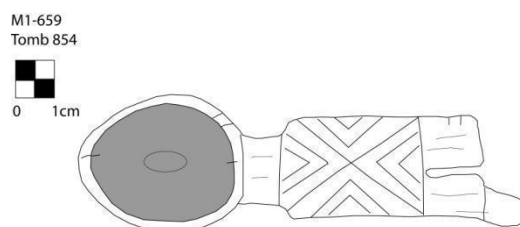
Figure 145. Red-slipped *kero*, Tomb 854.

Figure 146. Wooden spoon, Tomb 854.

APPENDIX C (continued)

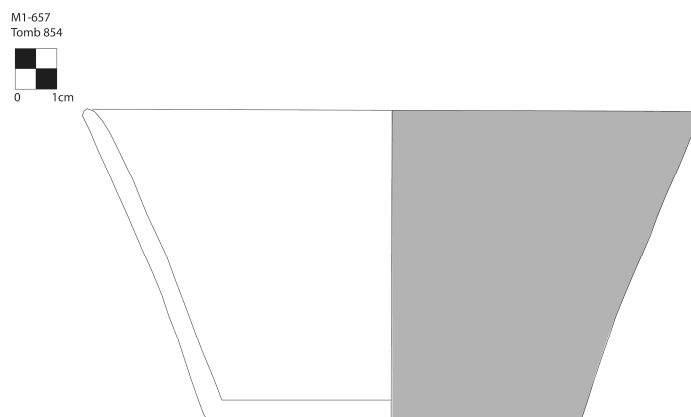
Figure 147. Red-slipped *tazon*, Tomb 854.

Figure 148. Panpipes, Tomb 854.

APPENDIX C (continued)

Tomb 858 (2002)

Tomb 858 was a partially disturbed stone lined cist with three stone courses in unit 79. There was no capstone, the mouth was stone and earth and measured 36 by 38cm. There was a small stone on the base of the tomb. The base measured 40 by 38cm. The tomb was 62cm deep.

It contained the poorly preserved (50% present) skeletal remains of an infant, aged approximately one year, of undetermined sex. Neither cranial modification nor pathologies could be observed.

Fragments of a brown *manta*, spun ZS and probably woven in a warp faced weave, were recovered, as well as braided fiber rope (1.1cm wide, 0.5cm thick).

Tomb 864 (2002)

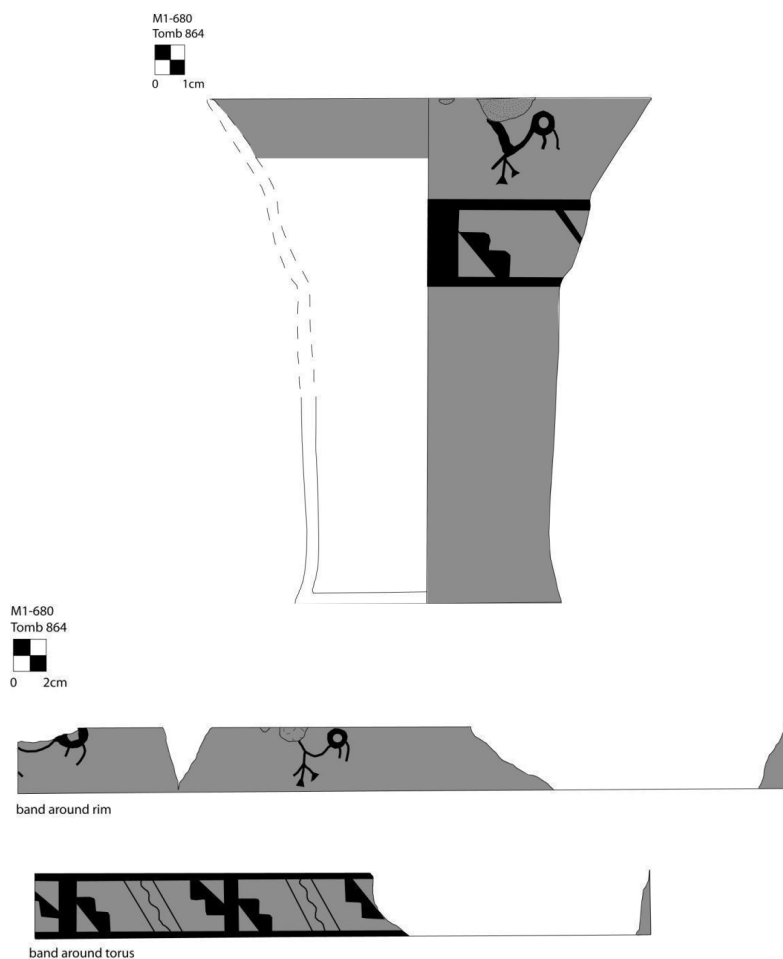
Tomb 864 was a partially disturbed stone lined cist on the southern limit of unit 81. There was no capstone. The mouth was stone and earth, and measured 65 by 54cm. There were two stone courses of irregularly shaped stones with mortar in-between. The floor was untreated and measured 30 by 28cm. It was 27cm deep.

Tomb 864 contained the skeleton of a child, aged 3 years +/- 6 months, of undetermined sex. Cranial modification could not be observed. There was slight dental wear. The child had lytic lesions in the mandible and left humerus and radius. There was also periostitis in the tibiae and radii. The child was buried facing east.

A red-slipped *kero*²²⁹ accompanied the child. It was broken when the tomb was excavated. The *kero* flared out from the base, and had a slight *torus*. It was decorated with roughly executed step-stair motifs around the *torus*. The rim was broken with large fragments missing but parts of two birds were visible. Etched into the base of the vessel after firing was a geometric outline.

²²⁹ Height 17.3cm, Rim Diameter 15cm, Base Diameter 9cm.

APPENDIX C (continued)

Figure 149. Red-slipped *kero*, Tomb 864.***Tomb 877 (2002)***

Tomb 877 was an intact stone lined cist near the northern limit of unit 84. There was no capstone. The mouth was stone and earth and measured 45 by 55cm. There were two stone courses with mortar in-between. A small flat stone was placed on the floor, which measured 40 by 44cm. The tomb was 62cm deep.

The field form records the presence of a skeleton, but it was not available for analysis. A *tazon*²³⁰ and a ceramic bottle²³¹ were also present. The *tazon* was red-slipped and decorated with

²³⁰ Height 7.9cm, Rim Diameter 14cm, Base Diameter 8cm.

²³¹ Height 13cm, Rim Diameter 9cm, Base Diameter 5cm, Neck Height 6.2cm.

APPENDIX C (continued)

wiggly vertical lines in black, orange and white. The bottle had a bulbous body, and a long neck that flared sharply outward. It was covered in red slip and the rim decorated with geometric lines. The body was decorated with step-stair motifs. However, there was a large section of the body that was undecorated giving the vessel an unfinished appearance.

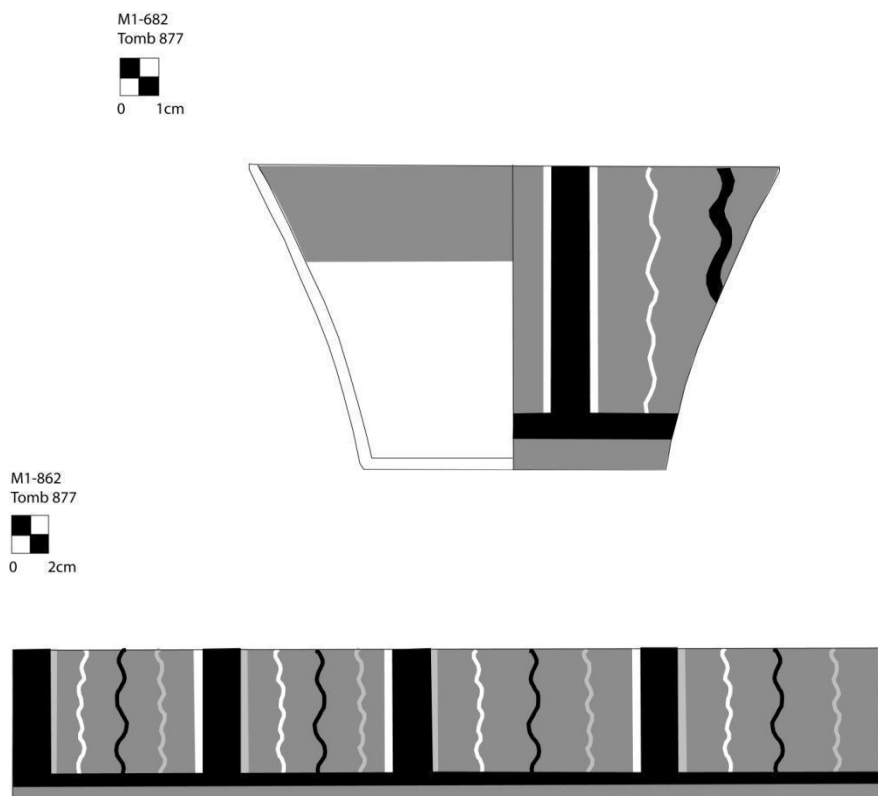


Figure 150. Red-slipped *tazon*, Tomb 877.

APPENDIX C (continued)

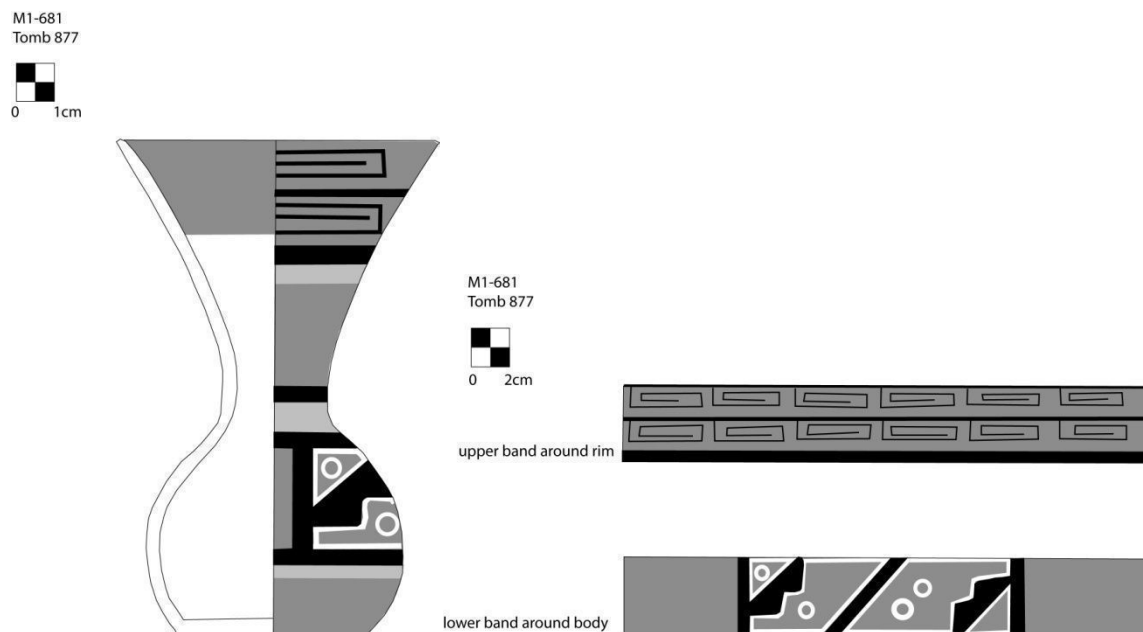


Figure 151. Red-slipped bottle, Tomb 877.

Tomb 886 (2002)

Tomb 886 was an intact stone lined cist with four stone courses on the western edge of unit 84. The cap was made of stones, the mouth was made of stone and mortar and measured 58 by 53cm. There were five flat stones on the floor of the tomb, which had a diameter of 50cm. The tomb was 94cm deep.

The field form records the presence of a disarticulated skeleton of an adult, facing east but these remains were not available for analysis. The form also mentions very poorly preserved textile fragments but these were also unavailable.

Tomb 887 (2002)

Tomb 887 was an intact stone lined cist in the center of unit 84. There was no capstone, the mouth was made of stones and mortar and measured 58 by 53cm. There were three stone courses with mortar in between. The floor was un-prepared, measured 58 by 53cm and the tomb was 66cm deep. The tomb records the presence of the skeleton of an adult oriented toward the south-east, but these remains were not available for analysis.

A carved wooden box was recovered from the tomb (7.6cm by 3.2cm). It had three compartments, and in one of them were pieces of red pigment.

APPENDIX C (continued)

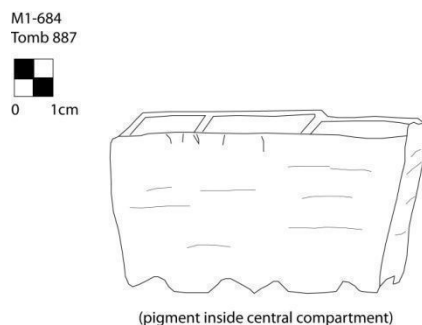


Figure 152. Wooden box, Tomb 887.

Tomb 910 (2002)

Tomb 910 was an intact stone lined cist on the western limit of unit 91. There was no capstone, the mouth was stone and earth and measured 60 by 58cm. There were seven stone courses with mortar in-between. The floor was untreated and measured 60 by 48cm. The tomb was 118cm deep.

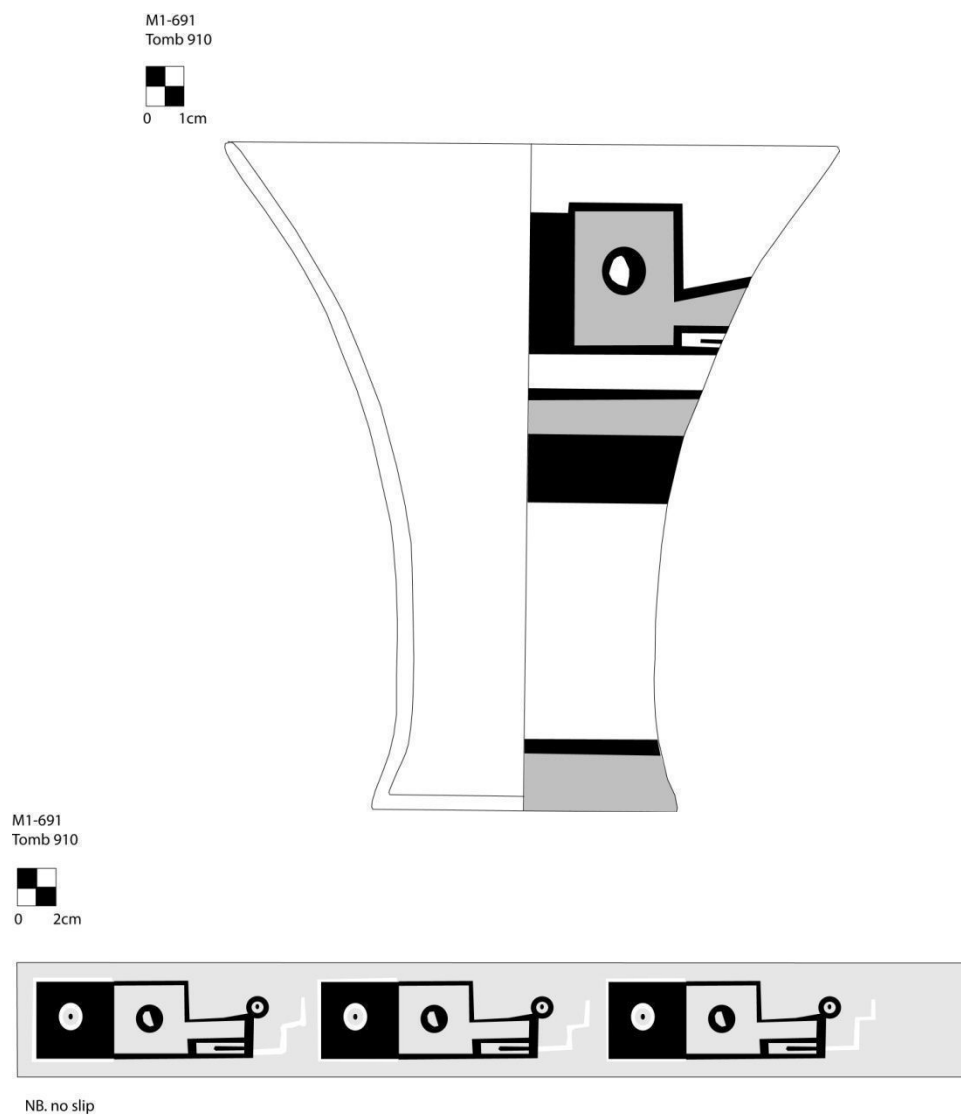
It contained the skeleton of a middle adult, a probable male. Cranial modification could not be observed. There was dental wear, dental caries, and some ossification of the flavum in some vertebrae. The individual was in a flexed position facing east.

Accompanying the corpse were a *kero*²³² and a *tazon*.²³³ The *kero* was not slipped and was decorated with feline figures. The *tazon* had a red slip which was eroding. There was also an incomplete wooden spoon, and a fragment of cane that possibly came from a flute (it had the 'hat' that flutes do).

²³² Height 17.5cm, Rim Diameter 16cm, Base Diameter 8cm.

²³³ Height 7.7cm, Rim Diameter 15cm, Base Diameter 8cm.

APPENDIX C (continued)

Figure 153. *Kero*, Tomb 910.

APPENDIX C (continued)

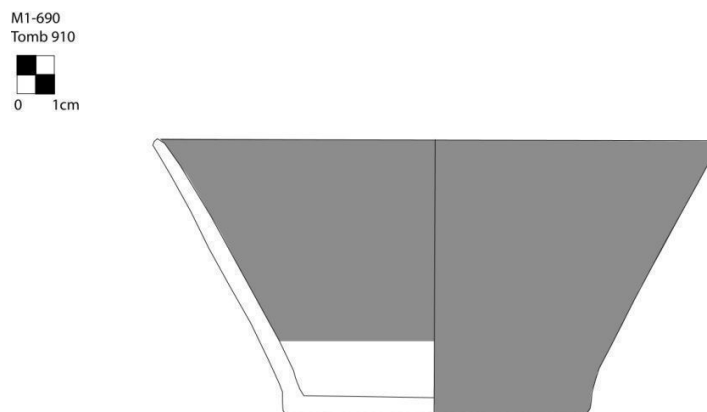
Figure 154. Red-slipped *tazon*, Tomb 910.

Figure 155. Handle of wooden spoon, Tomb 910.

Tomb 926 (2002)

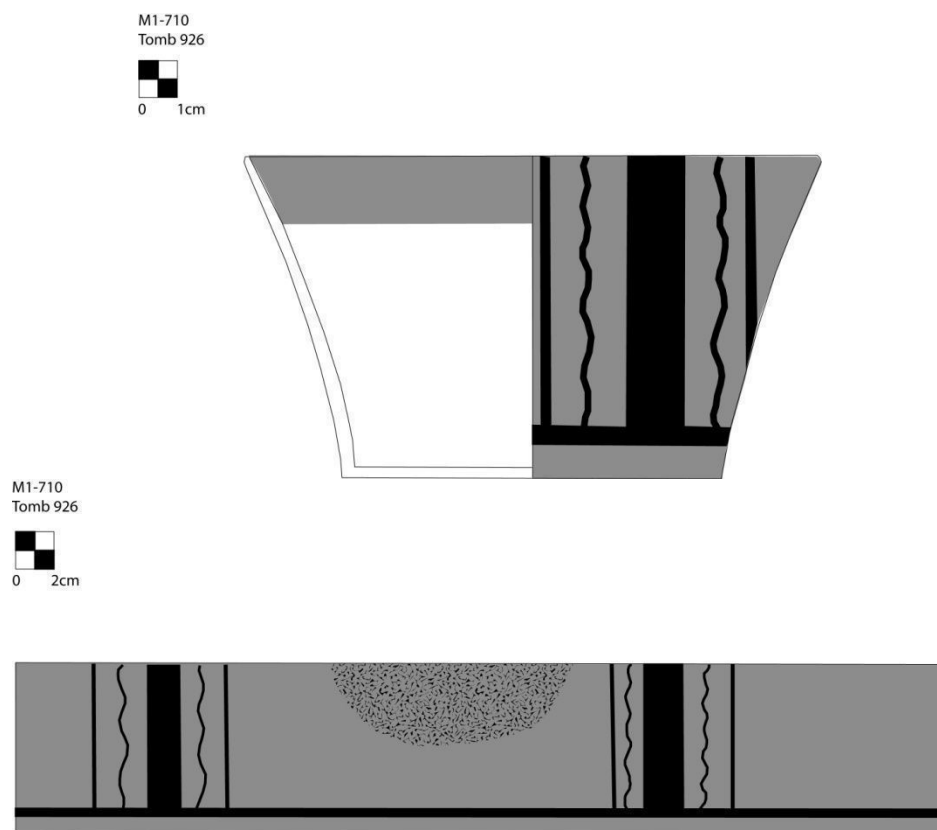
Tomb 926 was an intact stone lined cist located in the northern half of unit 94. There was no capstone, the stone and earth mouth measured 48 by 50cm. There were two stone courses. The floor measured 40 by 42cm, and the tomb was 70cm deep.

It contained the skeleton of a child, aged 3 years +/- 6 months, of undetermined sex. Neither cranial modification nor pathologies could be observed. The child was facing north.

A red-slipped *tazon*²³⁴ was recovered from the tomb. It had a large burning stain on one side of the rim. The vessel was very simply decorated with two sets of black vertical and wiggly lines.

²³⁴ Height 8.7cm, Rim Diameter 15cm, Base Diameter 10cm.

APPENDIX C (continued)

Figure 156. Red-slipped *tazon*, Tomb 926.***Tomb 928 (2002)***

Tomb 928 was an intact stone lined cist located on the southern limit of unit 94. There was no capstone, the stone and earth mouth measured 50 by 60cm. There were four courses of irregularly shaped stones. The floor was unprepared and measured 55 by 60cm. The tomb was 98cm deep.

It contained the skeletons of two individuals. One was a male, aged 40-44 years with accentuated tabular cranial modification. The individual had dental wear, caries and pre-mortem tooth loss. A fracture in the third left rib was in the final stages of remodeling. The individual also had porotic hyperstosis in the parietals, osteoarthritis in the shoulders, and osteophytes in the lumbar vertebrae. The second individual was a female, aged 60 years +, with tabular cranial modification. The individual had osteoarthritis in the lumbar vertebrae, in the hands and feet, and osteophytes in the vertebrae. There were dental caries, pre-mortem dental loss and dental abscesses. The individual also had strong muscle attachments on the humeri and femori. One

APPENDIX C (continued)

individual was found in a flexed position, facing east. The other was found to the south of the first and was also in a flexed position oriented toward the east. It is not clear from the field form which individual was the male, and which the female.

Two ceramics were found in the tomb. There was a cup, similar to Goldstein's (1985) flowerpots.²³⁵ It was red-slipped, with burning stains on the exterior and decorated with eight very stylized orange trophy heads. The other vessel was a reddish-brown slipped *tazon*.²³⁶ The vessel was cracked, the slip eroded, and there were burning stains obscuring some of the decoration, which consisted of orange and black step-stair motifs and white circles. There was a complete wooden spoon (16cm long) decorated with an incised geometric pattern of rectangles and triangles. The spoon and the *kero* were both placed inside the *tazon*. There were fragments of a brown, woolen *manta*, spun ZS and woven in a probable warp faced pattern. A single strand of fiber rope (20.1cm long, 1.0cm wide, 0.6cm thick) was also recovered.

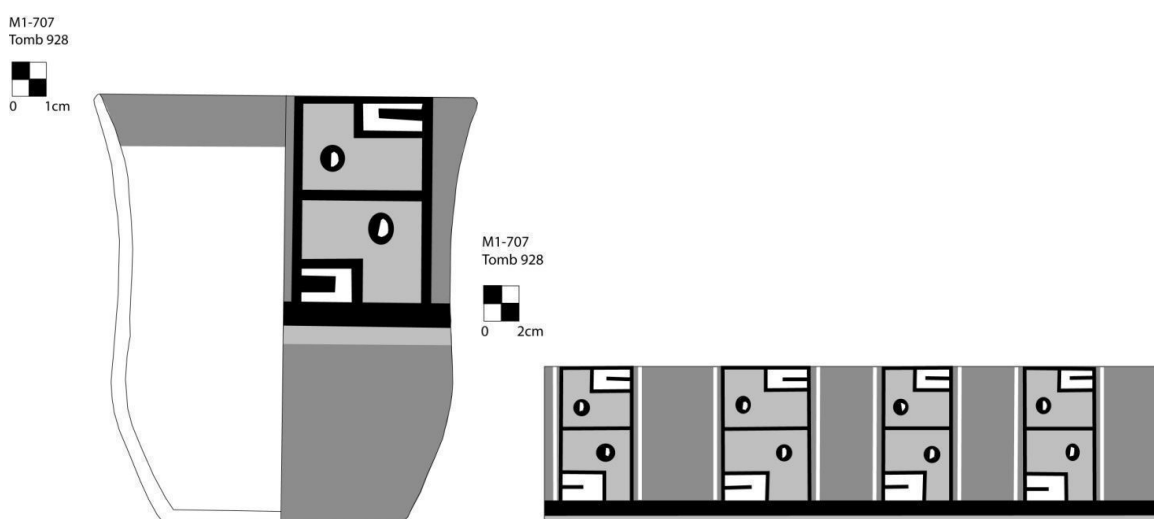


Figure 157. Red-slipped cup, Tomb 928.

²³⁵ Height 12.5cm, Rim Diameter 11cm, Base Diameter 7cm.

²³⁶ Height 8.6cm, Rim Diameter 16cm, Base Diameter 9cm.

APPENDIX C (continued)

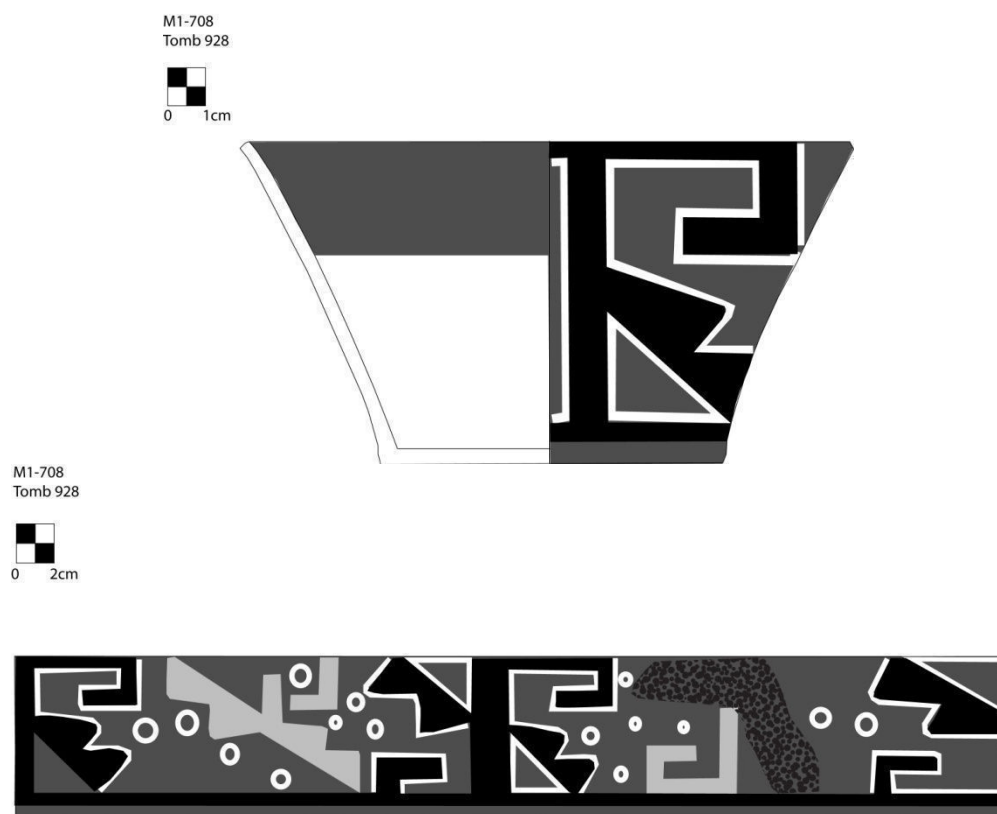
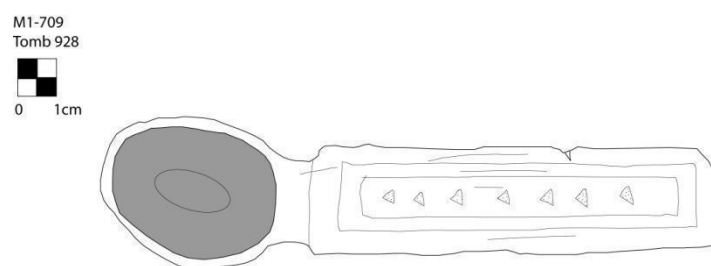
Figure 158. Reddish-brown slipped *tazon*, Tomb 928.

Figure 159. Wooden spoon, Tomb 928.

APPENDIX C (continued)

Tomb 919 (2002)

Tomb 919 was an intact stone lined cist on the east side of unit 96. The capstone was constructed of stones and earth, as was the mouth which measured 33 by 34cm. There were six stone courses with mortar in-between. The floor was unprepared and measured 32 by 29cm. The tomb was 49cm. The field form records the remains of a child in a flexed position facing east. These remains were not available for analysis.²³⁷ No cultural materials were found.

Tomb 920 (2002)

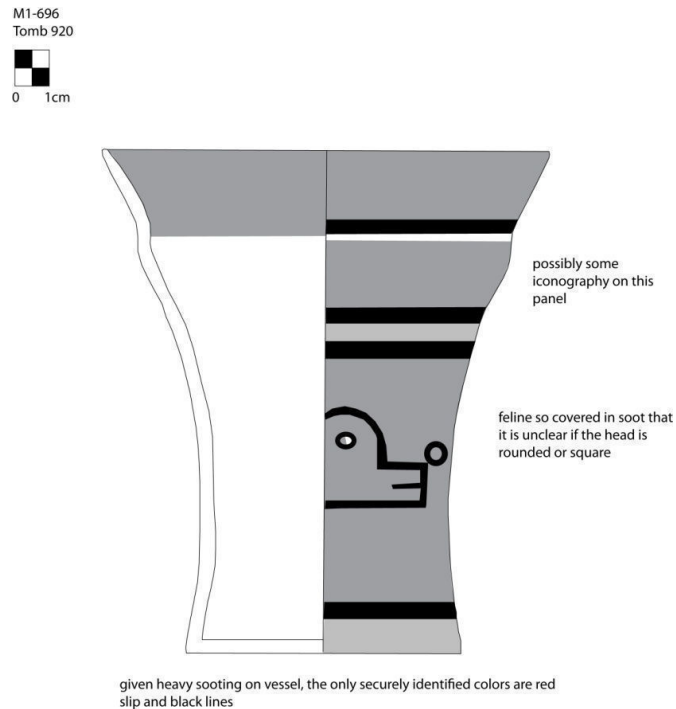
Tomb 920 was an intact stone lined cist located in the center of unit 96. It had a stone and earth capstone. The mouth was also made of stone and earth, and measured 43 by 45cm. The four stone courses were held together with mortar. There were small flat stones on the floor, which was 35 by 40cm. The tomb was 76cm deep. The field form notes the presence of a broken *kero* outside the tomb. It contained the skeleton of an infant, aged 18 months +/- 3 months. Neither cranial modification nor pathologies could be observed. The infant was facing east.

Against the southern wall, inside the tomb, was a dark red-slipped *kero*²³⁸ with a *torus*. The *kero* was in a poor state of preservation, with burning stains and soot on the exterior. The *kero* flared out directly from the base with no 'stem.' The iconography was largely obscured on the vessel, but appeared to represent at least one feline figure. A small fragment of a fiber basket was also recovered, as well as fragments of a woolen *manta*. Spun ZS and woven in a warp faced pattern, the *pampa* of the textile was dark brown, with stripes in black and camel color. There were also pieces of un-spun camel colored wool.

²³⁷ The draft report states "el avanzado estado de descomposición fue uno de los factores determinantes para que no se recojan los restos óseos."

²³⁸ Height 14.5cm, Rim Diameter 13cm, Base Diameter 8cm.

APPENDIX C (continued)

Figure 160. Dark red-slipped *kero*, Tomb 920.***Tomb 921 (2002)***

Tomb 921 was an intact stone lined cist to the north of tomb 920. The cap was stone and earth, as was the mouth which measured 37 by 38cm. There were two stone courses with mortar, and the unprepared floor measured 35 by 37cm. The tomb was 65cm deep.

It contained the poorly preserved remains of an infant, aged approximately 1 year, of undetermined sex. There was no cranial modification and pathologies could not be observed.

Tomb 943 (2002)

Tomb 943 was an intact stone lined cist on the western edge of unit 102. There was no capstone. The roughly circular mouth was made of stone and earth and measured 56 by 48cm. There were five stone courses. The floor was untreated and had a diameter of 52cm. The tomb was 86cm deep.

It contained the skeleton of a young to middle male adult, with slight tabular cranial modification. The individual had dental caries, some pre-mortem dental loss and a small abscess. The body was in a flexed position facing east.

APPENDIX C (continued)

Just in front of the corpse, on the east side of the tomb were a *kero*²³⁹ and a *tazon*.²⁴⁰ The exterior of the *kero* was not slipped but was a burnished orange paste, and decorated with a geometric pattern of step-stair motifs, wiggly lines, circles and geometric spirals. The *tazon* was red-slipped and decorated with two bird figures. The birds' legs are bent upwards, their wings are folded down, and their mouths open giving the impression that they are swimming. Both vessels had considerable burning stains on the exterior. Inside the *tazon* was a complete wooden spoon (17.2cm long) decorated with a carved camelid on the end of the handle. There were also eight canes of varying lengths that appear to have been part of a pan-pipe.

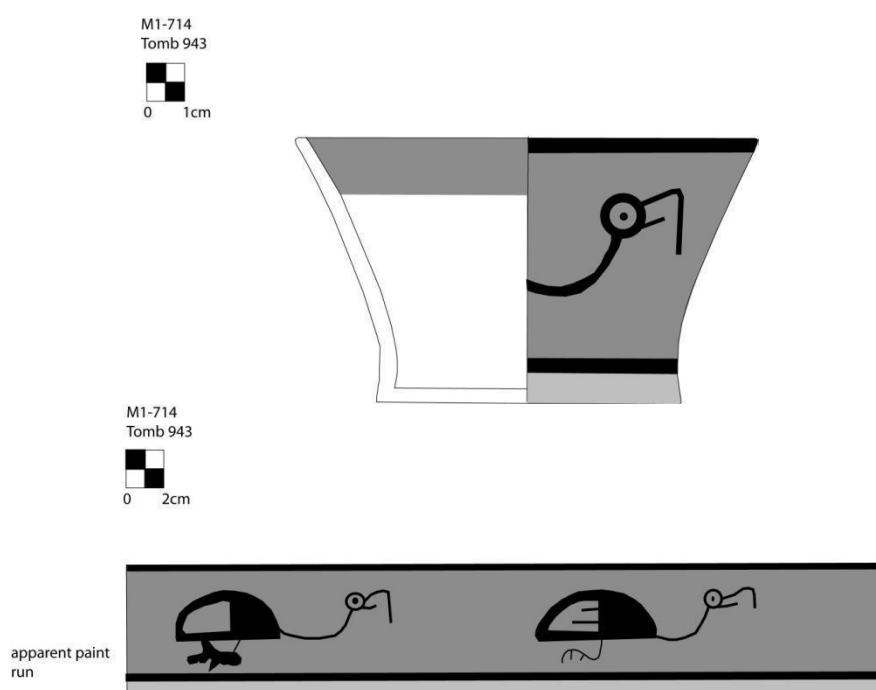
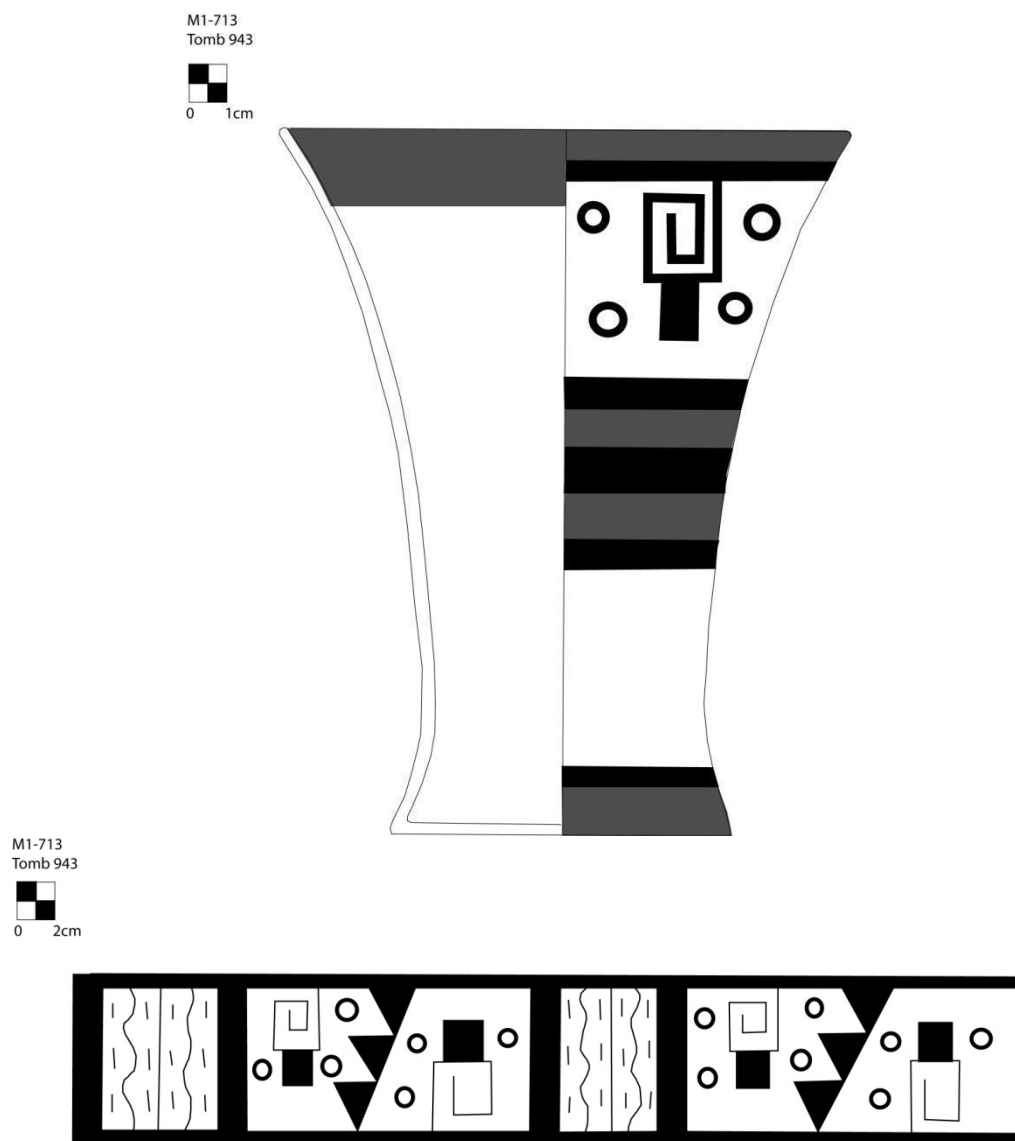


Figure 161. Red-slipped *tazon*, Tomb 943.

²³⁹ Height 18.6cm, Rim Diameter 15cm, Base Diameter 9cm.

²⁴⁰ Height 7cm, Rim Diameter 12cm, Base Diameter 8cm.

APPENDIX C (continued)

Figure 162. *Kero*, Tomb 943.

APPENDIX C (continued)

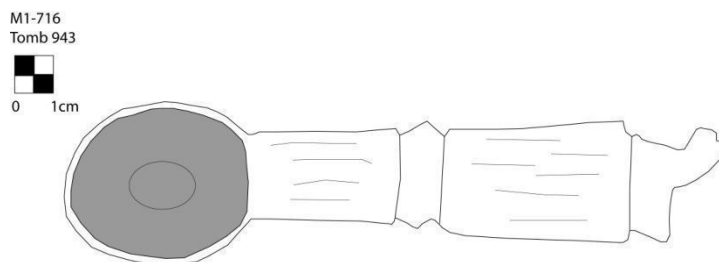


Figure 163. Wooden spoon, Tomb 943.

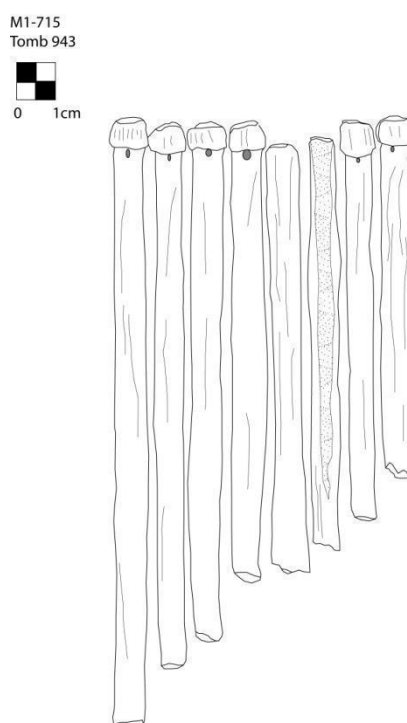


Figure 164. Panpipes, Tomb 943.

Tomb 935 (2002)

Tomb 935 was an intact stone lined cist in unit 103, with four stone courses and mortar in-between. The cap and mouth were made of earth and stone. The mouth measured 25 by 30cm. On the floor (30 by 30cm) was a stone used as a seat for the corpse. The tomb was 62cm deep.

APPENDIX C (continued)

The field form and draft report record the mummy of a child. The small size of the tomb supports the likelihood that the grave was for a small individual but these remains were not available for analysis.

Tomb 969 (2002)

Tomb 969 was a pit tomb in unit 104. There was no capstone. The untreated mouth measured 60 by 50cm. The floor was untreated with a diameter of 40cm. The tomb was 23cm deep.

It contained the skeleton of a juvenile, aged 7 years +/- 9 months, of undetermined sex. There was no cranial modification. There were 13 thoracic vertebrae. The juvenile had dental wear, caries and abscesses. The juvenile was in a fetal position facing northeast.

A small one handled pitcher²⁴¹ was recovered from the tomb. The neck and rim were almost entirely broken off. The exterior had a reddish-brown slip, and was almost completely decorated with geometric spirals and a Z shape under the handle.

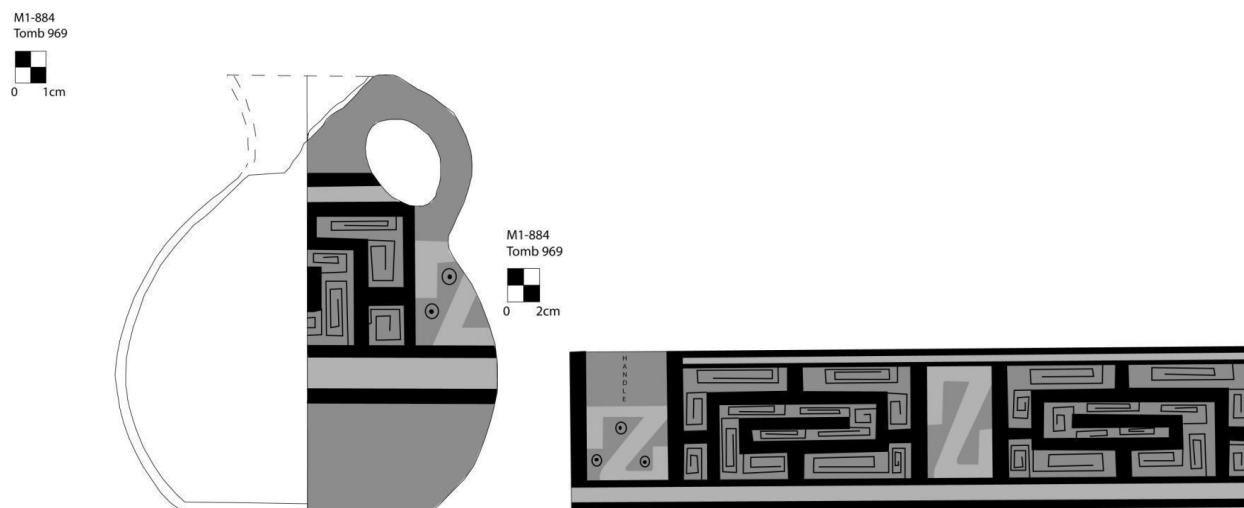


Figure 165. One-handed pitcher, Tomb 969.

Tomb 961 (2002)

Tomb 961 was an intact stone lined cist located in unit 109. The capstone was of stone and earth, as was the mouth which measured 30 by 30cm. There were five stone courses with mortar. There was a flat stone on the floor, which measured 25 by 30cm. The tomb was 56cm

²⁴¹ Height 13.9cm, Rim Diameter 7cm, Base Diameter 8cm, Neck Height 2.7cm.

APPENDIX C (continued)

deep. It contained the skeleton of a child aged 3 years +/- 6 months, of undetermined sex. Cranial modification could not be observed. The child had dental caries. It was facing east.

Fragments of a brown, woolen *manta*, spun ZS and with a warp faced weave, were recovered, as well as poorly preserved braided fiber rope. There were also fragments of cane and stick inventoried with the tomb.

Tomb 963 (2002)

Tomb 963 was a pit tomb located on the western side of unit 110. There was no capstone, the mouth was untreated and measured 63 by 57cm. The floor was untreated and measured 52 by 33cm. The tomb was 43cm deep.

It contained the skeleton of a child aged 4 years, +/- 9 months, of undetermined sex. Cranial modification could not be observed. There was active periostitis in the left tibia. The child was facing north.

There were fragments of a woolen *manta*, ZS spun and warp faced, with brown and light brown stripes. The edges had been finished by braiding and weaving red, blue and orange threads.

A red-slipped *tazon*,²⁴² with signs of reduction, was recovered. There were salt stains on the exterior of the vessel but the design of three birds was visible. Their legs were bent, but their wings down, suggesting they might have been squatting.

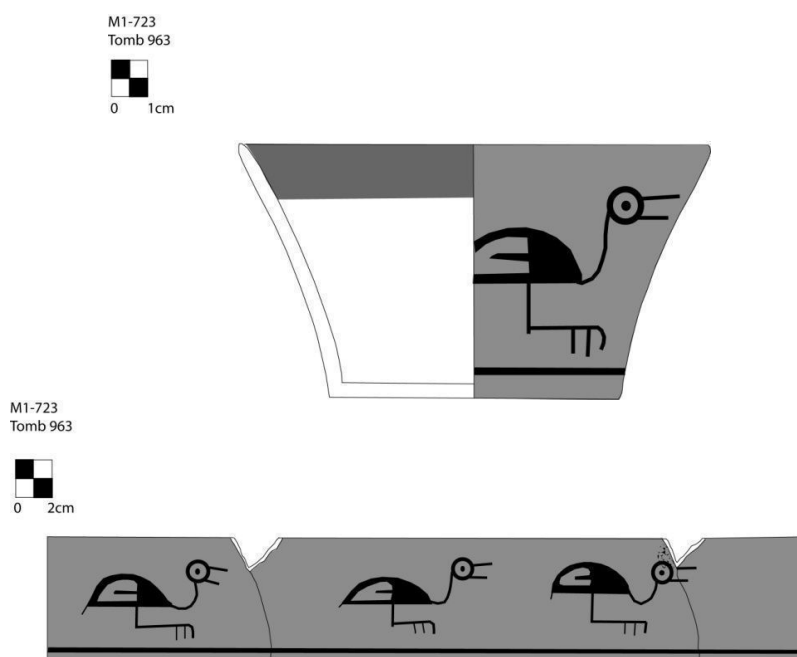


Figure 166. Red-slipped *tazon*, Tomb 963.

²⁴² Height 7cm, Rim Diameter 13cm, Base Diameter 8cm.

APPENDIX C (continued)

Tomb 971 (2002)

Tomb 971 was an intact pit tomb in unit 111. There was no capstone, and the untreated mouth measured 72 by 70cm. The floor was compacted earth and measured 60 by 55cm. The tomb was 28cm deep.

It contained the mummified remains of child. The cranium was skeletal and the child was aged at 4 years \pm 1 year, of undetermined sex. The child had tabular cranial modification. Pathologies could not be observed. The child was facing south-east.

Small fragments of textile were still present on the shoulders and left ulna and radius. It was a brown woolen textile. The fragment was very dirty and fragmentary, making thread count difficult but it appeared to be a *manta* in a warp faced pattern.

Tomb 988 (2002)

Tomb 988 was an intact stone lined cist along the southern limit of unit 118. The capstone consisted of a stone, held in place with mortar made of earth. The circular mouth was made of stones and mortar and measured 25 by 28cm. There were five stone courses with mortar. The corpse was sat on a flat stone placed on the floor, which measured 20 by 20cm. The tomb was 80cm deep.

It contained the skeleton of an infant, aged 18 months \pm 3 months, of undetermined sex. Cranial modification could not be observed and the infant had dental caries. The child was facing east.

A miniature one handled pitcher²⁴³ was interred with the infant. It had a reddish-brown slip, was decorated with roughly executed and eroding black stair-step motifs, and extensive burning marks on the exterior. There were fragments of a warp-faced *manta*, using ZS spun wool. The *pampa* was camel colored with vertical stripes in black, wine red and dark brown. In addition, there were two clumps of un-spun, camel colored wool, and short fragments (longest 2.7cm, 0.9cm wide, 0.2cm thick) of braided fiber rope.

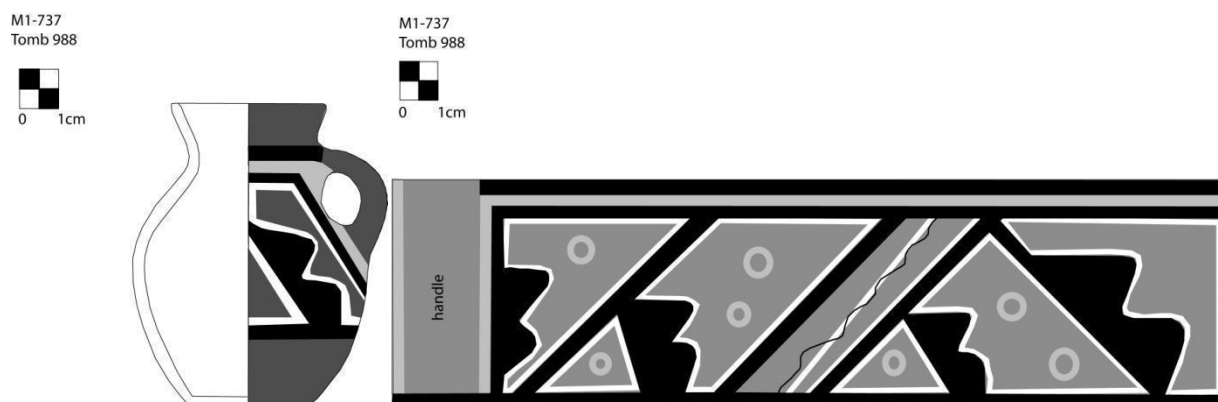


Figure 167. One-handed pitcher, Tomb 988.

²⁴³ Height 8cm, Rim Diameter 4cm, Base Diameter 3cm, Neck Height 1.9cm.

APPENDIX C (continued)

Tomb 989 (2002)

Tomb 989 was an intact stone lined cist in unit 119. There was no capstone, the mouth was constructed of stones and earth, and measured 60 by 62cm. There were five stone courses with mortar in-between. The floor was not prepared and measured 57 by 45cm. The tomb was 84cm deep.

It contained the skeleton of a middle adult, a probable male, aged 40 – 44 years. Cranial modification could not be observed. There was slight dental wear and caudal shift. The body was flexed and facing east.

Accompanying the individual was a ceramic cup²⁴⁴ that was ‘Wari style’ in form and decoration (Qosqopa). The upper half of the exterior had a dark red slip, decorated with stylized faces in a blue/gray paint. There was also a red-slipped *tazon*²⁴⁵ decorated with black, orange and white vertical straight and wiggly lines. An incomplete wooden spoon was in the *tazon*. The end of the handle was missing, but the rest of the spoon was undecorated.

What appeared to be rodent bones had been inventoried with the tomb as an “*ofrenda en boca de enterrimiento*.” I question whether these faunal remains constituted an offering.

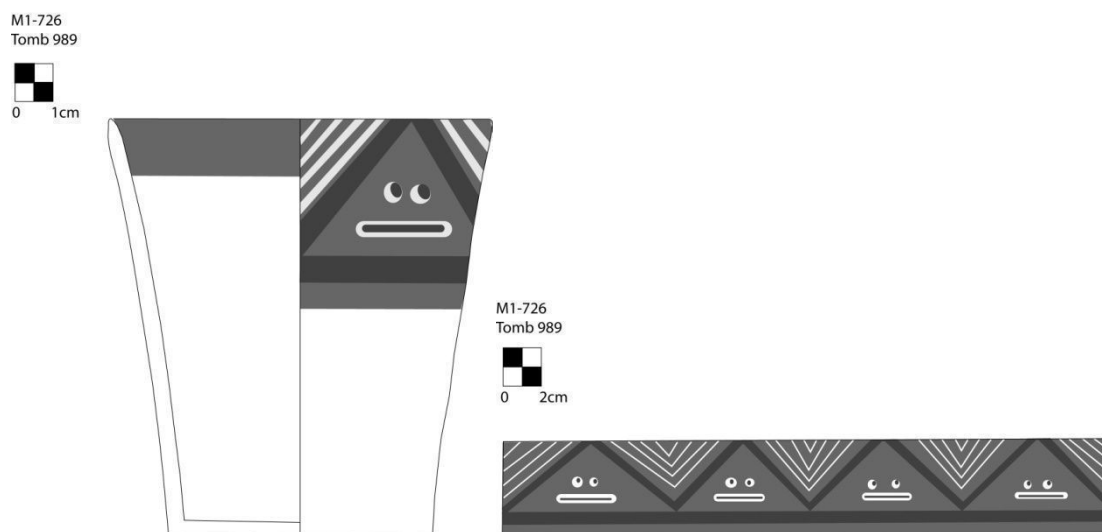


Figure 168. Wari style cup, Tomb 989.

²⁴⁴ Height 11.2cm, Rim Diameter 10cm, Base Diameter 7cm.

²⁴⁵ Height 7.9cm, Rim Diameter 15cm, Base Diameter 9cm.

APPENDIX C (continued)

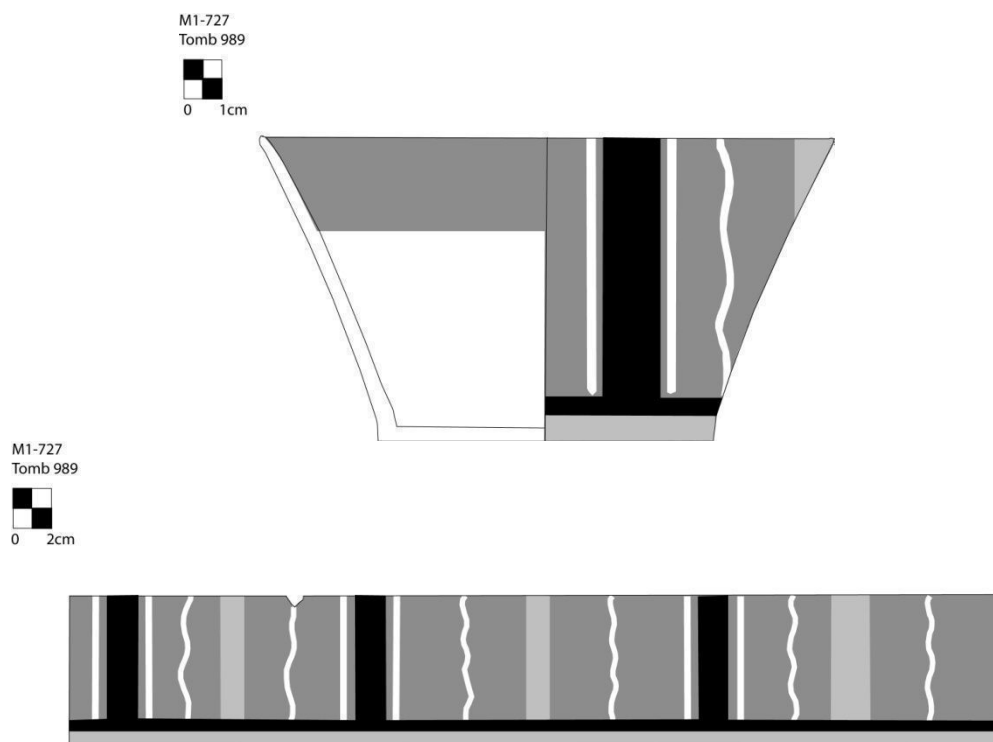
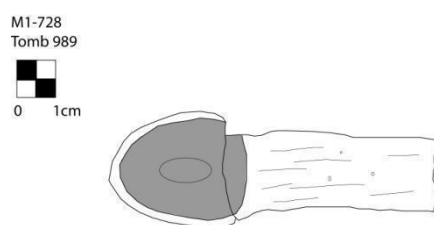
Figure 169. Red-slipped *tazon*, Tomb 989.

Figure 170. Wooden spoon, Tomb 989.

Tomb 1002 (2002)

Tomb 1002 was an intact stone lined cist in unit 29, with capstone consisting of one flat stone, and earth. The stone and earth mouth measured 45 by 40cm. The floor was not prepared and measured 38 by 25cm. The tomb was 66cm deep.

APPENDIX C (continued)

It contained the skeleton of a child, aged 2 years +/- 6 months, of undetermined sex. Cranial modification could not be definitely determined, but was probable. The child had dental caries. The child was flexed facing northeast.

By the child's head was a red-slipped *tazon*,²⁴⁶ with roughly executed step-stair motifs in orange and black. There were also fragments of a red-slipped vessel, possibly a bottle, with black stair-step motifs, and a non-diagnostic, heavily burned ceramic fragment. The draft reports notes that there were textiles in the tomb, but that they were in a poor state of preservation and were not available for analysis.

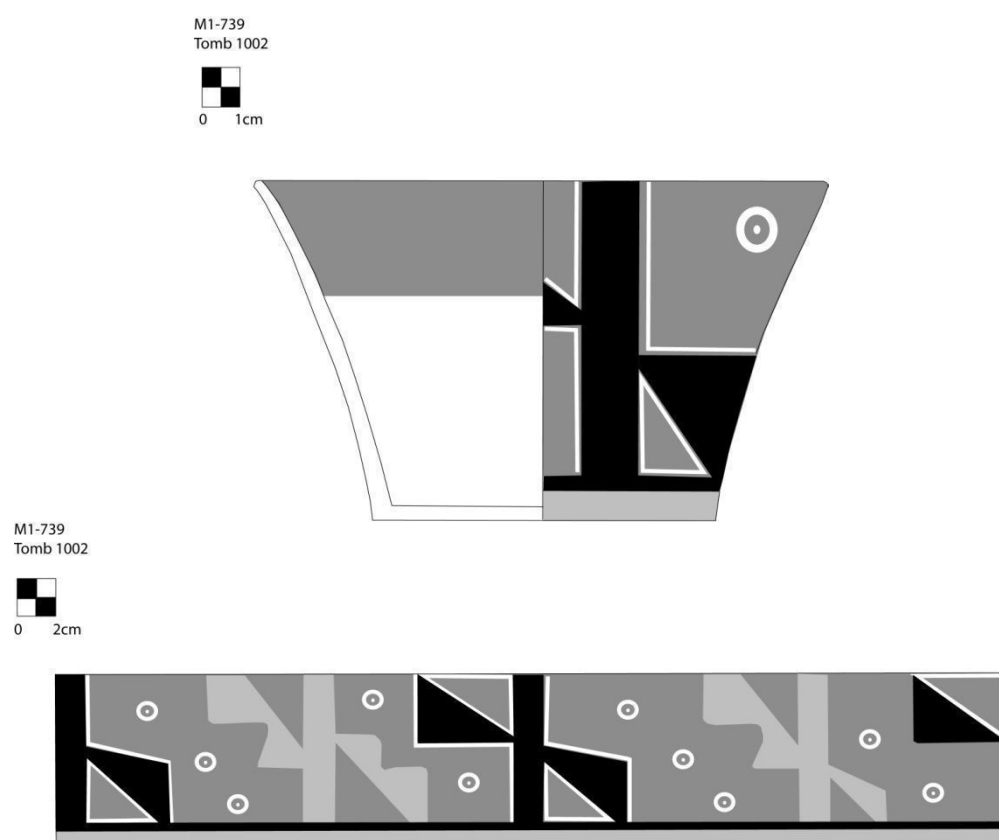


Figure 171. Red-slipped *tazon*, Tomb 1002.

²⁴⁶ Height 9.2cm, Rim Diameter 15cm, Base Diameter 9cm.

APPENDIX C (continued)

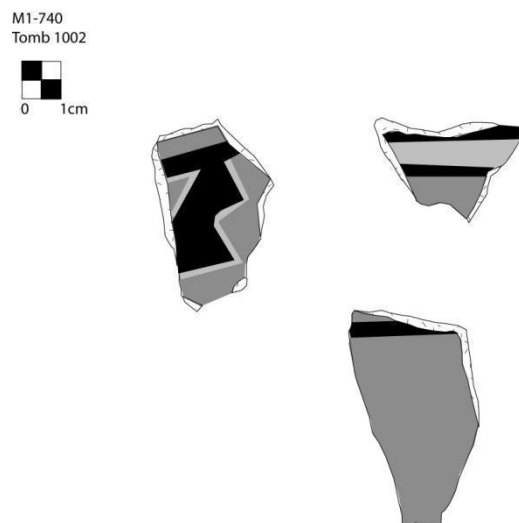


Figure 172. Ceramic sherds, Tomb 1002.

Tomb 1100 (2002)

Tomb 1100 was a pit tomb in unit 182. There was no capstone, the untreated mouth measured 55 by 70cm. The floor was unprepared and measured 50 by 40cm, and the tomb was 80cm deep.

According to the field form and draft report, the bones of an adult individual were in a flexed position leaning against the west side of the tomb. These remains were not available for analysis. In the southeast of the tomb was a small red-slipped *tazon*. The slip was eroding, and there were burn marks on both the interior and exterior of the vessel, but black, white and orange vertical straight and wiggly lines were visible. Inside the vessel was a complete wooden spoon (16.7cm long) decorated with an incised motif of a double cross.

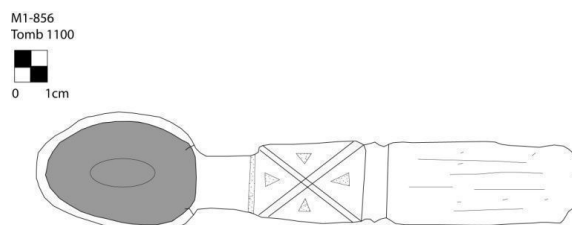
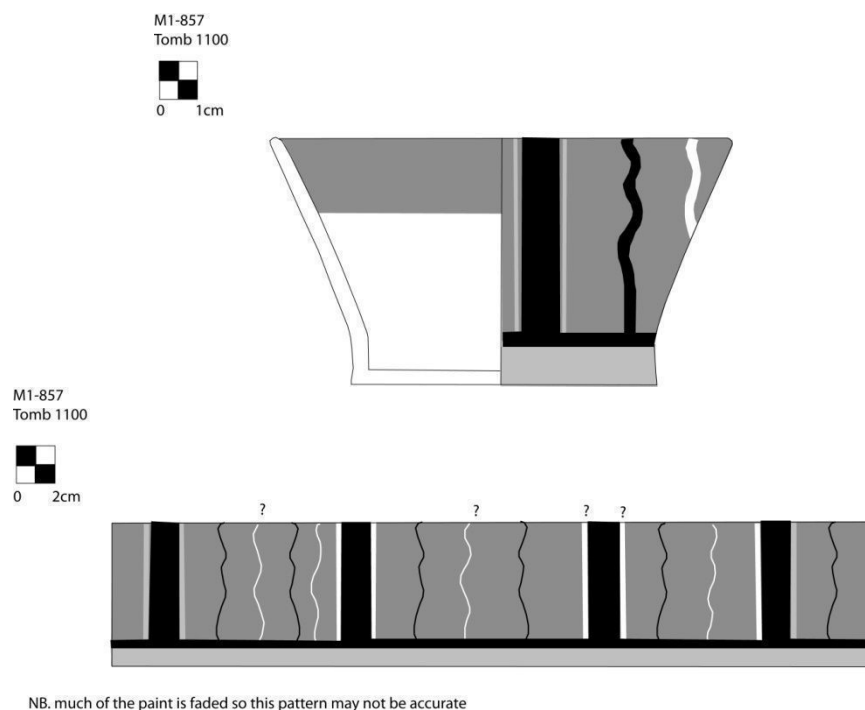


Figure 173. Wooden spoon, Tomb 1100.

APPENDIX C (continued)

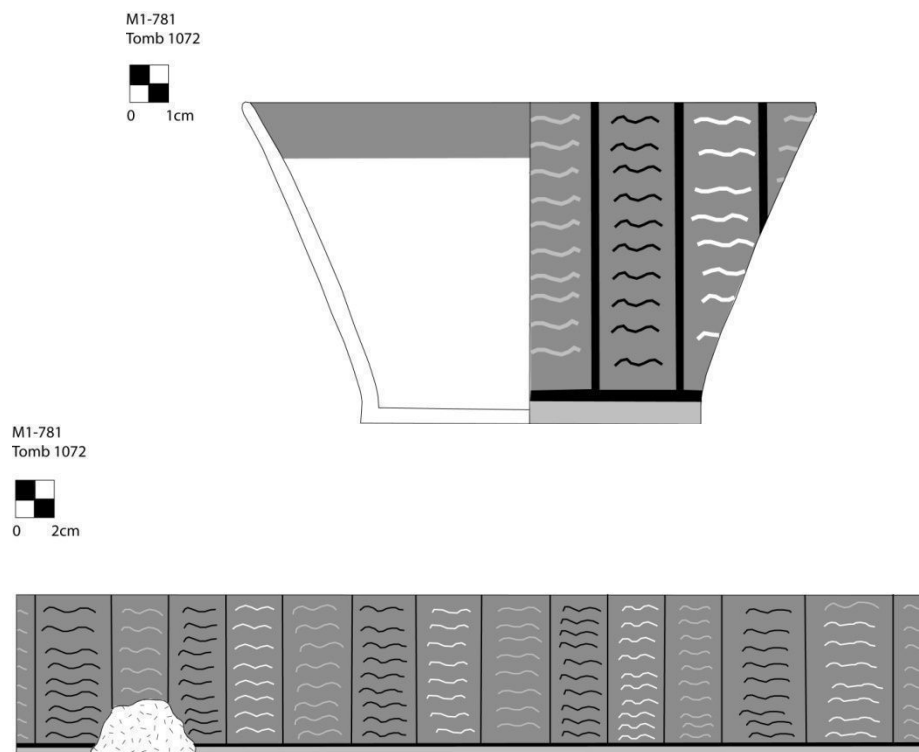
Figure 174. Red-slipped *tazon*, Tomb 1100.***Tomb 1072 (2002)***

Tomb 1072 was an intact pit tomb in the southern part of unit 190. There was no capstone, the mouth was untreated and measured 47 by 47cm. The floor was untreated and measured 15 by 15cm. The tomb was 35cm deep.

It contained a ceramic *olla*, over which was placed a red-slipped ceramic *tazon*²⁴⁷ acting as a lid. The *tazon* had a simple decoration of short white, black and orange horizontal wiggly lines. The field form comments that the two vessels served as an 'urn.' Although the draft report stated that there no bones were recovered from the *olla*, inventoried with the tomb were the bones of a fetal individual, aged approximately 8-9 fetal months. There was no cranial modification nor pathologies.

²⁴⁷ Height 8.5cm, Rim Diameter 15cm, Base Diameter 9cm.

APPENDIX C (continued)

Figure 175. Red-slipped *tazon*, Tomb 1072.***Tomb 832 (2002)***

Tomb 832 was an intact stone lined cist in unit 10. There was no capstone, the stone and earth mouth measured 46 by 41 cm. There were five stone courses, the bottom course of stones were vertically placed, the rest were horizontal. The floor was untreated and measured 59 by 46 cm. The tomb was 122 cm deep.

It contained the poorly preserved remains of an adult, sex and exact age undetermined. Neither cranial modification nor pathologies could be observed.

There was also a *kero*²⁴⁸ and an incomplete *tazon*.²⁴⁹ The *kero* was red-slipped with step-stair motifs and wiggly lines decorating the exterior. The interior was noteworthy for being a polished black-ware. Given the longstanding association of black-ware with Omo style sites, and red-slipped ware, particularly those decorated with step-stair motifs, with Chen Chen style sites,

²⁴⁸ Height 17.1 cm, Rim Diameter 15 cm, Base Diameter 8 cm.

²⁴⁹ Height 9.5 cm, Rim Diameter 16 cm, Base Diameter 9 cm.

APPENDIX C (continued)

this vessel raises interesting questions about the extent to which those styles can be regarded as wholly discrete and what ‘hybrid’ vessels like this one might indicate about the relationships between inhabitants of Omo and Chen Chen style sites. The *tazon* was red-slipped, decorated with wiggly lines and diamonds, and had burning stains on the interior. An undecorated wooden spoon (15.1cm long) was also recovered.

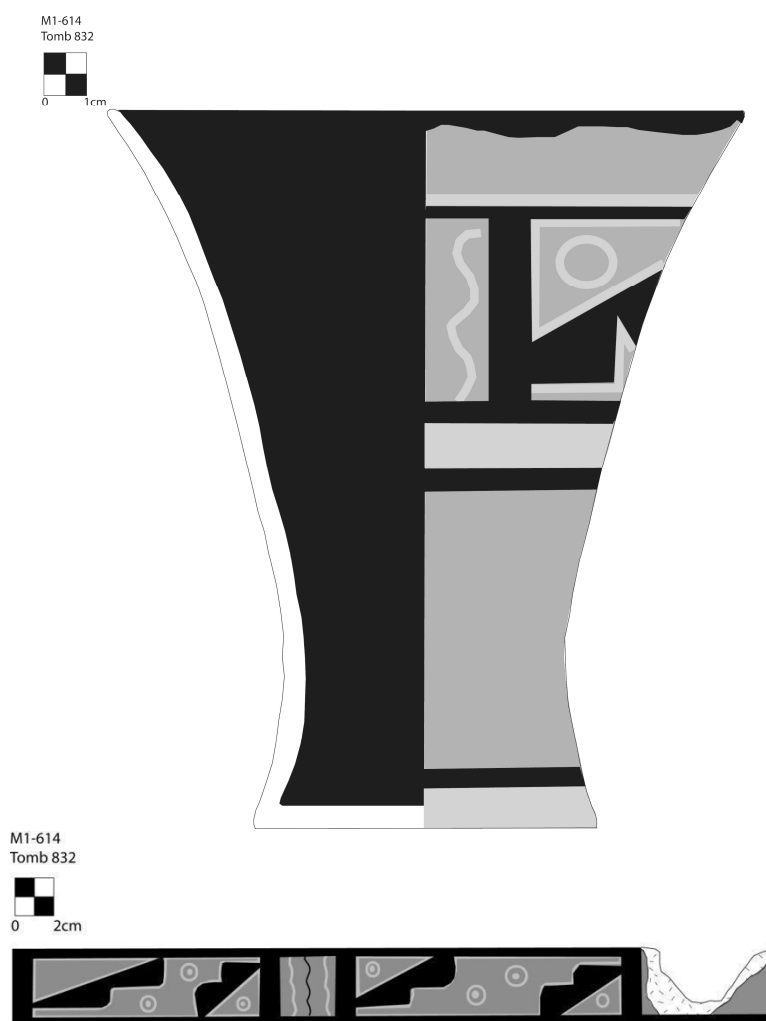


Figure 176. Red-slipped *kero* with polished black-ware interior, Tomb 832.

APPENDIX C (continued)

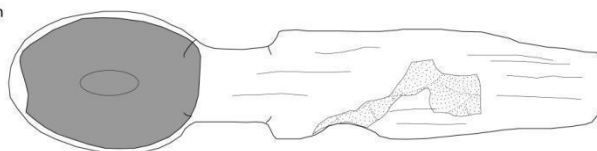
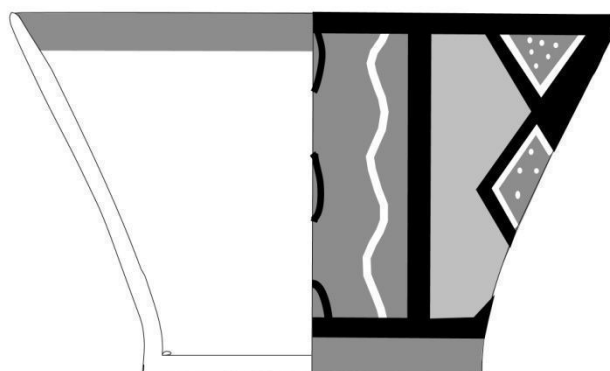
M1-613
Tomb 832

Figure 177. Wooden spoon, Tomb 832.

M1-615
Tomb 832M1-615
Tomb 832Figure 178. Red-slipped *tazon*, Tomb 832.

APPENDIX C (continued)***Tomb 849 (2002)***

Tomb 849 was an intact stone lined cist in unit 66. The capstone was made of stone and mortar, the mouth was made of stone and measured 34 by 33cm. There were four stone courses. The floor was not prepared and measured 30 by 35cm. The tomb was 57cm deep.

There was an external offering of a broken *kero*.²⁵⁰ The slip was reddish-brown, and the *kero* was unusual because the decorative panels of step-stair motifs, wiggly lines and circles were around the shaft instead of the flaring upper portion of the vessel.

Inside the tomb were the skeletal remains of an infant, aged 1 year +/- 3 months, of undetermined sex. Cranial deformation could not be observed. The infant had perisostitis in both humeri, and the linea aspera on both femurs was more ridged than normal and had active bone reaction. The infant was in a flexed position facing east.

²⁵⁰ Height 16.5cm, Rim Diameter 15cm, Base Diameter 9cm.

APPENDIX C (continued)

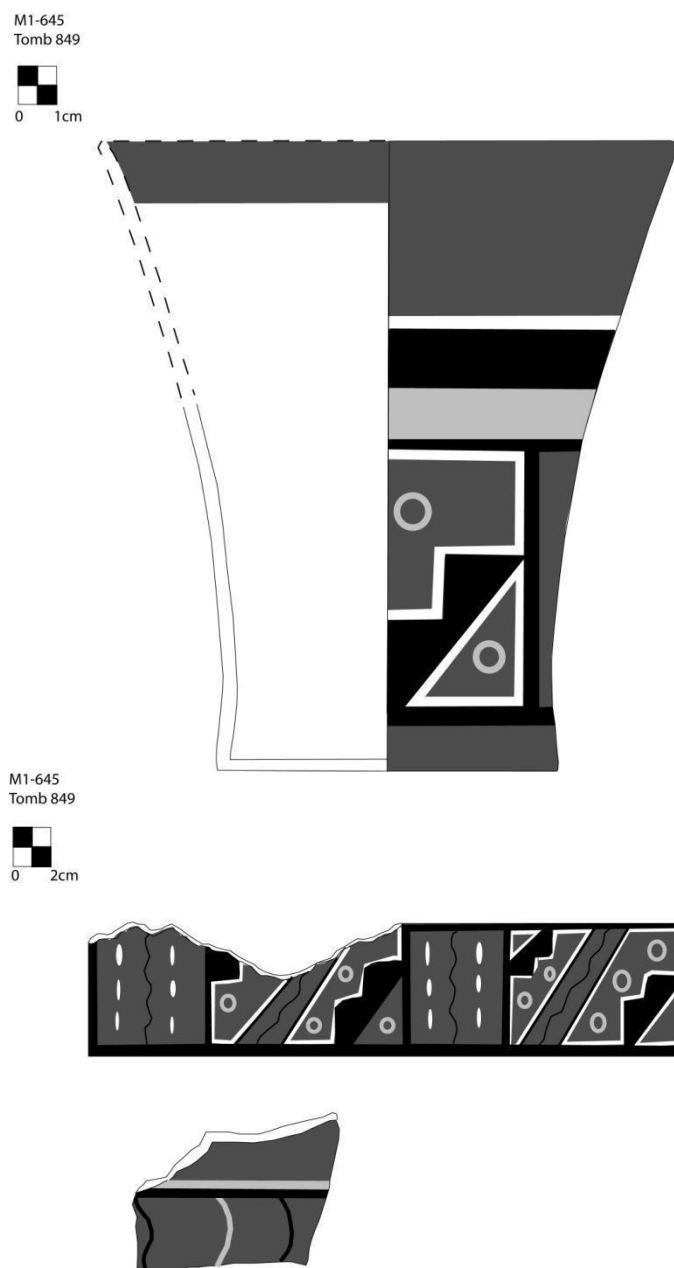


Figure 179. Broken *kero* and sherd, interpreted as external offering, Tomb 849.

Tomb 861 (2002)

Tomb 861 was a stone lined cist in unit 66 with four courses of irregular stones, with mortar in-between. The capstone was missing. The mouth was made of stones and earth and

APPENDIX C (continued)

measured 65 by 65cm. The floor had two flat stones sitting on it, and measured 67 by 50cm. The floor was 90cm deep. There was volcanic ash in the mouth, and so the tomb may have been disturbed before AD 1600.

It contained the poorly preserved skeleton of an older adult, a probable male. Cranial modification could not be observed. There was ossification of the flammis on the lumbar and thoracic vertebrae, a compression fracture on one of the lumbar vertebrae. There was also moderate erosion of the radii. The individual was facing north-east.

The tomb also contained two ceramic vessels. One was a red-slipped anthropomorphic vessel²⁵¹ modeled in the shape of an individual, probably a male, wearing a striped tunic or poncho. Four white stripes around the neck suggest necklaces, and the individual has a painted black skullcap with a white band around the base. White decorations on the ears suggest earspools. From the back emerges the rounded neck and rim of the vessel. The other vessel was a red-slipped *tazon*²⁵² decorated with black wiggly lines and black bands with orange circles.

There was an incomplete wooden spoon with incised cross-hatching on the handle, and a possible cactus spine needle.

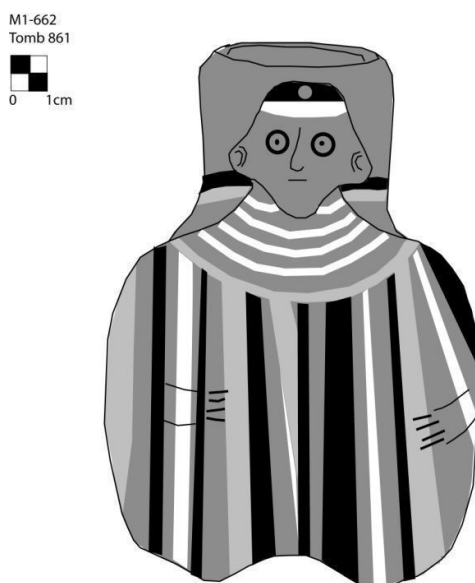


Figure 180. Anthropomorphic vessel, Tomb 861.

²⁵¹ Height 13.5cm, Rim Diameter 6cm, Base Diameter 11cm, Neck Height 3.6cm.

²⁵² Height 8.5cm, Rim Diameter 16cm, Base Diameter 9cm.

APPENDIX C (continued)

M1-664
Tomb 861
0 1cm

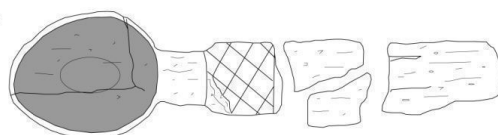
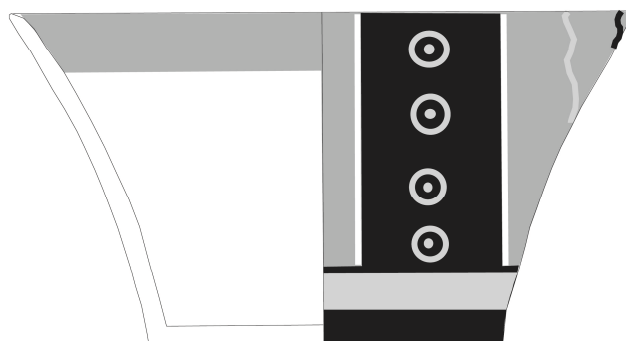


Figure 181. Wooden spoon, Tomb 861.

M1-663
Tomb 861
0 1cm



M1-663
Tomb 861
0 2cm

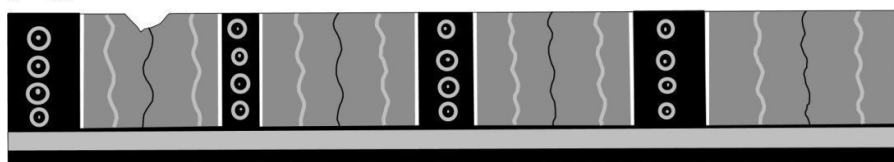


Figure 182. Red-slipped *tazon*, Tomb 861.

Tomb 1188 (1995)

Tomb 1188 was a pit burial located on the eastern side of trench 34-2. It contained the skeleton of an older adult female, aged at least 60 years. The individual had tabular cranial modification. There was dental wear, caries, tartar, pre-mortem tooth loss and dental abscesses. There was lipping on the lumbar vertebrae and the bones were generally weak. Sherds from a

APPENDIX C (continued)

red-slipped ceramic vessel²⁵³ were also recovered. The vessel was probably a *tazon* and had traces of a black painted design on it.

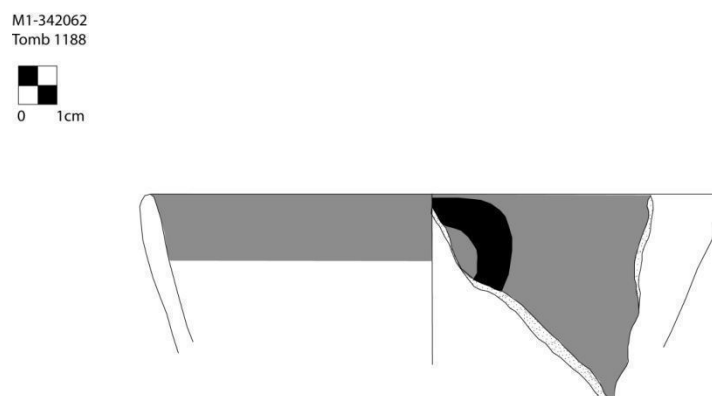


Figure 183. Fragment of possible *tazon*, Tomb 1188.

Tomb 1220 (1995)

Tomb 1220 was an intact stone lined cist near the southern edge of trench 34-1. It contained the skeleton of a juvenile, aged 6 years +/- 9 months, of undetermined sex. Cranial modification could not be observed. The juvenile had periostitis in both tibia, porotic hyperstosis in the squamous part of the occipital bone, slight dental wear and a dental caries in a lower right deciduous molar.

Two ceramic vessels were recovered from the tomb. There was a dark red slipped *tazon*.²⁵⁴ It had burning stains on both the exterior and interior. The exterior had been divided into four panels. Two of these were decorated with a series of short horizontal black and white lines. The other two were decorated with yellowish-red horizontal lines. The design was generally poorly executed. The other vessel was a small pitcher with a spout.²⁵⁵ The exterior was covered in a reddish-brown slip, with a band of slip around the interior of the rim. There were burning stains on the exterior, which had been decorated with stylized trophy heads and thick crosses. An incomplete wooden spoon (14.3cm long) was recovered, as well as very poorly preserved fragments of fiber rope.

²⁵³ Rim Diameter 15cm.

²⁵⁴ Height 7.9cm, Rim Diameter 15cm, Base Diameter 10cm.

²⁵⁵ Height 10.5cm, Rim Diameter 3cm, Base Diameter 4cm, Neck Height 3.8cm.

APPENDIX C (continued)

M1-341021
Tomb 1220

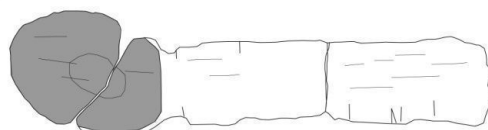
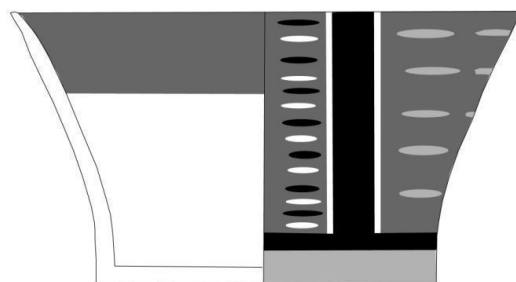


Figure 184. Wooden spoon, Tomb 1220.

M1-341022
Tomb 1220



M1-341022
Tomb 1220

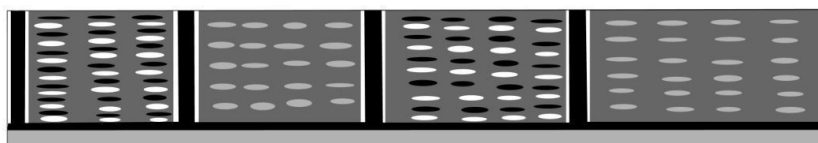


Figure 185. Dark red-slipped *tazon*, Tomb 1220.

APPENDIX C (continued)

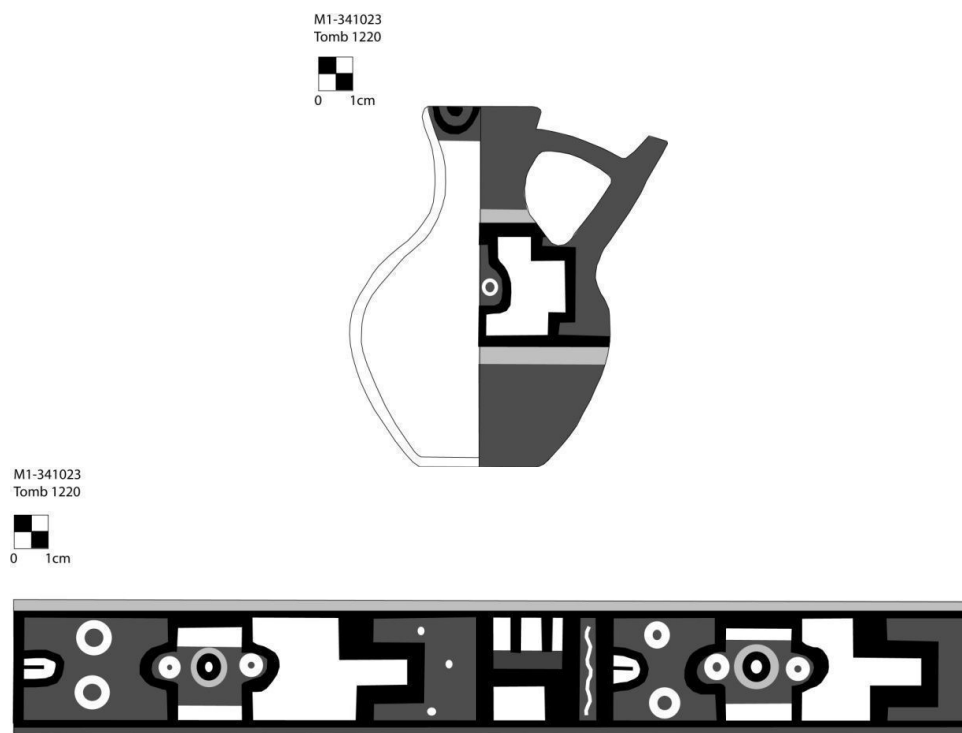


Figure 186. One-handed pitcher, Tomb 1220.

Tomb 1223 (1995)

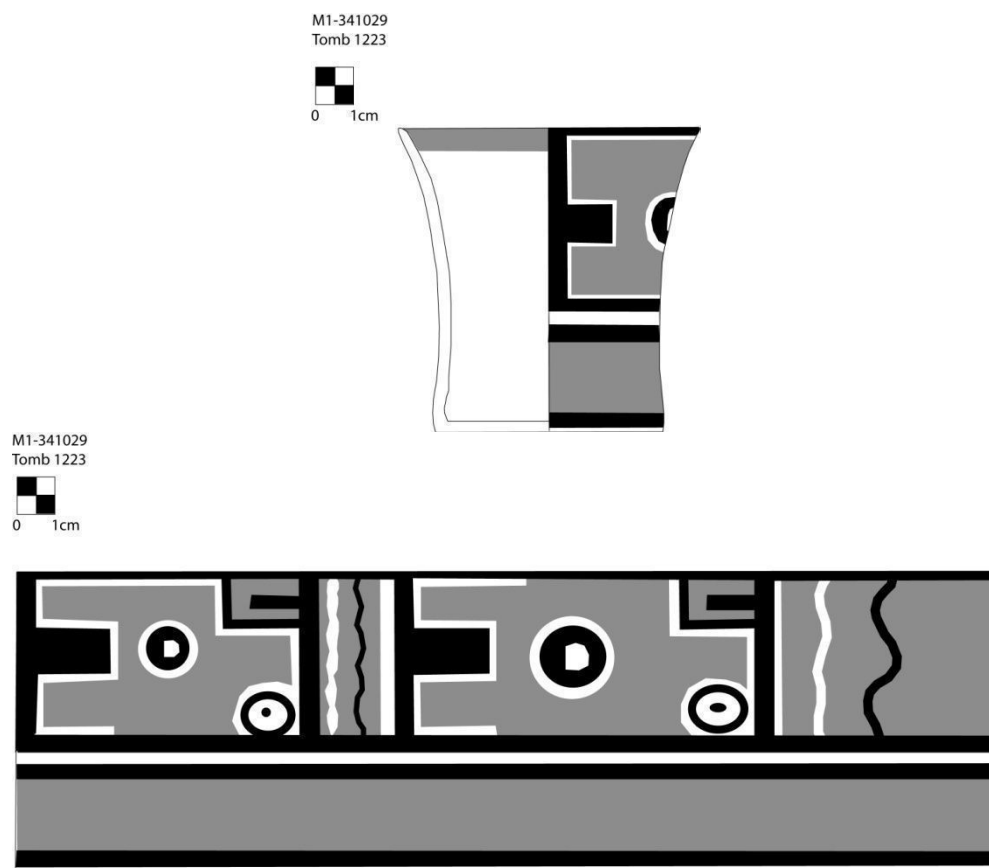
Tomb 1223 was an intact stone lined cist located in the western half of trench 34-1. It contained the skeleton of a child, aged 3 years +/- 6 months, of undetermined sex. There was no cranial modification. The child had dental caries and slight dental wear.

There was a small red-slipped cup.²⁵⁶ Ceramic sherds, including large fragments of a sooted *olla*²⁵⁷ and an un-slipped but striped tail or leg from a zoomorphic *incensario*.

²⁵⁶ Height 8.1cm, Rim Diameter 8cm, Base Diameter 6cm.

²⁵⁷ Rim Diameter 8cm.

APPENDIX C (continued)



APPENDIX C (continued)

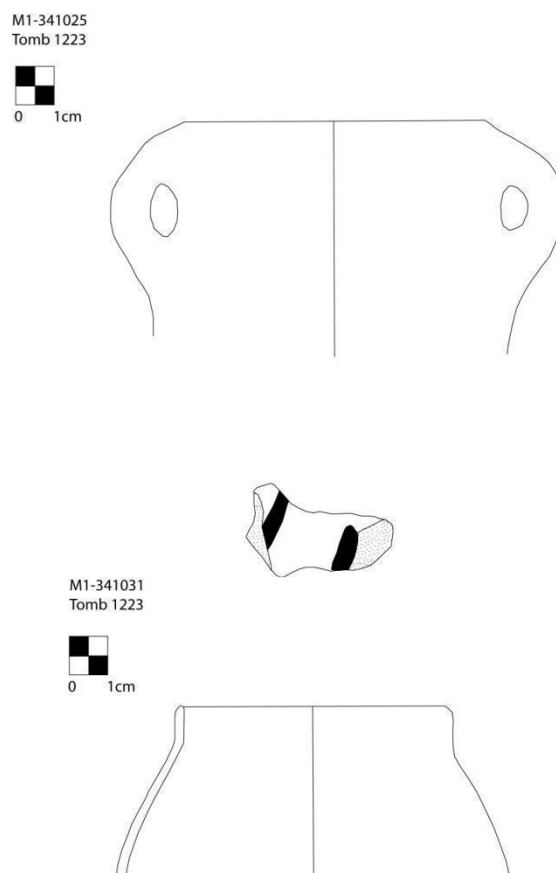


Figure 188. Ceramic sherds, including fragments of an *olla*, Tomb 1223.

Tomb 1189 (1995)

Tomb 1189 was an intact stone lined cist, located in the northeastern corner of trench 34-2. It contained the poorly preserved skeletal remains of a middle adult, a probable female. Neither cranial modification nor pathologies could be observed. Two intact ceramic vessels and two sherds were recovered from the tomb. There was a red-slipped ‘coca-cola bottle shaped’ *kero*²⁵⁸ decorated in blue/grey, orange and black designs of thick crosses. A red-slipped *tazon*²⁵⁹ was decorated with roughly executed step-stair motifs in black and orange. The two sherds were

²⁵⁸ Height 17cm, Rim Diameter 11cm, Base Diameter 7cm.

²⁵⁹ Height 7.5cm, Rim Diameter 16cm, Base Diameter 10cm.

APPENDIX C (continued)

red-slipped and from a decorated vessel, possibly a *kero*. There was also an incomplete wooden spoon.

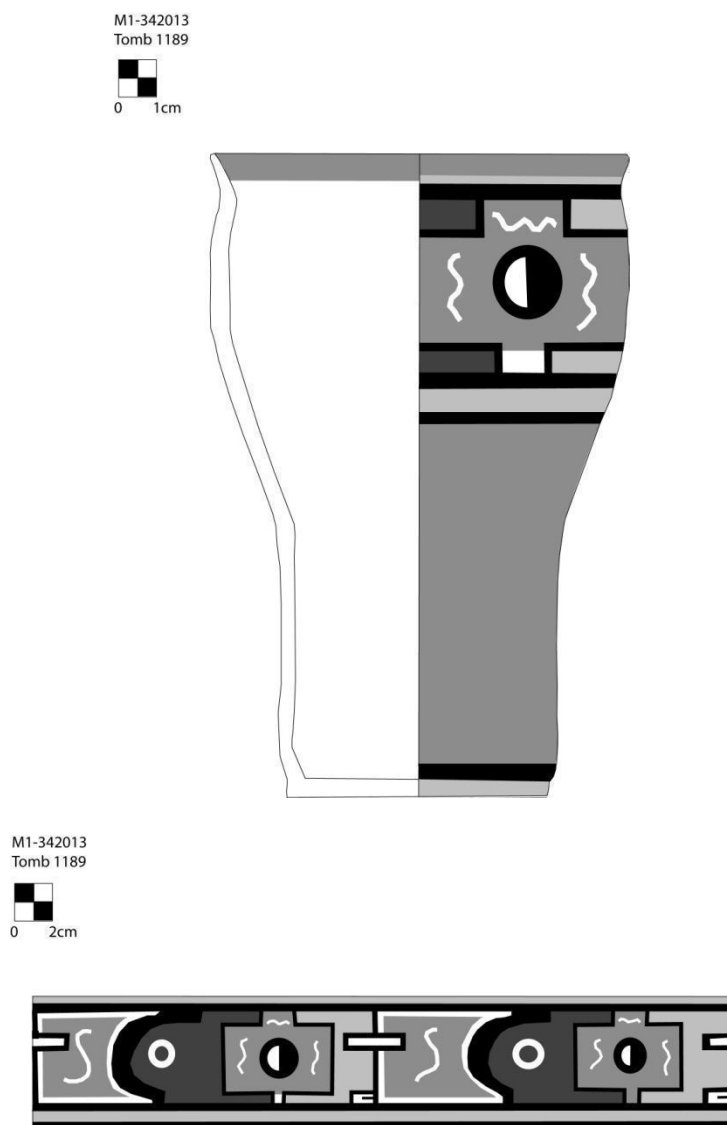


Figure 189. Red-slipped 'coca-cola bottle' *kero*, Tomb 1189.

APPENDIX C (continued)

M1-342015
Tomb 1189

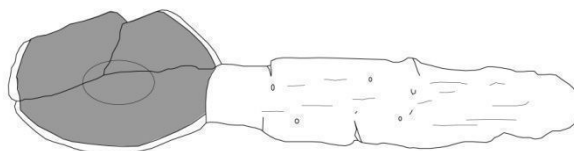
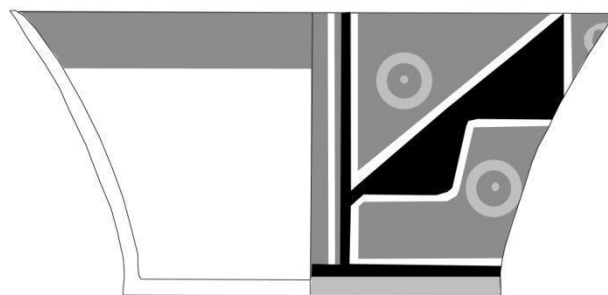


Figure 190. Wooden spoon, Tomb 1189.

M1-342014
Tomb 1189



M1-342014
Tomb 1189



Figure 191. Red-slipped *tazon*, Tomb 1189.

APPENDIX C (continued)

M1-342009
Tomb 1189


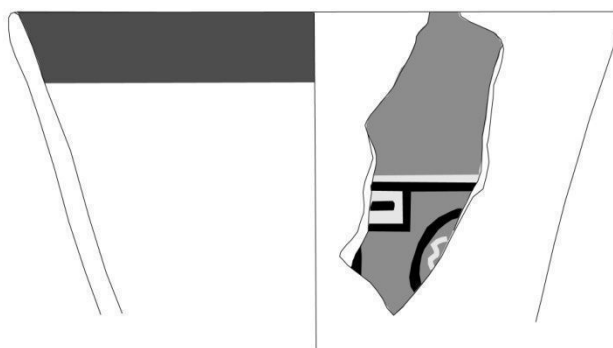



Figure 192. Fragment of *kero*, Tomb 1189.

Tomb 1198 (1995)

Tomb 1198 was an intact stone lined cist located on the western side of trench 34-2. Two sets of human remains were listed in the inventory, but only one set was available for analysis. These represented a child, aged 5 years +/- 9 months. Cranial modification could not be observed. The child had dental caries.²⁶⁰

Very poorly preserved fragments of a woolen *manta* were recovered. The weave was probably warp faced, but the color, spin direction or spin count could not be determined. An incomplete wooden spoon was also found.

²⁶⁰ As only 66% of the child was represented in this set of remains, it is possible that the other specimen contained the rest of this same individual.

APPENDIX C (continued)

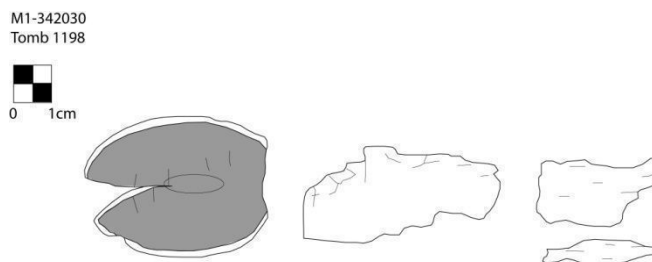


Figure 193. Wooden spoon, Tomb 1198.

Sector 35

Sector 35 was a small cemetery to the south of sector 33 and to the east of sector 36. Owen did not excavate any trenches in sector 35. Pari's project excavated 57 units in sector 35. A total of 10 tombs were deemed sufficiently intact for analysis in this project.

Tomb 450 (2002)

Tomb 450 was an intact stone lined cist with three stone courses in unit 1. The stone capstone sat on a circular mouth made of stone measuring 28 by 26cm. There was a flat stone on the floor of the tomb, which measured 38 by 28cm. The tomb was 48cm deep.

It contained the skeleton of a child, aged 2 years +/- 6 months, of undetermined sex. Cranial modification could not be observed. There was a modified muscle attachment in both radii, and the radii and fibulae were curved.

Tomb 457 (2002)

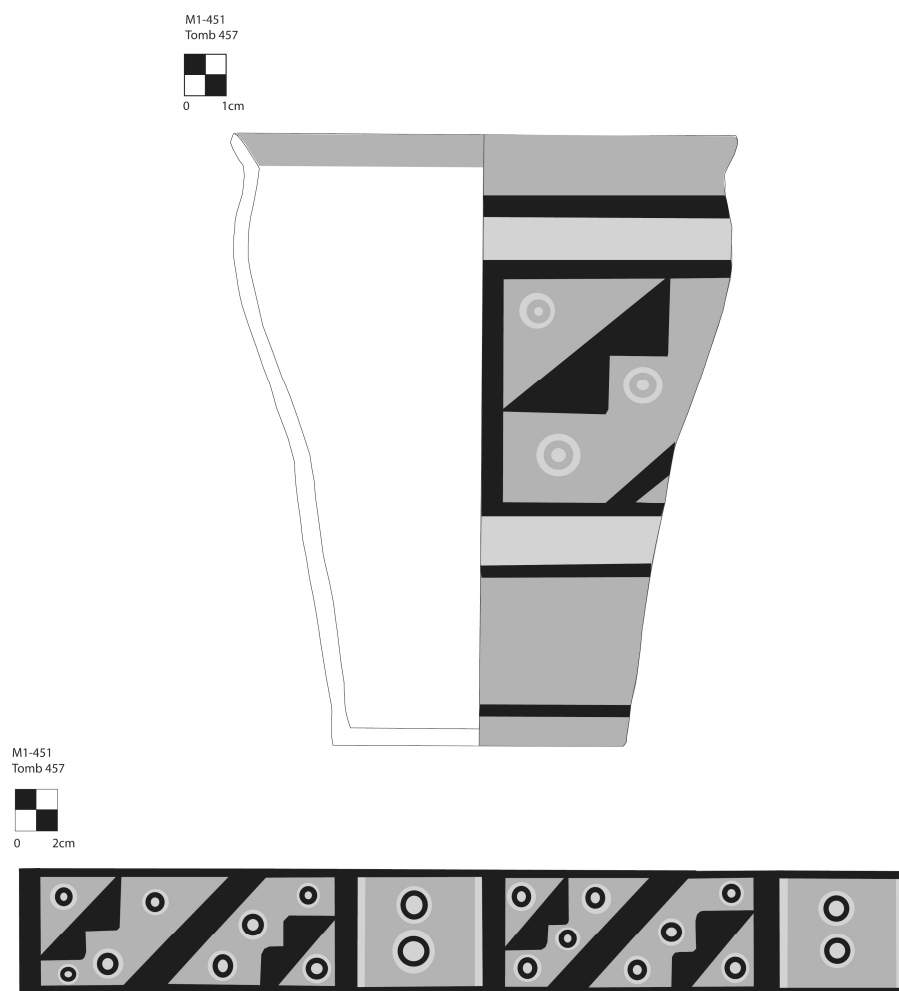
Tomb 457 was another stone lined tomb in unit 1. It had suffered some disturbance and the capstone was missing. The mouth measured 65 by 50cm, and was constructed from stones and earth. There were two stone courses with mortar. A flat stone was placed on the floor of the tomb, which measured 40 by 35cm. The tomb was 47cm deep.

No human remains were found in the tomb but there were two ceramic vessels. There was a coca-cola bottle shaped *kero*.²⁶¹ The *kero* was red-slipped, with black step-stair motifs and orange circles, and a dark burning stain on the exterior. The other vessel was a red-slipped *tazon*²⁶² with three standing bird figures.

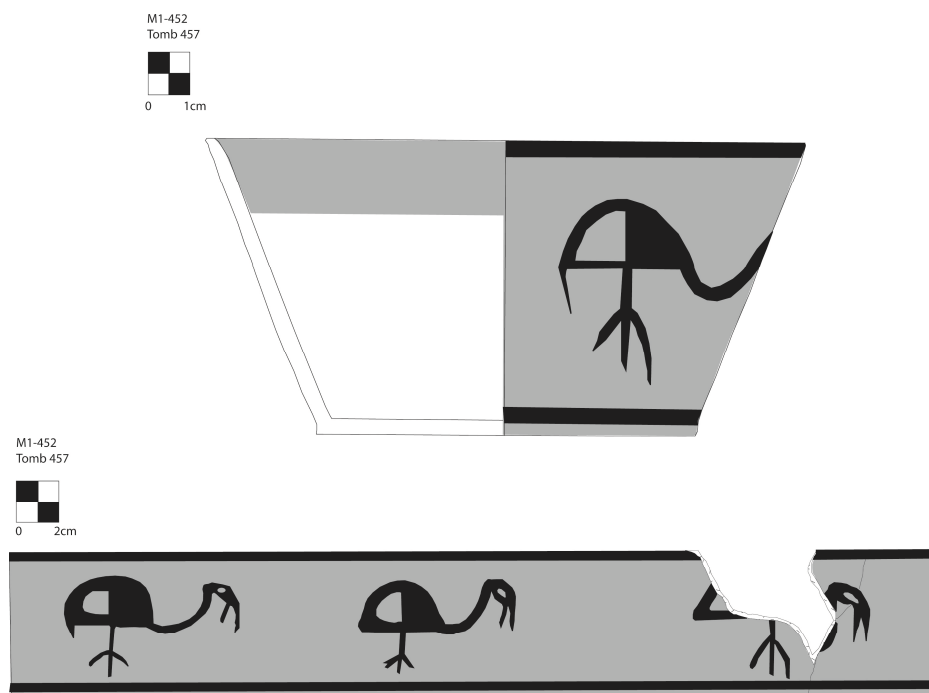
²⁶¹ Height 14.5cm, Rim Diameter 12cm, Base Diameter 7cm.

²⁶² Height 7.4cm, Rim Diameter 14cm, Base Diameter 9cm.

APPENDIX C (continued)

Figure 194. Red-slipped *kero*, Tomb 457.

APPENDIX C (continued)

Figure 195. Red-slipped *tazon*, Tomb 457.***Tomb 451 (2002)***

Tomb 451 was an intact, stone lined cist in unit 2. The capstone was stone and earth, as was the mouth which measured 56 by 39cm. There were three stone courses with mortar in-between. The floor was not treated and measured 40 by 45cm. The tomb was 86cm deep. It contained the poorly preserved and fragmentary remains of a juvenile, aged 6 years, +/- 9 months, of undetermined sex. Neither cranial modification nor pathologies could be observed.

Tomb 458 (2002)

Tomb 458 was an intact, stone lined cist in unit 2. It had a stone and earth capstone and mouth. The mouth measured 26 by 20cm. The floor measured 27 by 25cm. The tomb was 40cm deep. It contained the skeleton of an infant, aged 6 months +/- 2 months, of undetermined sex. There was no cranial modification and pathologies could not be observed. No cultural remains were found.

Tomb 459 (2002)

Tomb 459 was an intact, stone lined cist in unit 34, with five stone courses and mortar in-between. There was a stone cap, the circular mouth was made of stone and earth and measured

APPENDIX C (continued)

44 by 42cm. The floor was untreated and measured 53 by 47cm. The tomb was 78cm deep.

It contained the skeleton of an adolescent, aged approximately 18 years, of undetermined sex. The individual probably had cranial modification but it was impossible to confirm this due to fragmentation of the cranium. The neural arcs of the thoracic vertebrae were fused, and the individual had dental caries and wear. The adolescent was in a flexed position facing east.

A red-slipped ceramic *kero*²⁶³ was also recovered from the tomb. It was decorated with stylized feline heads, and there were burning stains on the exterior.

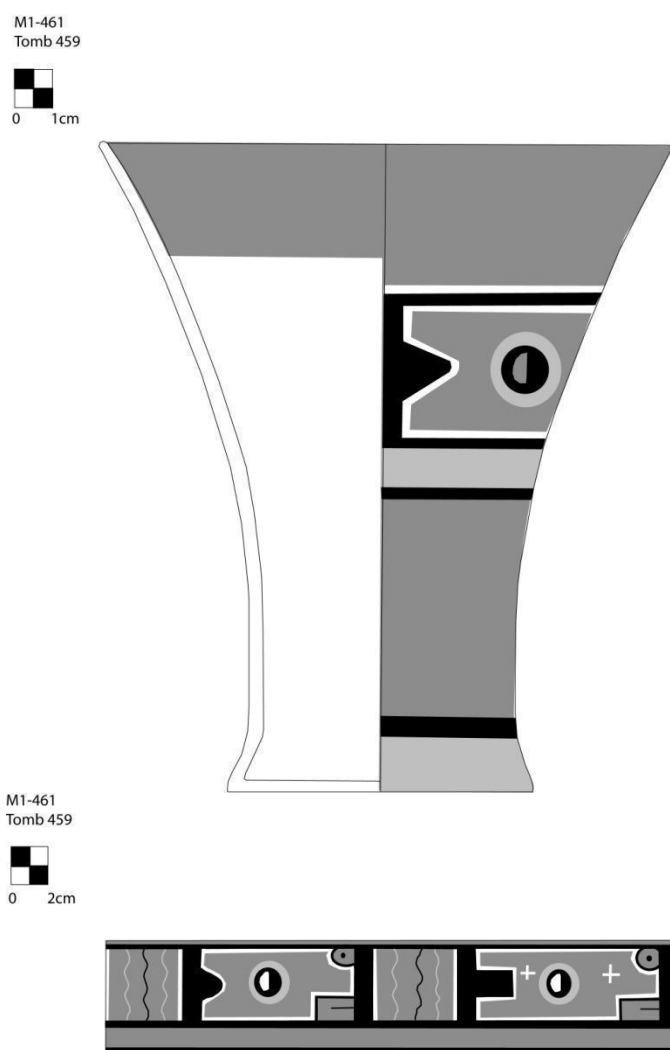


Figure 196. Red-slipped *kero*, Tomb 459.

²⁶³ Height 17cm, Rim Diameter 15cm, Base Diameter 8cm.

APPENDIX C (continued)

Tomb 513 (2002)

Tomb 513 was an intact stone lined cist in unit 56 with seven stone courses and mortar in-between. The cap was made of stone and earth, as was the mouth which measured 47 by 58cm. The floor measured 70 by 50cm, and the tomb was 98cm deep.

It contained the partially mummified remains of an adult, sex and exact age undetermined, with tabular cranial modification. Pathologies could not be observed. The adult was in a flexed position oriented between the southeast and northeast. Braided brown hair was visible on the top of the individual's head.

Two textiles were still attached to the individual. One was a brown, warp faced woolen *frazada*. Underneath the blanket was brown *manta* with camel colored stripes, woven in an interlocking pattern. In both textiles, the wool had been spun ZS. The mummy bundle was held in place by braided fiber rope (0.6cm wide, 0.2cm thick) and woolen threads.

In addition, there was a dark red slipped *tazon*²⁶⁴ decorated with black, white and orange step-stair motifs, circles and wiggly lines, and a one handled pitcher.²⁶⁵ The pitcher had a red-slip and was decorated with an avian figure depicted hanging upside down wrapped around the body of the vessel. There was also a complete wooden spoon (13.6cm long), with its handle carved in the shape of a camelid facing left.

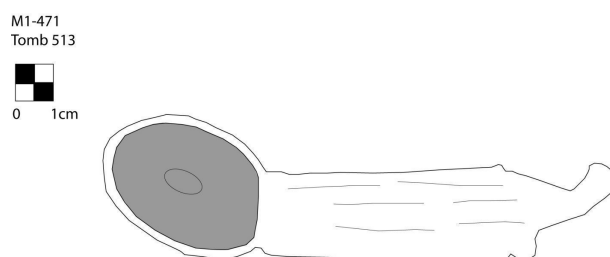
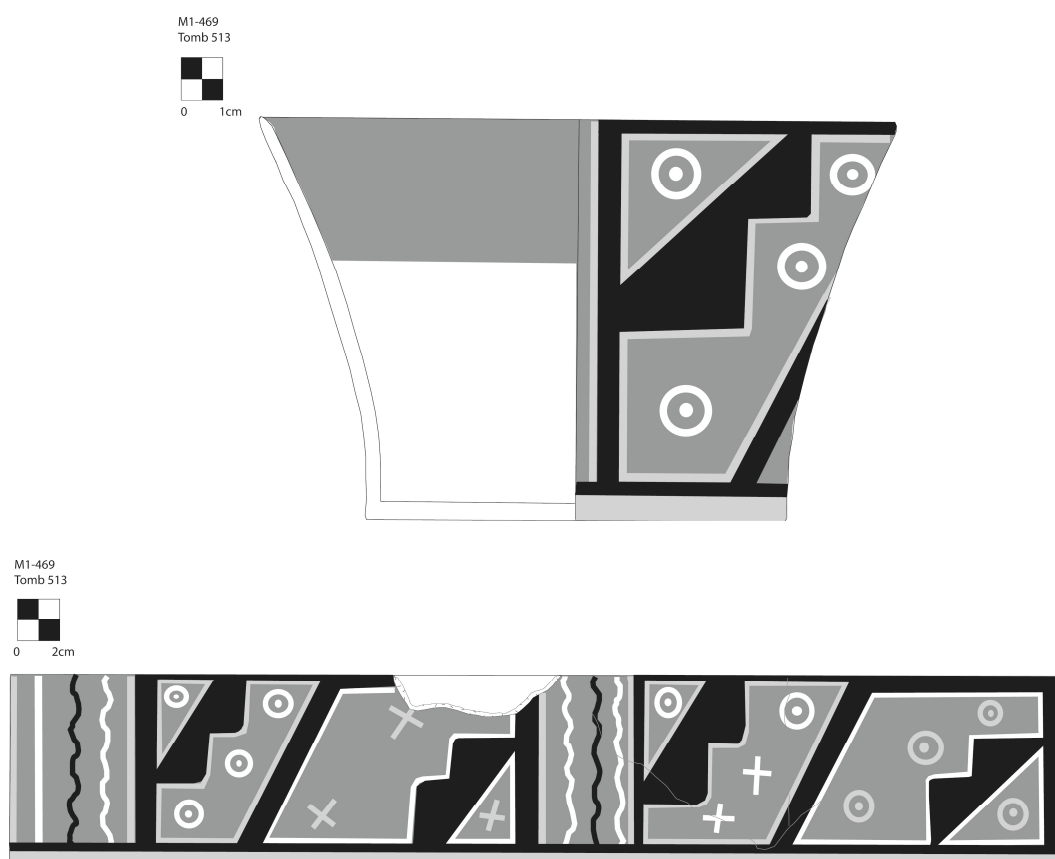


Figure 197. Wooden spoon, Tomb 513.

²⁶⁴ Height 9.5cm, Rim Diameter 15cm, Base Diameter 10cm.

²⁶⁵ Height 21cm, Rim Diameter 8cm, Base Diameter 7cm, Neck Height 4.6cm.

APPENDIX C (continued)



APPENDIX C (continued)

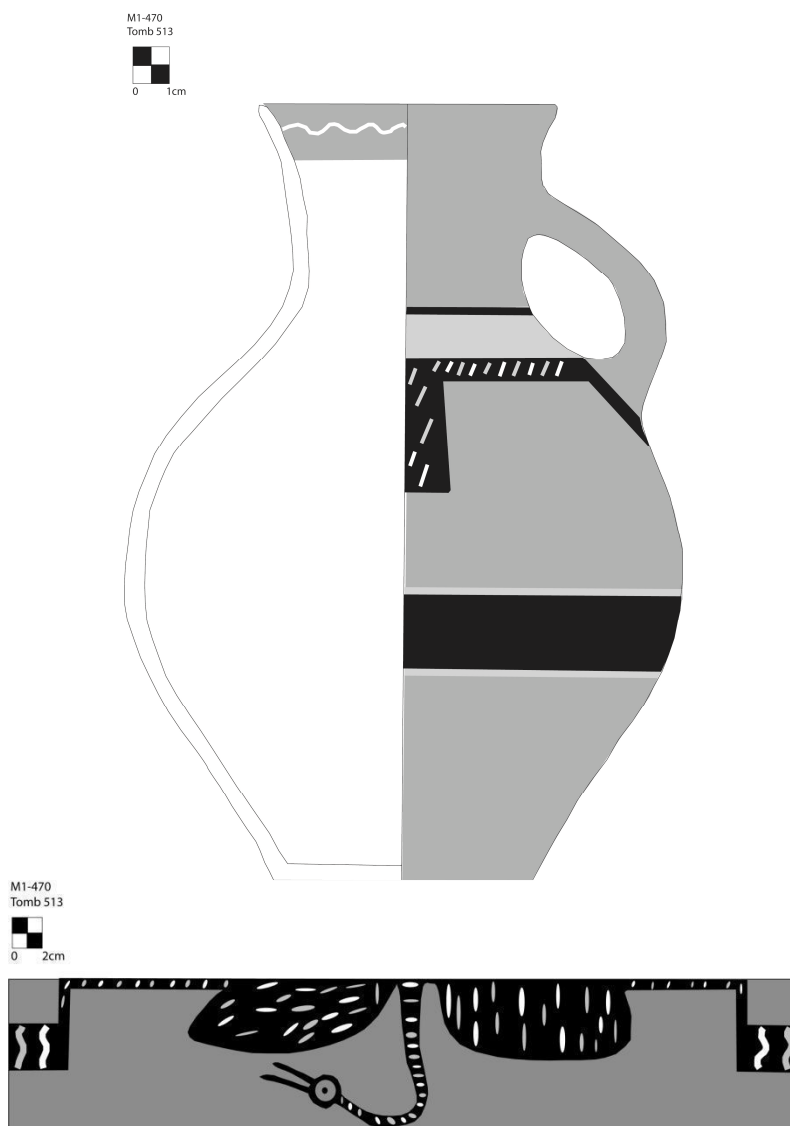


Figure 199. Red-slipped pitcher, Tomb 513.

Tomb 539 (2002)

Tomb 539 was an intact stone lined cist in unit 83, with four courses of stone with mortar in-between. One large, flat stone acted as a cap and was held in place with earth mortar. The mouth was made of stones and earth and measured 47 by 52cm. The floor was untreated and measured 38 by 35cm. The tomb was 77cm deep.

APPENDIX C (continued)

It contained the skeleton of a child aged 3 years, +/- 6 months, of undetermined sex. The child had probable tabular cranial modification. The child had dental wear, and healed microposity in the lamboid suture and the squamous portion of the occipital bone. The child was in a fetal position facing to the northeast.

Two ceramic vessels were recovered from the tomb; a reddish-brown slipped *tazon*²⁶⁶ and a damaged one handled pitcher.²⁶⁷ The *tazon* was decorated with step-stair motifs, wiggly lines and circles. The surface of the pitcher was almost completely eroded but traces of dark red brown slip were visible around the interior and exterior of the rim. The handle was incomplete. There was also a complete wooden spoon (15.5cm long) and had subtle carving in the middle of the handle.

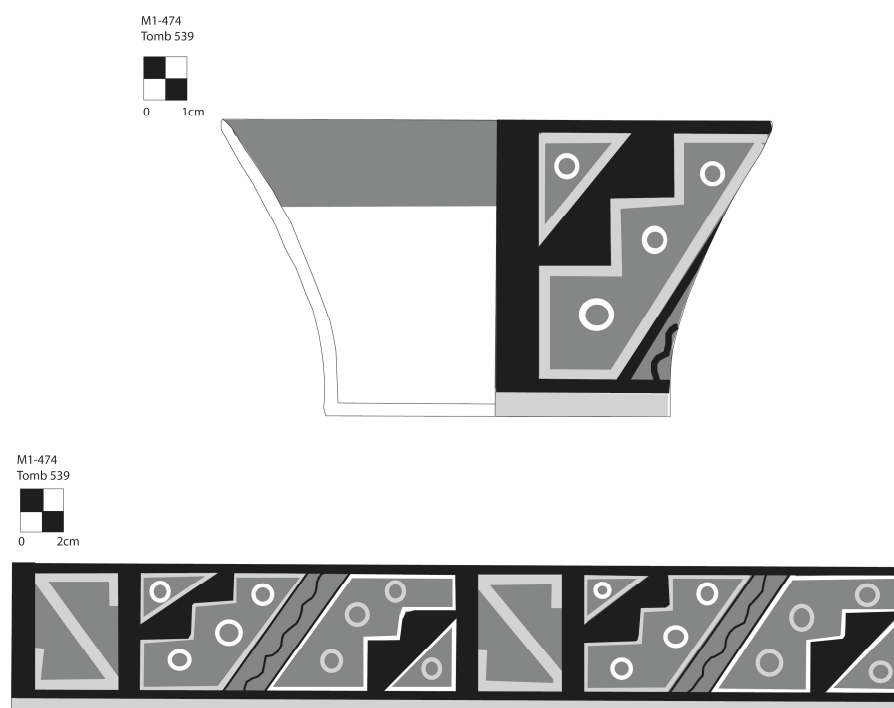


Figure 200. Reddish brown slipped *tazon*, Tomb 539.

²⁶⁶ Height 7cm, Rim Diameter 13cm, Base Diameter 8cm.

²⁶⁷ Height 9cm, Rim Diameter 5cm, Base Diameter 5cm, Neck Height 1cm.

APPENDIX C (continued)

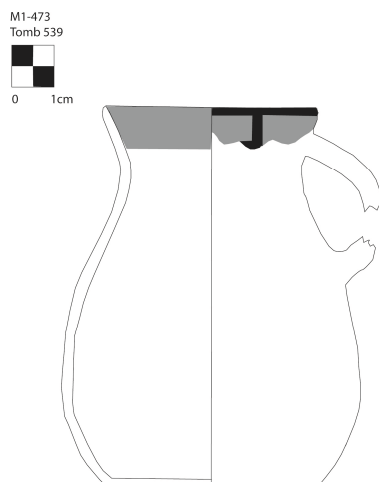


Figure 201. Pitcher with eroded exterior surface, Tomb 539.

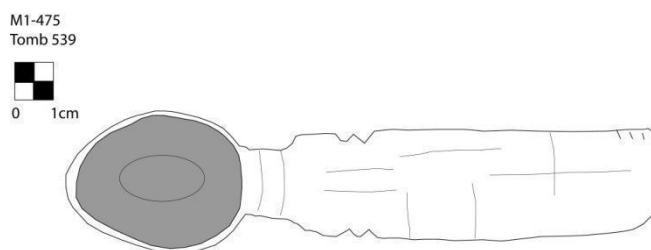


Figure 202. Wooden spoon, Tomb 539.

Tomb 605 (2002)

Tomb 605 was a stone lined cist with five stone courses and mortar, located in unit 85. There was no capstone, the mouth was made of stones and earth and measured 48 by 46cm. The floor measured 45 by 43cm, and the tomb was 67cm deep.

It contained the skeleton of a child, aged 5 years, +/- 9 months, of undetermined sex. The child had tabular cranial modification. There were dental caries and active periostitis in the long bones and right ribs. The child was in a fetal position facing east.

APPENDIX C (continued)

There was also a red-slipped *tazon*²⁶⁸ and a red-slipped one handled pitcher²⁶⁹ in the tomb. The *tazon* was decorated with a series of vertical wiggly lines, and the pitcher had a geometric design repeated on each side of the vessel. There was a complete wooden spoon (18.1cm) with a carved handle that possibly depicted a camelid.

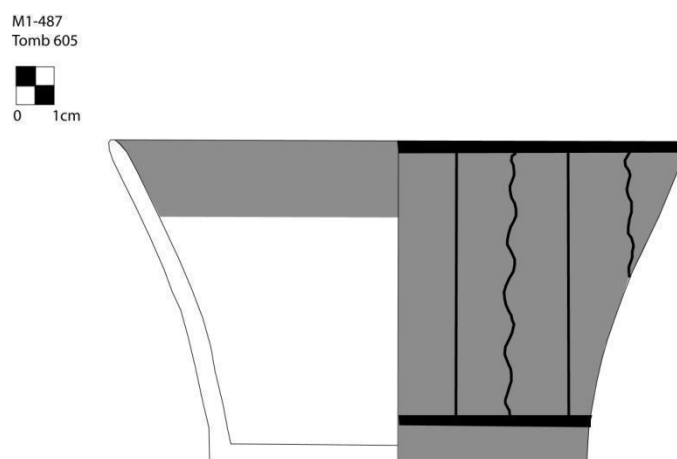


Figure 203. Red-slipped *tazon*, Tomb 605.

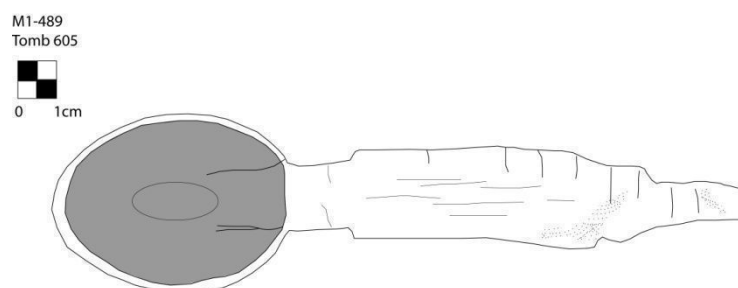


Figure 204. Wooden spoon, Tomb 605.

²⁶⁸ Height 8.5cm, Rim Diameter 15cm, Base Diameter 10cm.

²⁶⁹ Height 16.5cm, Rim Diameter 8cm, Base Diameter 7cm, Neck Height 3.4cm.

APPENDIX C (continued)

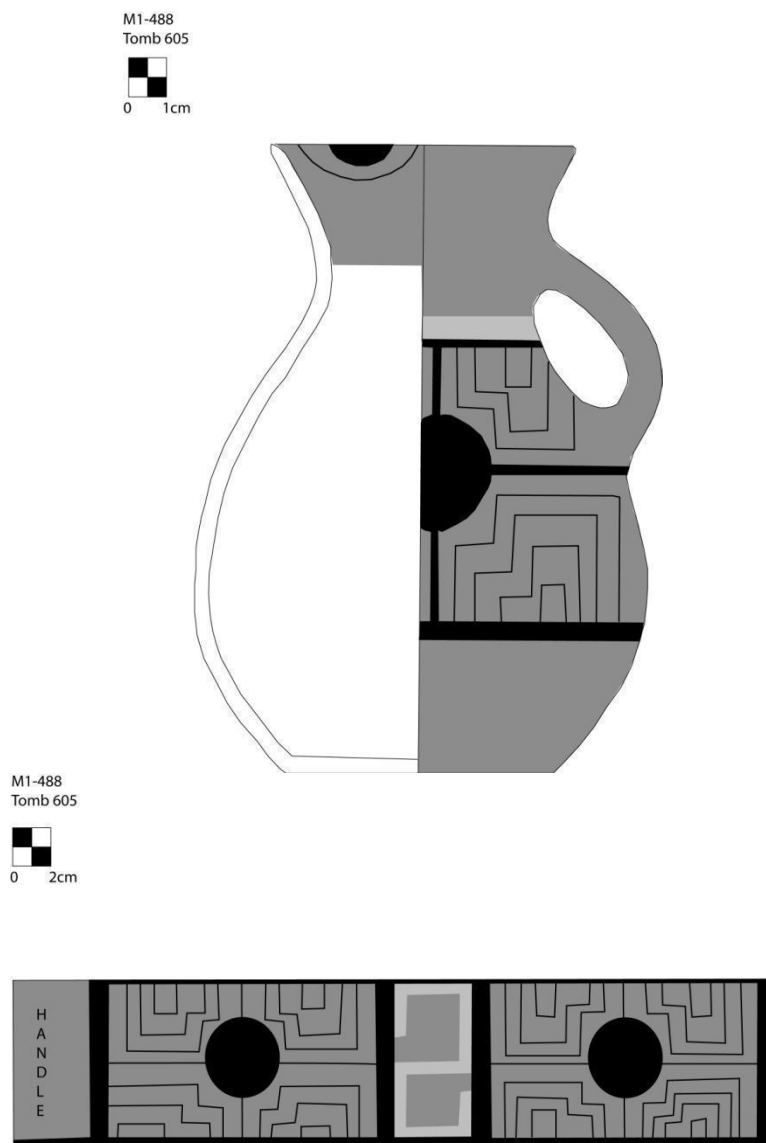


Figure 205. Red-slipped pitcher, Tomb 605.

Tomb 606 (2002)

Tomb 606 was a stone lined cist in unit 101. There was no capstone, the mouth was made of stones and earth and measured 49 by 48cm. A flat stone covered about 50% of the floor, which measured 35 by 35cm. The tomb was 48cm deep.

APPENDIX C (continued)

It contained a skeleton, aged 5 years, +/- 9 months, of undetermined sex. The child had tabular cranial modification, dental wear and exposed dentine in one canine. The child was in a fetal position facing east.

A red-slipped *tazon*²⁷⁰ was recovered from the tomb. The vessel was made of a medium texture paste, was undecorated and had a burning stain on the exterior. Much of the slip on the exterior had eroded away. There was also a wooden spoon decorated with a carved camelid facing left.

M1-491
Tomb 606
0 1cm



Figure 206. Red-slipped *tazon*, Tomb 606.

M1-492
Tomb 606
0 1cm

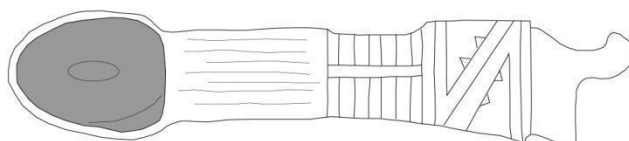


Figure 207. Wooden spoon, Tomb 606.

²⁷⁰ Height 6.7cm, Rim Diameter 13cm, Base Diameter 9cm.

APPENDIX C (continued)***Tomb 641 (2002)***

Tomb 641 was an intact pit tomb in unit 101. There was no cap-stone, the mouth was untreated and measured 100 by 80cm. The floor was untreated and measured 50 by 50cm. The tomb was 80cm deep. It contained the skeleton of a middle adult, a male with tabular cranial modification. The male had porotic hyperostosis in the cranium, and hypervascularization and inflammation in the parietals. The individual also had dental wear, caries and a dental abscess. There were remodeled fractures in four of the left ribs. The individual also had strong muscle attachments in the humeri, femora, ulnae and clavicles. The individual was in a flexed position facing east. There was a red-slipped *kero*²⁷¹ decorated with two condors looking upwards, with repair holes on either side of a crack in the rim.

²⁷¹ Height 16.5cm, Rim Diameter 16cm, Base Diameter 8cm.

APPENDIX C (continued)

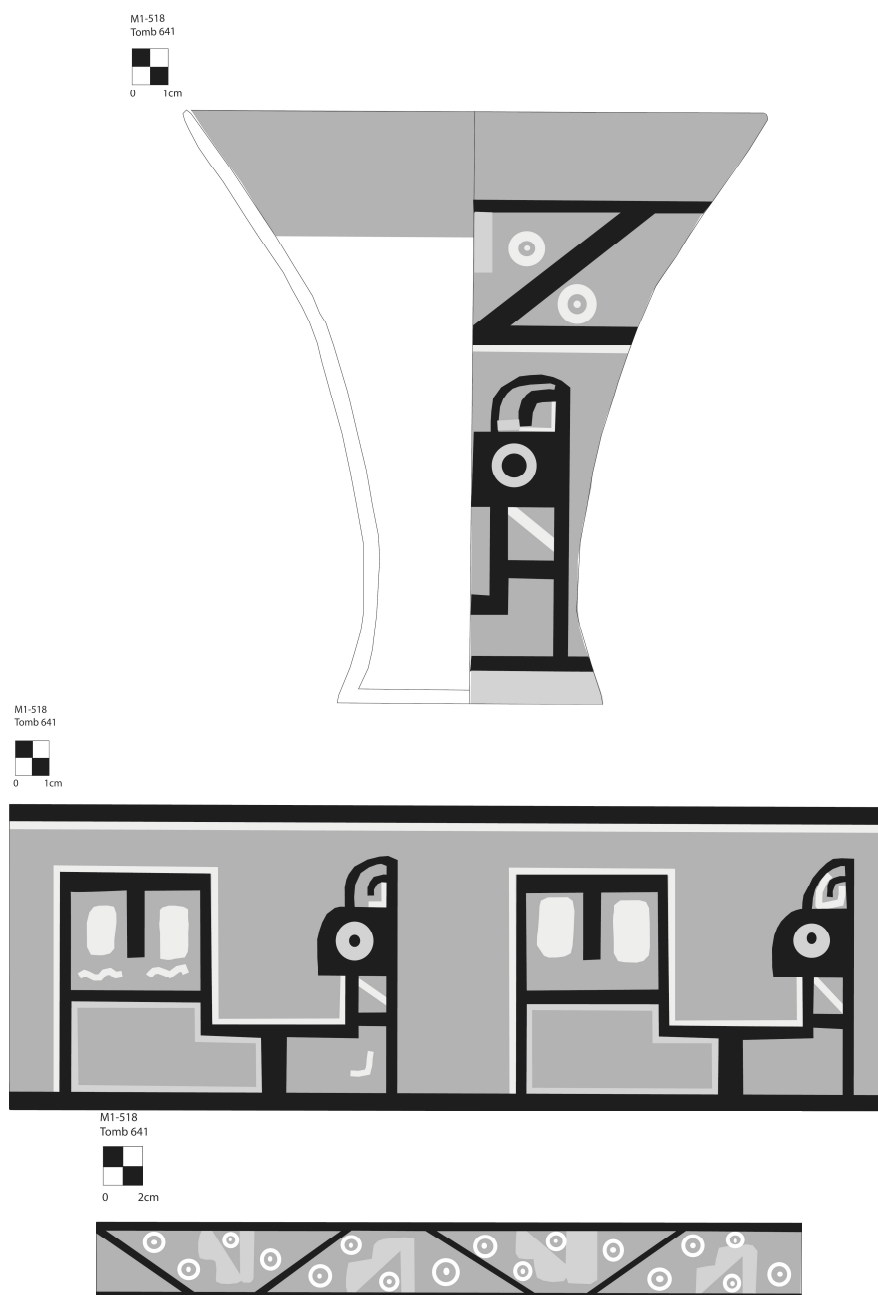


Figure 208. Red-slipped *kero*, Tomb 641 (nb. different scales in depictions of upper and lower design panels).

APPENDIX C (continued)

Sector 36

Sector 36 was located in the southernmost part of Chen Chen, just to the west of sector 35. Both Owen and Pari's projects excavated in sector 36. Owen excavated two trenches, recovering 12 tombs, four of which were analyzed in this project. Pari excavated 139 units, and 21 of the tombs recovered in 2002 were deemed sufficiently intact for this project.

Tomb 452 (2002)

Tomb 452 was an intact stone lined cist in unit 28. The cap was made of flat stone held in place with mortar. The mouth was made of stones and mortar, and measured 33 by 39cm. There were three stone courses with mortar in-between. A flat stone was placed on the floor, which had a diameter of 29cm. The tomb was 54cm deep.

It contained the poorly preserved remains of a child, aged 3 years, +/- 6 months, of undetermined sex. Neither cranial modification nor pathologies could be observed. The child was in a flexed position. No cultural materials were recovered.

Tomb 656 (2002)

Tomb 656 was a pit tomb²⁷² in unit 66. There was no capstone, the mouth was untreated and measured 100 by 80cm. The floor was also untreated with a diameter of 76cm. The tomb was 95cm.

The field form lists the presence of the skeleton of an adult, in a flexed position facing east. These remains were not available for analysis. No cultural materials were recovered.

Tomb 537 (2002)

Tomb 537 was a stone lined cist located in unit 67. The cap was made of stones and mortar, as was the mouth which measured 55 by 49cm. There was a flat stone on the floor, which had a diameter of 50cm. The tomb was 94cm deep.

The field form records the presence of the skeleton of an adult, facing east. These remains were not available for analysis. No cultural materials were recovered.

Tomb 538 (2002)

Tomb 538 was an intact stone lined cist located in unit 68. The cap consisted of a single flat stone held in place by mortar. The mouth was made of stones and mortar and measured 35 by 38cm. There was a flat stone on the floor of the tomb which had a diameter of 29cm. The tomb had two stone courses with mortar in-between and was 51cm deep.

It contained the partially mummified remains of a neonate. There was no cranial modification, but there was extensive active periostitis in the femora and tibiae.

Fragments of two textiles were associated with the remains. There was a brown *frazada* which had been woven in a warp faced pattern. A ridged effect had been created by weaving the warp and weft using threads of varying thickness. In addition there was a woolen *manta*, woven in an interlocking pattern. The *pampa* of the *manta* was brown with vertical blue stripes. The stripes were woven in groups of three, and the *pampa* had been woven using thicker threads on

²⁷² Identified as intact in the draft report, and disturbed in the field form.

APPENDIX C (continued)

either side of the stripes, again creating a ridged effect. A small fragment of fiber rope was also mixed into the mummy bundle.

Tomb 530 (2002)

Tomb 530 was an intact stone lined cist in unit 72. The cap was made of stone and mortar, as was the mouth which measured 40 by 45cm. There was a flat stone on the floor which had a diameter of 40cm. The tomb had four stone courses with mortar in-between and was 75cm deep.

The field form reports the presence of the poorly preserved skeleton of a child. These remains were not available for analysis. The draft report stated that no cultural materials were in the tomb, although the field form mentions a broken *kero* in the upper part of the excavation. This was not available for analysis.

Tomb 583 (2002)

Tomb 583 was an intact stone lined cist in unit 73. The cap was made of two stones mortared into place. The mouth was stone and mortar and measured 60 by 55cm. A flat stone covered 70% of the floor, which measured 55 by 42cm. The human remains were found on top of this stone. There were six stone courses with mortar in-between and the tomb was 89cm deep.

The tomb contained a juvenile, aged 8 years, +/- 9 months, of undetermined sex. There was possible tabular cranial modification. The juvenile had dental caries, and lipping on the tuberosity of the left clavicle. The juvenile was in a flexed position, facing east, held in position with poorly preserved fiber rope (which was unavailable for analysis).

Four ceramic vessels were recovered from the tomb. There was a small dark-red slipped cup,²⁷³ whose body consisted of two globes creating a figure of eight profile. It was decorated with circles, thick black lines and narrow wiggly lines. Underneath this vessel was a reddish-brown slipped *tazon*²⁷⁴ decorated with a thick bands in black, and narrower straight and wiggly lines. Inside the *tazon* was a complete wooden spoon (15.2cm long) decorated with a carved camelid on the end of the handle, and a broken red-slipped pitcher.²⁷⁵ The rim and handle were broken off, much of the slip was eroded and it was decorated with a geometric pattern. Finally, there was a broken two handled *olla*²⁷⁶ with soot on the exterior and burning marks on the interior. Over the mouth of the *olla* was an incomplete gourd vessel acting as a lid.

²⁷³ Height 11.3, Rim Diameter 8cm, Base Diameter 6cm.

²⁷⁴ Height 7.2cm, Rim Diameter 13cm, Base Diameter 8cm.

²⁷⁵ Height 6cm, Base Diameter 4cm.

²⁷⁶ Height 12.5cm, Rim Diameter 9cm, Base Diameter 7cm.

APPENDIX C (continued)

M1-482
Tomb 583
0 1cm

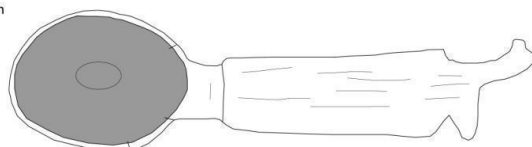
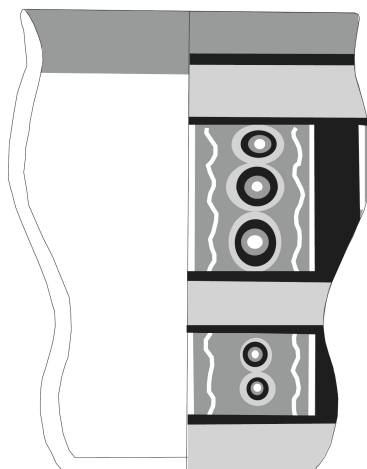


Figure 209. Wooden spoon, located inside *tazon*, Tomb 583.

M1-483
Tomb 583
0 1cm



M1-483
Tomb 583
0 1cm

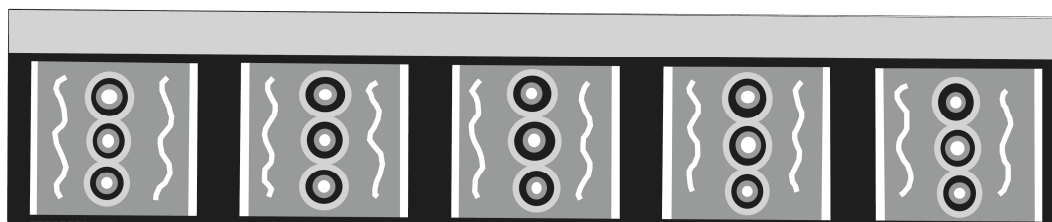
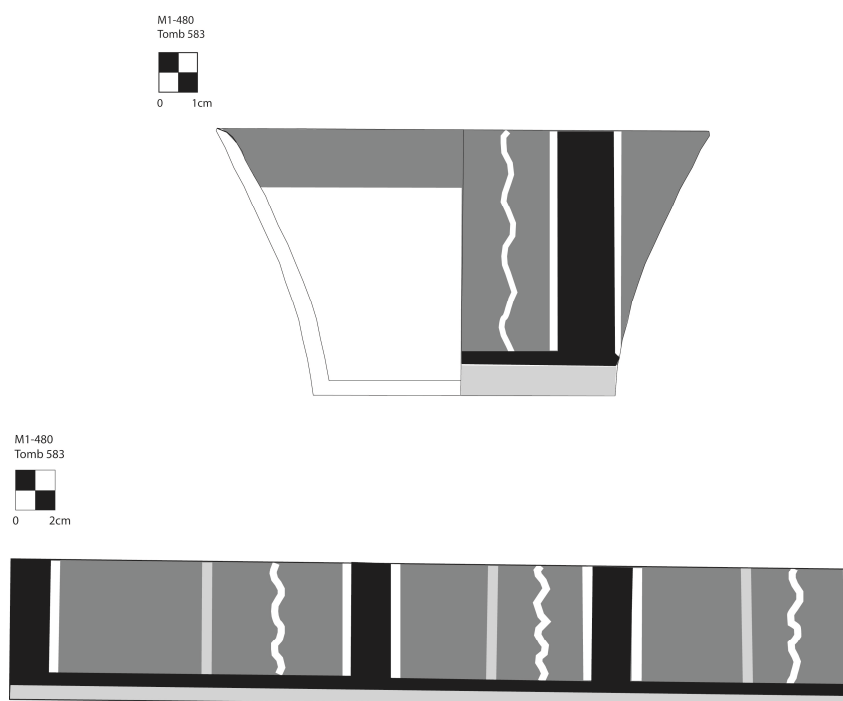
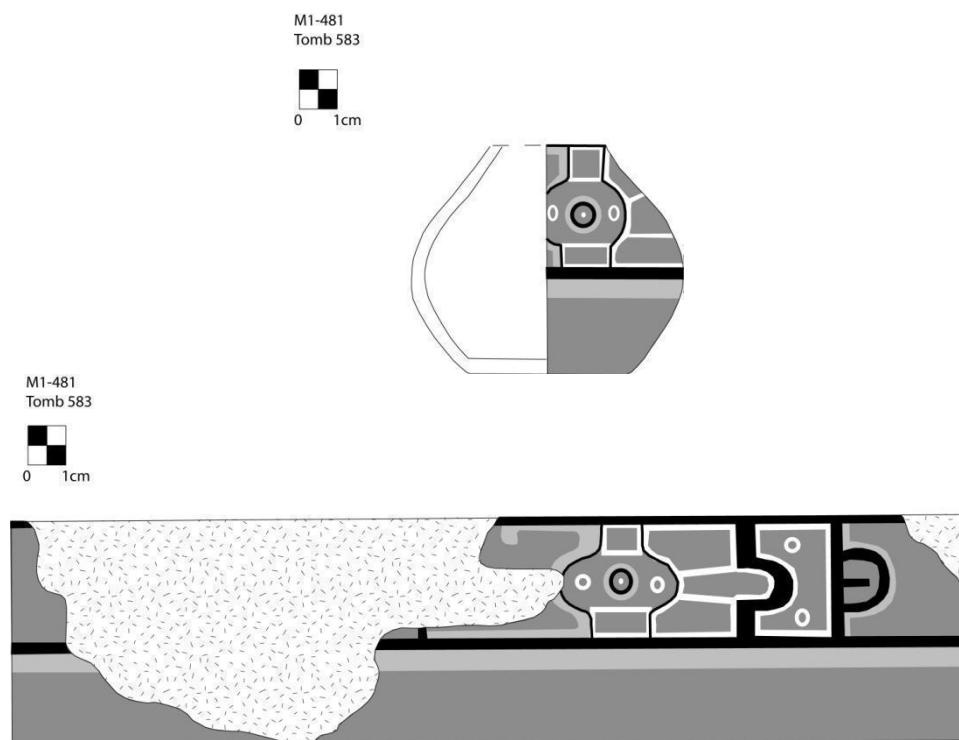
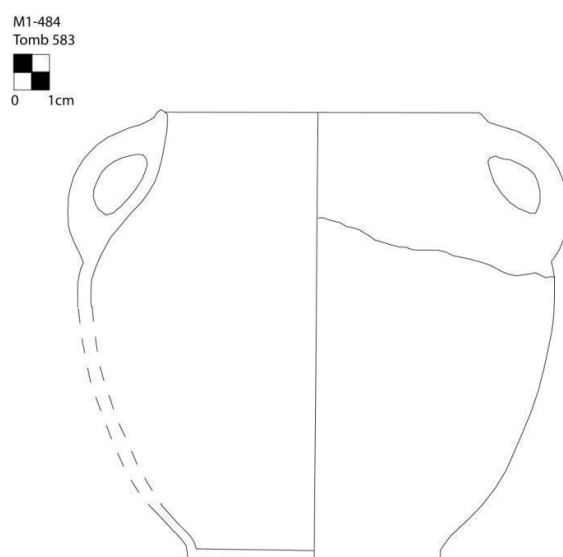


Figure 210. Dark red-slipped cup, Tomb 583.

APPENDIX C (continued)

Figure 211. Reddish brown-slipped *tazon*, Tomb 583.

APPENDIX C (continued)

Figure 212. Broken pitcher, located inside *tazon*, Tomb 583.Figure 213. *Olla*, Tomb 583.

APPENDIX C (continued)

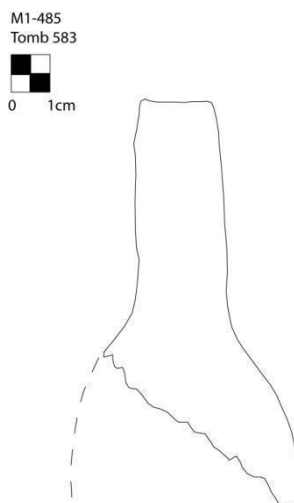


Figure 214. Incomplete gourd vessel, placed on-top of the *olla*, Tomb 583.

Tomb 584 (2002)

Tomb 584 was an intact stone lined cist in unit 73. The cap consisted of long stones mortared into place. The mouth was made of stones and mortar, and measured 50 by 48cm. The floor was untreated with a diameter of 57cm. The tomb was 90cm deep. It contained the skeleton of a female, aged 50-59 years. The female had tabular cranial modification, dental wear and caries, pre-mortem dental loss, caudal shift and demonstrated considerable robusticity on the left side. The individual was in a flexed position, facing southeast and was held in position with fiber ropes (not available for analysis).

Tomb 562 (2002)

Tomb 562 was an intact stone lined cist in unit 77. The cap was one stone mortared into place. The stone and mortar mouth measured 37 by 42cm. There was a flat stone on the floor, which had a diameter of 30cm. There four stone courses with mortar, and the tomb was 69cm deep. The field form records the presence of the poorly preserved skeleton of a child, facing east sitting on the flat stone but these remains were not available for analysis.

Tomb 548 (2002)

Tomb 548 was an intact stone lined cist in unit 79. The cap was one stone mortared into place. The stone and mortar mouth measured 28 by 26cm. There was a flat stone on the floor which had a diameter of 20cm. There were three stone courses with mortar and the tomb was 70cm deep. The field form notes the mummy of a child facing east, but these remains were not available for analysis.

APPENDIX C (continued)

Tomb 582 (2002)

Tomb 582 was an intact stone lined cist in unit 80. The cap consisted of a single stone mortared into place. The mouth was made of stones and mortar and measured 38 by 31cm. There were four stones courses with mortar in-between. A flat stone was placed on the floor, which had a diameter of 40cm. The tomb was 70cm deep. According to the field form there were the poorly preserved remains of a child oriented toward the east, but these remains were not available for analysis. A small one handle pitcher²⁷⁷ was interred with the child. The exterior surface was heavily eroded, but the vessel had originally had a black slip and the surface was polished. No traces of decorative motif were visible.

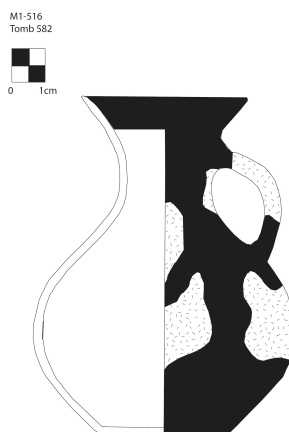


Figure 215. One-handed pitcher, Tomb 582.

Tomb 631 (2002)

Tomb 631 was an intact stone lined cist in unit 102. A single stone mortared in placed acted as the capstone, the mouth measured 33 by 29cm and was made of stones and mortar. There were three stone courses with mortar. The field drawing indicates two stones on the floor, which measured 40 by 45cm. The tomb was 59cm deep. The field form notes the presence of poorly preserved remains of a child, in a flexed position facing east. These remains were not available for analysis. Two ceramic vessels were recovered from the tomb, a light red-slipped coca cola bottle shaped *kero*,²⁷⁸ and a red-slipped *tazon*.²⁷⁹ The decoration on both was geometric

²⁷⁷ Height 10.1cm, Rim Diameter 4cm, Base Diameter 5cm, Neck Height 2.5cm.

²⁷⁸ Height 16.9cm, Rim Diameter 12cm, Base Diameter 7cm.

²⁷⁹ Height 6.9cm, Rim Diameter 14cm, Base Diameter 8cm.

APPENDIX C (continued)

and ‘simple.’ The *kero* had black step-stair motifs outlined in orange, and the *tazon* had a pattern of vertical straight and wiggly lines repeated three times.

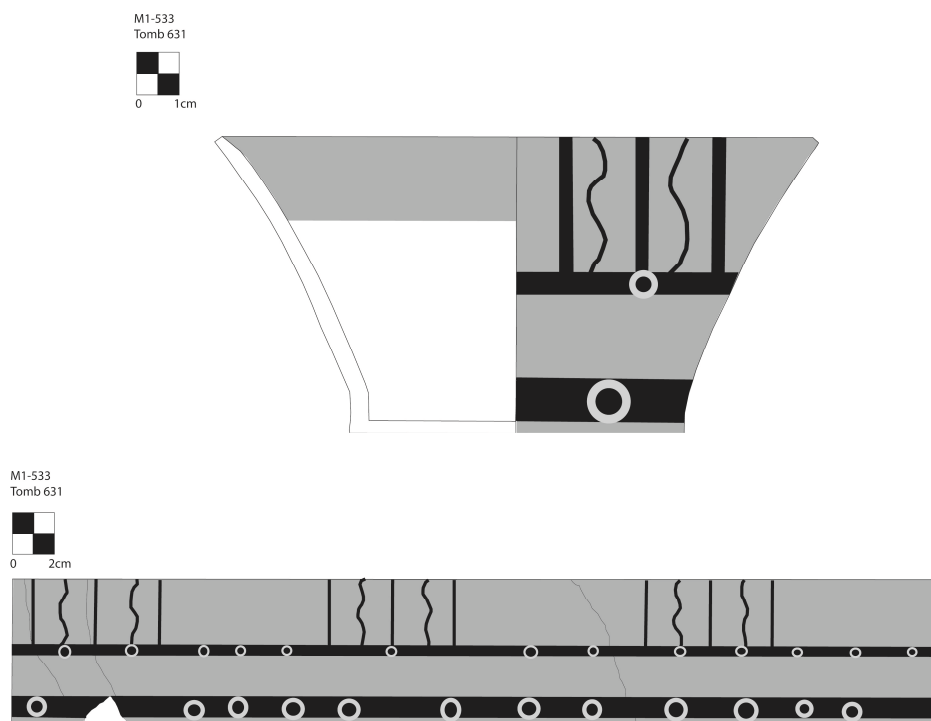


Figure 216. Red-slipped *tazon*, Tomb 631.

APPENDIX C (continued)

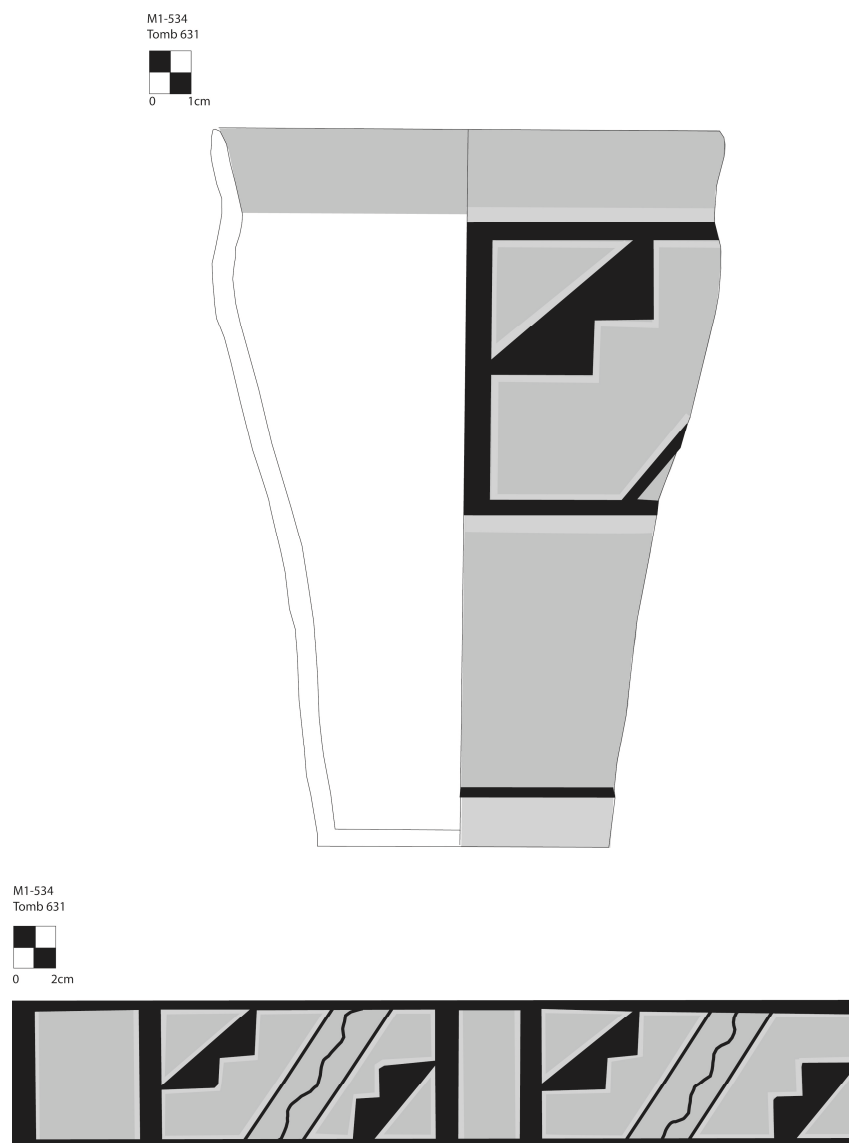


Figure 217. Light red-slipped 'coca-cola bottle' *kero*, Tomb 631.

APPENDIX C (continued)

Tomb 585 (2002)

Tomb 585 was an intact stone lined cist²⁸⁰ in unit 108. There was no capstone. The mouth was made of stones and mortar and measured 78 by 75cm. The floor measured 50 by 45cm. There were four stone courses, and the tomb was 95cm deep.

The field form records the presence of the poorly preserved skeleton of an adult, but this was not available for analysis.

Two small ceramic vessels were recovered from the tomb. One was a miniature coca cola bottle shaped *kero*,²⁸¹ with a red slip decorated with black step stair motifs and geometric spirals. The other vessel was a small red-slipped one handled pitcher.²⁸² The handle had broken off and the step-stair and circular motifs were largely obscured by burning stains. There was also an incomplete wooden spoon decorated with a geometric pattern of incised triangles within rectangles.

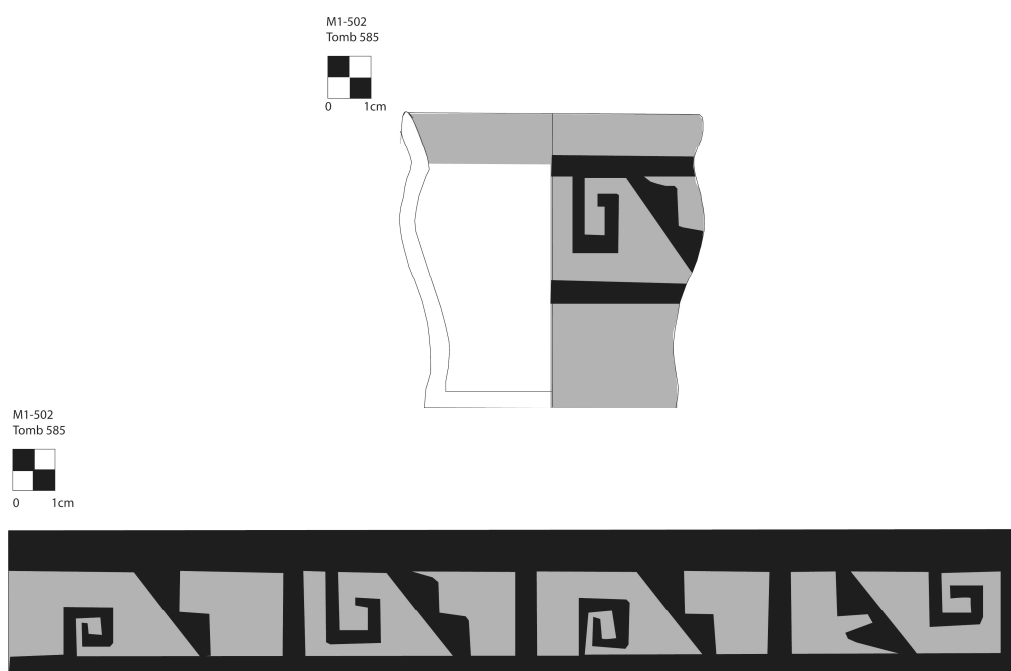


Figure 218. Mini 'coca-cola bottle' shaped *kero*, Tomb 585.

²⁸⁰ Intact according to the draft report, disturbed in antiquity according to the field form

²⁸¹ Height 7.2cm, Rim Diameter 7cm, Base Diameter 6cm.

²⁸² Height 11.9cm, Rim Diameter 7cm, Base Diameter 6cm.

APPENDIX C (continued)

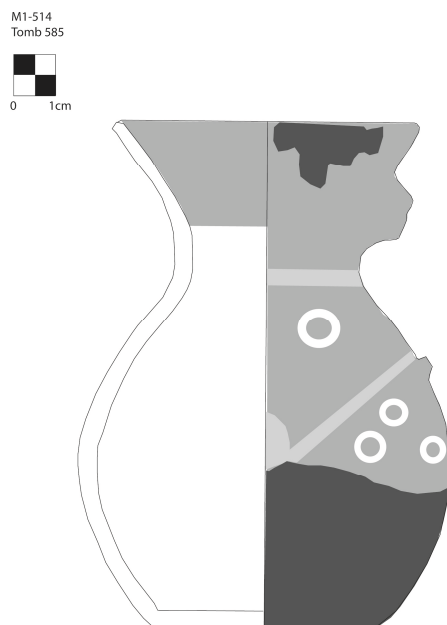


Figure 219. Red-slipped pitcher, Tomb 585.

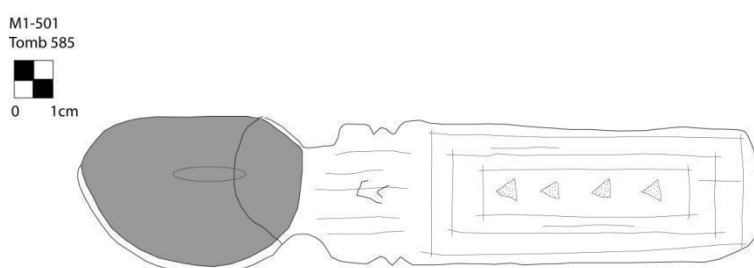


Figure 220. Wooden spoon, Tomb 585.

Tomb 589 (2002)

Tomb 589 was an intact stone lined cist in unit 129. The cap was stone and mortar, as was the mouth which had a diameter of 40cm. The floor was prepared with flat stones and had a diameter of 30cm. There were two stone courses and the tomb was 44cm deep. The field form recorded the presence of very disturbed remains of a child, but these were not available for analysis.

APPENDIX C (continued)

Tomb 607 (2002)

Tomb 607 was an intact stone lined cist in unit 137, with a cap consisting of a single stone and mortar. The mouth measured 44 by 30cm, and was made of stone and mortar. There was a flat stone on the floor of the tomb, which measured 46 by 35cm. There were three stone courses with mortar in-between and the tomb was 70cm deep. According to the field form, there were poorly preserved remains of a child facing east, but these were not available for analysis.

Tomb 608 (2002)

Tomb 608 was an intact stone lined cist in unit 138. A single stone mortared into place acted as a cap, the mouth was made of stones and measured 30 by 35cm. The floor consisted of packed earth and measured 26 by 22cm. There were three stone courses and the tomb was 59cm deep. The field form records the presence of very poorly preserved remains of a fetal individual but these were not available for analysis.

Tomb 609 (2002)

Tomb 609 was an intact stone lined cist in unit 138. There was a cap of stones and mortar, the mouth measured 63 by 40cm and was also made of stones and mortar. There was a flat stone on the floor, which measured 50 by 24cm. There was one stone course and the tomb was 46cm deep. The field form records the presence of the poorly preserved skeleton of a child, but this was not available for analysis.

Tomb 663 (2002)

Tomb 663 was an intact stone lined cist in unit 153. The cap consisted of a single stone mortared into place. The mouth measured 30 by 30cm and was made of stone and mortar. A flat stone was placed on the floor, which had a diameter of 40cm. There were four stone courses and the tomb was 73cm deep.

It contained the skeleton of a juvenile aged 6 years +/- 9 months, of undetermined sex. The child had probable tabular cranial modification. The juvenile had active cribra orbitalia in the right orbit, active and healed macro and microposity in the lamboid suture, both parietals and the occipital bone, a lytic lesion in the right humerus and slight dental wear. The juvenile was oriented toward the east.

Tomb 666 (2002)

Tomb 666 was an intact stone lined cist²⁸³ in unit 153. There was no capstone. The mouth was made of stones and mortar with a diameter of 40cm. The floor was un-prepared and had a diameter of 45cm. There were four stone courses with mortar, and the tomb was 79cm deep.

It contained the very poorly preserved skeleton of an adult, sex and exact age undetermined. Neither cranial modification nor pathologies could be observed. The individual was in a flexed position facing east.

Two red slipped ceramic vessels were interred with the individual. One was a cup²⁸⁴ decorated with black step-stair motifs, outlined in white and orange, and white and orange

²⁸³ Intact according to the draft report, disturbed in antiquity according to the field form.

APPENDIX C (continued)

circles. There were some burning stains on the interior of the vessel. The other vessel was a *tazon*²⁸⁵ decorated with three birds, possibly eating. Four repair holes were present around a crack in the vessel. Several fragments of a wooden spoon were also recovered from the tomb.

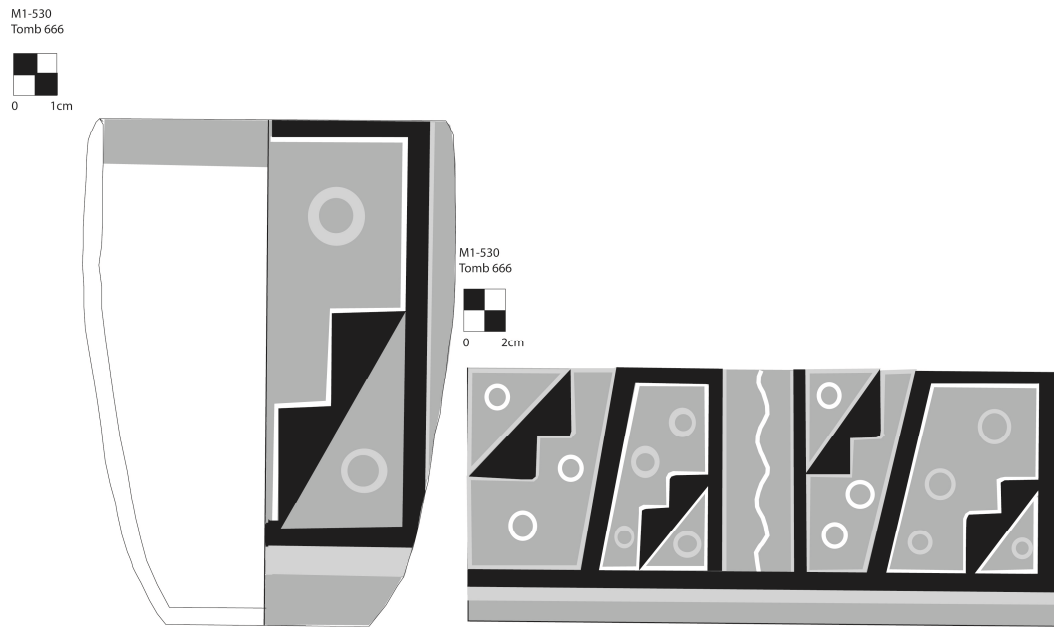
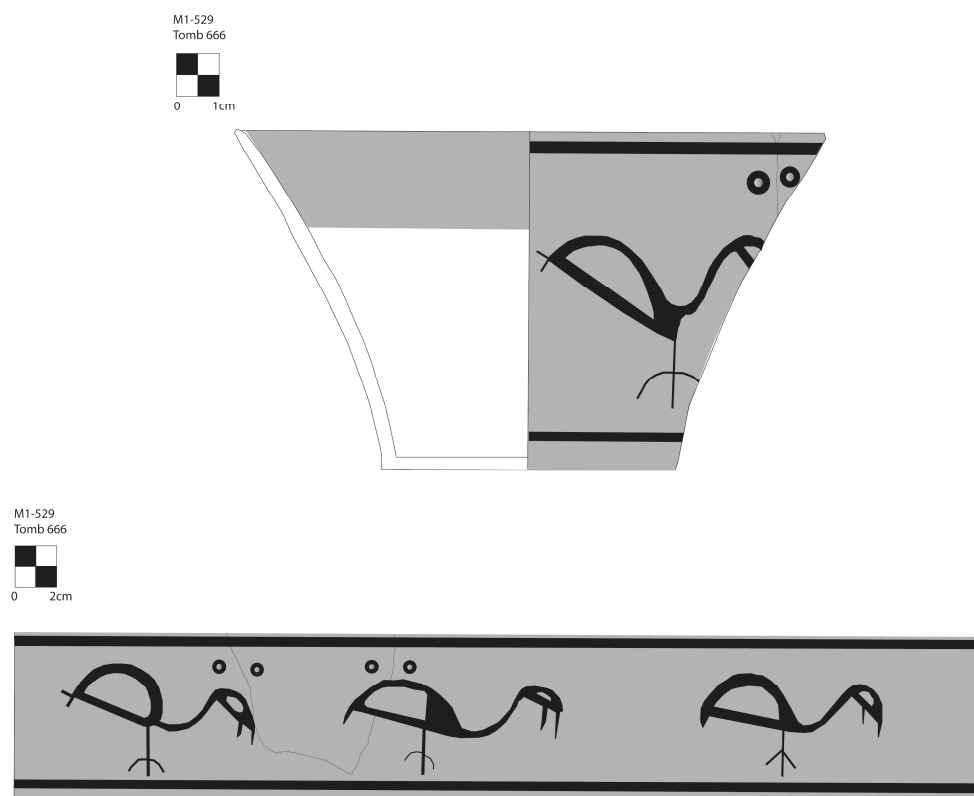


Figure 221. Wari style cup, with Tiwanaku step-stair motif, Tomb 666.

²⁸⁴ Height 12.1cm, Rim Diameter 9cm, Base Diameter 5cm.

²⁸⁵ Height 8cm, Rim Diameter 14cm, Base Diameter 7cm.

APPENDIX C (continued)

Figure 222. Red-slipped *tazon* with repair holes, Tomb 666.***Tomb 655 (2002)***

Tomb 655 was an intact stone lined cist in unit 155. A single stone acted as a cap, the mouth was stone and mortar and had a diameter of 40cm. There was a flat stone on the floor, which had a diameter of 35cm. There were three stone courses and the tomb was 69cm deep. It contained the poorly preserved remains of an adult, and some fragments of textile. Neither the human remains nor the textile were available for analysis.

Tomb 753 (2002)

Tomb 753 was a partially intact stone lined cist in unit 171. There was no capstone, the mouth was made of stones and mortar and measured 50 by 60cm. The floor was unprepared and had a diameter of 50cm. There were four stone courses and the tomb was 50cm deep. It contained the fragmentary remains of a juvenile aged 7-8 years, of undetermined sex. Neither

APPENDIX C (continued)

cranial modification nor pathologies could be analyzed. There was a plainware *olla*²⁸⁶ buried with the juvenile. The paste was of a medium texture. There was no slip or decoration, and the exterior was covered in soot. One handle was broken off.

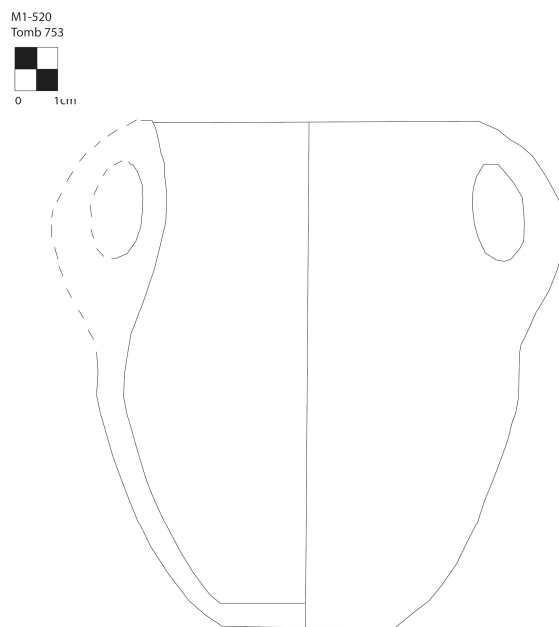


Figure 223. *Olla*, Tomb 753.

Tomb 755 (2002)

Tomb 755 was a stone lined cist²⁸⁷ in unit 192. There was no capstone, the mouth was made of stones and mortar, with a diameter of 85cm. The floor was unprepared and had a diameter of 60cm. There were three stone courses with mortar and the tomb was 97cm deep.

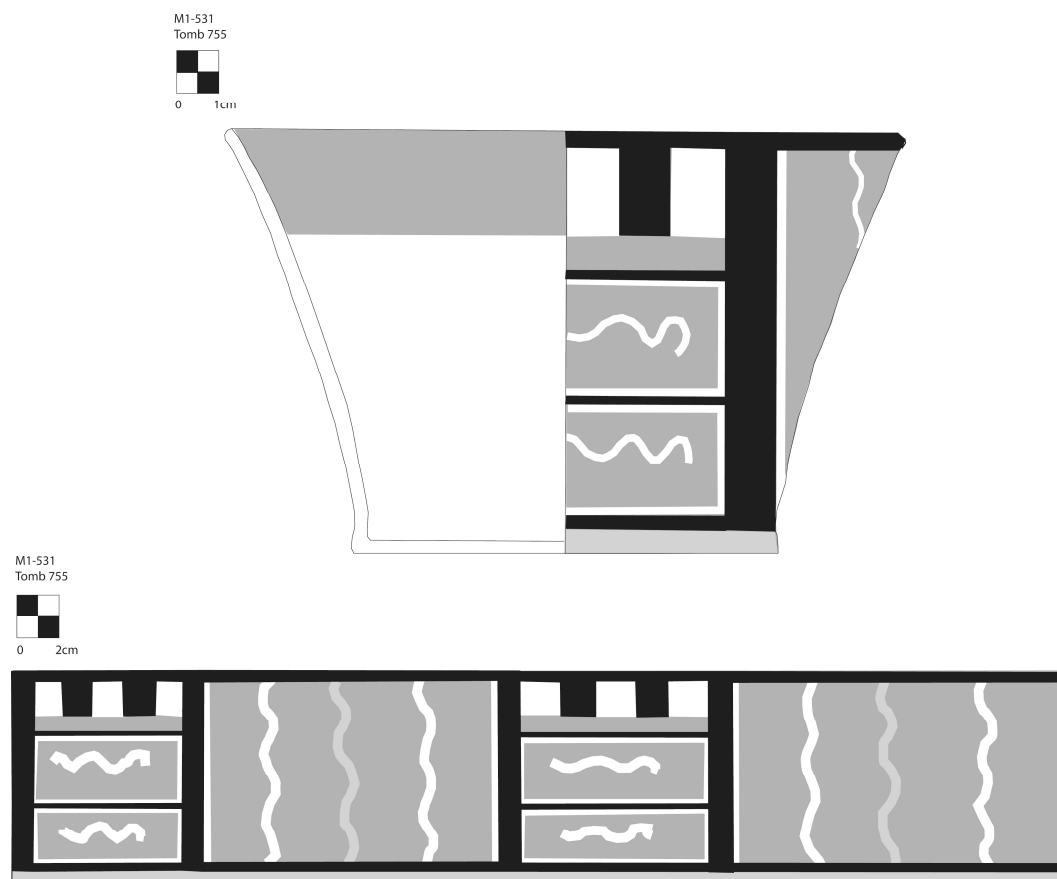
The field form records the presence of the remains of an adult but these were not available for analysis.

A red-slipped *tazon*²⁸⁸ and a dark red slipped coca cola bottle shaped *kero*²⁸⁹ were interred in the tomb. The *tazon* was decorated with wiggly lines and geometric blocks, the *kero* with step stair motifs and white crosses.

²⁸⁶ Height 12cm, Rim Diameter 8cm, Base Diameter 4cm.

²⁸⁷ Intact according to the draft report, disturbed in antiquity according to the field form.

APPENDIX C (continued)

Figure 224. Red-slipped *tazon*, Tomb 755.

²⁸⁸ Height 10cm, Rim Diameter 16cm, Base Diameter 10cm.

²⁸⁹ Height 16.3cm, Rim Diameter 12cm, Base Diameter 8cm.

APPENDIX C (continued)

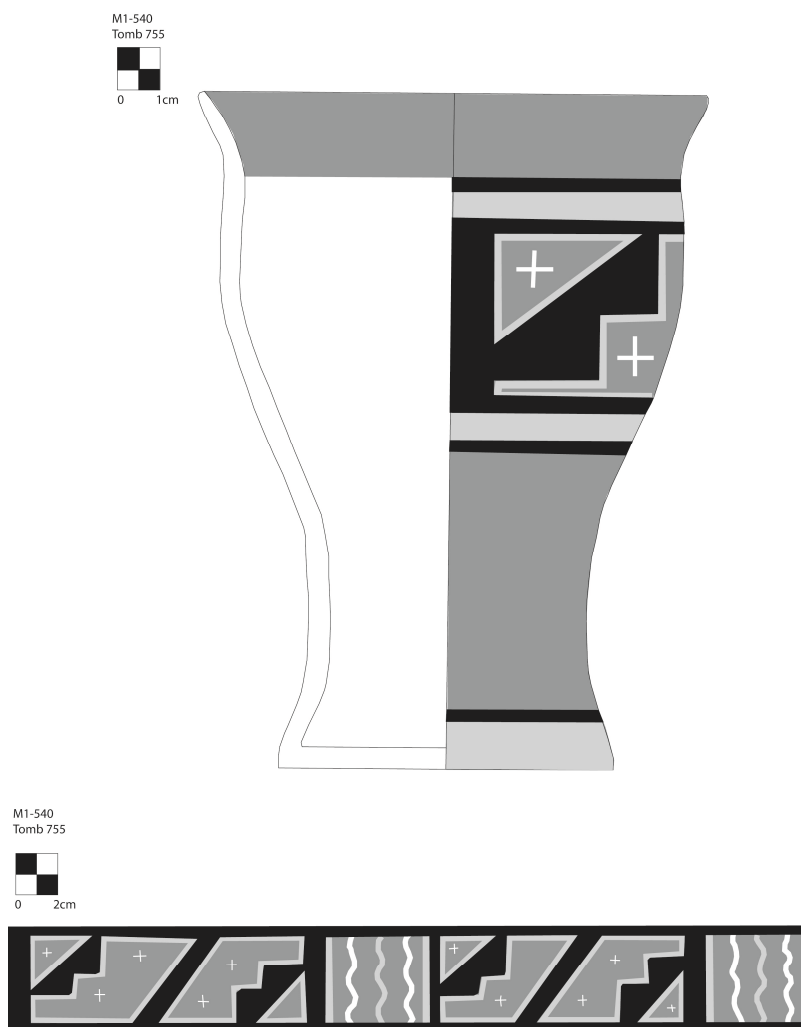


Figure 225. Red-slipped 'coca-cola bottle' shaped *kero*, Tomb 755.

Tomb 1104 (1995)

Tomb 1103 was a pit burial located near the northern limit of trench 36-1. It contained the skeleton of a middle adult, a probable female. Cranial modification could not be observed. The female had dental caries and pre-mortem dental loss, an almost healed fracture in the right radius. There was evidence for arthritis in the hands, osteoporosis and very strong muscle attachments in the humeri, especially the right one.

APPENDIX C (continued)

Non-diagnostic, un-slipped ceramic sherds made of a medium textured paste with signs of reduction were recovered. There were fragments of a warp faced woolen *frazada*. The wool in the warp was brown, the weft threads were constructed by spinning brown and honey colored threads together. Lengths of braided and S twisted fiber rope were also found.

Tomb 1134 (1995)

Tomb 1134 was a pit burial near the center of trench 36-2. Human remains are recorded for the burial but they were not available for analysis. The small size of the grave suggests that it was created for an infant or young child.

Two red-slipped ceramic sherds were recovered. One was from the rim of a vessel, possibly a *tazon*²⁹⁰ that was notable for having been decorated on the interior rather than the exterior. The decoration appeared to be black semi circles.

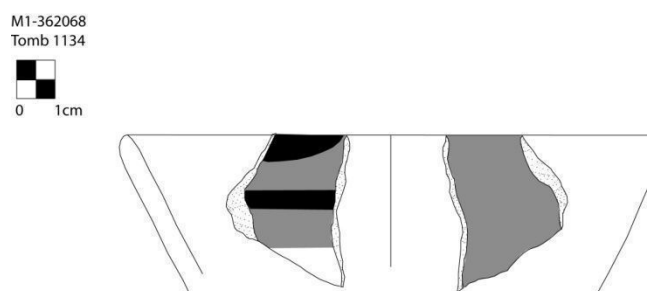


Figure 226. Rim fragment, possibly from a *tazon*, Tomb 1134.

Tomb 1098 (1995)

Tomb 1098 was an intact stone lined cist, located on the southern limit of trench 36-1. It contained the skeleton of a child, aged 3 years +/- 6 months, of undetermined sex. There was no cranial modification. The child had periostitis in one tibia and dental caries and slight wear. Fragments of a brown woolen *manta*, spun ZS and woven in a warp faced pattern were recovered.

Tomb 1099 (1995)

Tomb 1099 was an intact stone lined cist located in the southeastern corner of trench 36-1. It contained the skeleton of an infant, aged 12 months +/- 3 months, of undetermined sex. Cranial modification could not be observed. There was active porotic hyperstosis in the parietals, hypervascularization in the muscle attachments of both femurs, although no evidence of cloacas to

²⁹⁰ Rim Diameter 14cm.

APPENDIX C (continued)

suggest osteomyelitis. The femurs and tibias were both enlarged. Braided and knotted fiber rope was also recovered from the tomb.

APPENDIX D

BIOARCHAEOLOGICAL ANALYSIS OF HUMAN REMAINS FROM CHEN CHEN **Análisis Bioarqueológico de los restos óseos procedentes del sitio Chen-Chen (M1-02 y M1-95C)**

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INTRODUCCIÓN

El presente informe presenta los resultados del análisis de los restos óseos humanos que corresponden a 129 individuos que se encontraban en el Museo Contisuyo, ubicado en la ciudad de Moquegua. El presente análisis fue realizado en base al pedido de la candidata a doctorado Nicola O'Connor Sharratt. Los restos analizados pertenecen temporalmente al periodo Horizonte Medio y a la ocupación Tiwanaku en el valle de Osmore, Moquegua. El objetivo de este análisis es dar a conocer el componente bioantropológico de la evidencia ósea, e integrar la misma a la información arqueológica.

Los materiales fueron recibidos en cajas grandes y/o medianas, las cuales contenían de uno a tres individuos –en escasos casos 4 individuos dependiendo de si eran adultos, sub-adultos o del tamaño de la caja. Cada individuo se encontraba adecuadamente embalado. Si bien los datos de campo reflejaban el registro de un individuo se tuvo el cuidado de evaluar e identificar todos los restos óseos humanos para detectar duplicidad de elementos y así estimar el número mínimo de individuos (NMI²⁹³). Sin embargo, sólo en algunos casos se obtuvo el NMI mayor a 1, en cuyo caso se procedió a numerar los demás individuos añadiendo una letra al número de inventario (ejemplo: 12A, 12B, 14A, 14B, etc.)

1.- METODOLOGÍA

El análisis bioarqueológico consistió en determinar el perfil biológico de todos los individuos mediante una serie de observaciones macroscópicas del tejido óseo dirigidas a estimar la edad y sexo de los individuos e identificar lesiones paleo-patológicas. Además, se realizaron análisis dentales completos con la finalidad de evaluar aspectos tales como salud e higiene dental.

1.1.- Determinación de Sexo

En el presente análisis osteológico se observaron diferentes indicadores de dimorfismo sexual, mediante la aplicación de métodos no-métricos (morfológicos), expuestos en diferentes textos especializados (W. Bass, 1995; Bennett, 1993; Black, 1978; Brothwell, 1981; J. Buikstra and D. Ubelaker, 1994; Hillson, 2005; Isçan and Miller-Shaivitz, 1986; Krogman and Isçan, 1986; Phenice, 1969; Saunders and Yang, 1999; Stewart, 1979; Ubelaker, 1978; White, 2000).

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²⁹³ NMI: número mínimo de individuos.

APPENDIX D (continued)

No existe consenso respecto a qué métodos, algunos mejor evaluados que otros, son más confiables y por ende aplicables al momento de determinar el sexo en individuos de procedencia arqueológica; en cuya estimación incluso resultados con un 75% de confiabilidad son ampliamente aceptados²⁹⁴ (Black, 2000). La elección y aplicabilidad del método dependerá del estado de conservación del material óseo (presencia/ausencia, fragmentación y/o erosión)²⁹⁵, de las condiciones patológicas²⁹⁶ presentes en el tejido óseo, del estado de desarrollo del individuo (si se trata de un adulto o sub-adulto), e igualmente de cuán representativos son los indicadores de dimorfismo sexual dentro de la población estudiada. Se asume, por ejemplo, que ciertos indicadores de dimorfismo sexual entre poblaciones procedentes de diferentes áreas geográficas se diferenciarán ligeramente entre sí, lo cual pone en discusión cuán acertados son los métodos aceptados y usados por la academia en la compilación del perfil biológico de nuestras poblaciones. E incluso, retomando el punto antes mencionado, dentro de un mismo grupo social se pueden evidenciar superposiciones –en términos de morfología esquelética, entre ambos segmentos sexuales, ya sea debido a la presencia de esqueletos masculinos con rasgos morfológicos (tamaño y forma) usualmente adscritos al segmento femenino o viceversa. Indudablemente, una errónea determinación del sexo tiene efectos significativos en la estimación de otras características biológicas tales como la edad del individuo y estudios paleodemográficos, por dividir varios de los métodos normalmente usados sus criterios en base al sexo.

La estimación del sexo en individuos sub-adultos no fue llevada a cabo, primero por contar éstos con una morfología esquelética sólo evaluable a partir de la pubertad y en segundo lugar, por la escasa confiabilidad de posibles indicadores de dimorfismo sexual presentes en el esqueleto. En términos biológicos, la línea divisoria entre inmadurez (sub-adultos) y madurez (adultos) pareciera darse dentro de un rango de 15 a 18 años de edad. Según Krogman *et al.*, en individuos menores a dicho rango de edad la estimación del sexo –a partir de la observación de indicadores morfológicos y métricos, tiene una confiabilidad no mayor a un 50% (Krogman and Isçan, 1986). Por lo tanto, en el caso de individuos sub-adultos, sólo el análisis cromosómico genético provee de una estimación confiable al 99.9% del sexo.

En términos morfológicos, el dimorfismo sexual se expresa en algunos huesos o regiones anatómicas consideradas como diagnósticas y confiables para determinar el sexo de un individuo adulto. Por ejemplo, la cintura pélvica –cuya morfología está directamente relacionada al proceso del parto–, o el cráneo –evaluado de acuerdo a la mayor o menor robustez de los rasgos

²⁹⁴ Black enfatiza que una confiabilidad de 75%, considerada en el ámbito arqueológico como alta, es inaceptable dentro del campo forense donde se esperan cifras por sobre el 90% de confiabilidad (Black, 2000).

²⁹⁵ El mal estado de conservación de una muestra osteológica no sólo conlleva a la ausencia de piezas óseas sino también obstruye considerablemente la observación de criterios dimórficos en el esqueleto.

²⁹⁶ Como lo denotan Saunders y colegas, la formación de nuevo tejido óseo en la superficie periosteal del hueso en individuos femeninos adultos puede erróneamente ser interpretado como un criterio morfológico masculino (Saunders and Yang, 1999).

APPENDIX D (continued)

considerados-. Ambos constituyen las dos regiones anatómicas más confiables para llevar a cabo la evaluación morfológica del sexo en un individuo. La pelvis adulta nos permite estimar el sexo de un individuo con incluso un 95% de confiabilidad. Mientras que el cráneo nos provee de una confiabilidad no mayor a un 80% (Krogman and Isçan, 1986). Ciertamente, los indicadores morfológicos observables en el cráneo dependerán también de la edad del individuo, siendo mucho más pronunciados pasada la pubertad y claramente afectados por cambios durante la adultez tardía. Por otra parte, el corpus de criterios morfológicos diagnósticos pueden variar de población en población (Brothwell, 1981). Es decir, los indicadores más diagnósticos varían en términos de confiabilidad y aplicabilidad entre una población y otra. Consecuentemente, la evaluación de cada criterio dentro de la población estudiada proveerá primero la posibilidad de definir qué indicadores deben ser reconocidos como típicos de un individuo masculino o femenino, y en segundo lugar, permitirá determinar qué indicadores morfológicos son más representativos y por ende confiables dentro de dicha población de estudio.

El conjunto de indicadores morfológicos considerados en el presente análisis se ilustran en la tabla XII.

En el caso de la muestra analizada, los indicadores morfológicos tradicionales para el cráneo, basadas en la mayor o menor gracilidad de los rasgos considerados, parecen corresponder sin sobreponerse a las categorías sexuales consideradas (Table XIII). Dentro de la categoría Femenina existen dos divisiones donde se encuentran los individuos clasificados como Femeninos o Femeninos Probables. Mientras que en la categoría masculina se encuentran los clasificados como Masculinos o Masculinos Probables. La clasificación “probable” se refiere a que existen algunos indicadores morfológicos que hacen posible la clasificación del individuo como masculino –o femenino- pero ya sea por la fortaleza significativa del rasgo usado o por la débil conformación morfológica del rasgo o el estado de conservación de los restos, su clasificación sexual se ubica en la categoría “probable”. Por otro lado, la categoría indeterminado, se refiere a la falta de potencial diagnóstico que muestran las características morfológicas del cráneo o la pelvis, por lo que se ha visto necesario ponerlo como indeterminado ya que ninguna característica hace pensar su mejor clasificación dentro de la categoría masculina o femenina. Finalmente, la categoría no observable se refiere a que, ya sea por el estado de conservación o pérdida de segmentos morfológicos diagnósticos para determinar el sexo del individuo, no se ha podido evaluar –observar- los rasgos morfológicos para estimar el sexo en el individuo.

Por otro lado, cuando la pelvis y/o el cráneo están ausentes o sólo parcialmente presentes, se suelen utilizar los huesos largos para determinar el sexo del individuo exhumado, a partir de la observación de indicadores morfológicos, conjuntamente con la aplicación de métodos métricos; siendo el fémur el hueso mayormente analizado (Krogman and Isçan, 1986). En términos morfológicos las extremidades de un individuo masculino suelen ser mucho más largas, pesadas y con áreas más grandes de inserción muscular. E incluso el fémur masculino suele tener un cuerpo más largo, grueso y amplio, así como también una epífisis proximal y distal mucho más larga que su correspondiente femenino (Brothwell, 1981). Sin embargo, este método de estimación de edad no fue usado para esta muestra ya que en los casos de los individuos con sexo no observable no se contó con el fémur o la cabeza de fémur en buenas condiciones para efectuar las mediciones.

APPENDIX D (continued)

TABLE XII

DIFERENTES CARACTERÍSTICAS MORFOLÓGICAS DEL ESQUELETO
COMÚNMENTE UTILIZADAS PARA LA DETERMINACIÓN DE SEXO EN MUESTRAS
ARQUEOLÓGICAS

DETERMINACIÓN DEL SEXO: Indicadores Morfológicos		
Cintura Pélvica	Cráneo	Mandíbula
Arco Ventral (presencia/ausencia)	Glabella	Cuerpo
Ángulo Sub-púbico	Margen Supra-orbital	Rama
Escotadura Ciática Mayor	Arco Superciliar	Ángulo Gonial
Concavidad Sub- pública	Angulo Hueso Frontal	Proceso Alveolar
Surco Pre-auricular	Tuberosidad Frontal	Protuberancia Mentoniana
Acetábulo	Líneas Temporales	Escotadura Mandibular
Hueso Isquio-púbico	Proceso y Cresta Mastoidea	
Unión Sacro-iliaca	Surco Digástrico	
Sacro	Protuberancia y Cresta Occipital	
Cavidad Pélvica	Cóndilos Occipitales Línea Nucal	
Fuentes: (W. Bass, 1995; Bennett, 1993; J. Buikstra and D. Ubelaker, 1994; Ferllini, 2002; Krogman and Isçan, 1986; Phenice, 1969; Washburn, 1948; White, 2000)		

APPENDIX D (continued)

TABLE XIII

CATEGORÍAS DE CLASIFICACIÓN SEXUAL EMPLEADAS EN EL ANÁLISIS

DETERMINACIÓN DEL SEXO: Categorías		
Femeninos	Indeterminado	Masculino
Femenino		Masculino
Femenino Probable	Indeterminado	Masculino Probable
No Observable		
Fuentes: (W. Bass, 1995; Bennett, 1993; J. Buikstra and D. Ubelaker, 1994; Ferllini, 2002; Krogman and Isçan, 1986; Phenice, 1969; Washburn, 1948; White, 2000)		

1.2.- Estimación de la Edad

Dependiendo de la disponibilidad de restos óseos en la muestra arqueológica, así como del estado de madurez biológica alcanzado por el individuo al momento de morir, se aplican diferentes y variados métodos, basados en los cambios morfológicos que sufren los tejidos óseos, con la finalidad de estimar la edad del individuo (W. Bass, 1995; Rathbun and Buikstra, 1984). En el presente análisis se utilizan 12 categorías etarias para clasificar a los individuos, basado en Baker y colaboradores (2005) y Buikstra y Ubelaker (1994):

Como se aprecia en la tabla, los rangos de edad en individuos adultos están dados en intervalos de ocho a diez años hasta la edad de 46 años. Debido a lo complejo que resulta estimar la edad mediante la morfología ósea en individuos de avanzada edad, y por ende, a su escasa confiabilidad; los individuos por sobre los 46 años son categorizados como ‘adultos mayores’.

El rango de edad de ‘adultos jóvenes’ involucra cambios cruciales a nivel del esqueleto, por lo tanto, permite estimar la edad del individuo de forma mucho más precisa y confiable (Boylston, et al., 1998; Hillson, 2005; Rathbun and Buikstra, 1984). En el caso de sub-adultos, los criterios biológicos que permiten estimar la edad del individuo hasta un rango no mayor de 18 años, son: (1) El desarrollo dental (formación y erupción dental), (2) la aparición y fusión de los centros de osificación (unión de epífisis), y (3) el crecimiento de los huesos largos (expresado en longitud). Todos estos eventos siguen un desarrollo constante y cronológico, en el cual un cambio biológico lleva a otro. Por ejemplo, la dentición decidua es seguida por la formación y desarrollo de una dentición permanente.

De igual modo, las edades en las cuales los diferentes eventos biológicos toman lugar son conocidas –como por ejemplo la fusión de los centros de osificación; proporcionando con ello un método ampliamente evaluado a ser aplicado en el campo arqueológico. De este conjunto de métodos, es el desarrollo dental uno de los indicadores de edad de mayor confiabilidad, incluso mucho más que el desarrollo y fusión de los huesos largos, debido a que el crecimiento del hueso está mucho más afecto a factores extrínsecos tales como deficiencias en la dieta y el estado de salud, que la formación y erupción dental. Por lo tanto, los parámetros están supeditados a la

APPENDIX D (continued)

observación de la formación, erupción y recambio de las piezas dentales, a la fusión de los centros de osificación secundarios post-craneales, y al largo estimado de las diálisis de los huesos largos. Resultando idóneo, previa observación cabal de dichos parámetros de desarrollo, el establecimiento del rango de edad por medio de la identificación de dos variables claves: del evento de desarrollo más reciente que haya ocurrido y del próximo estadio de desarrollo todavía no alcanzado (Godoy Allende, 2004/2005; Rathbun and Buikstra, 1984).

TABLE XIV

CATEGORÍAS ETARIAS USADAS EN EL ANÁLISIS

CATEGORIA	EDAD
Feto	Meses gestacionales
Perinatal	Alrededor del nacimiento
Neonato	Primer mes de vida
Infante	Un mes a 11 meses de edad
Primera niñez	1 – 6 años
Segunda niñez	7 – 12 años
Pubertad	(M) 10-14 años y (H) 12-16 años
Adolescente	(M) 15-18 años y (H) 17-20 años
Adulto Joven	18 – 25 años
Adulto Joven-Medio	26 – 35 años
Adulto Medio	36 – 45 años
Adulto Mayor	46 + años

Contrariamente, las metodologías aplicadas para determinar la edad en individuos adultos proporcionan amplios rangos de edad, lo cual torna la estimación dificultosa y poco confiable. Gran parte de estos métodos no son aplicables a adultos por sobre los cincuenta años de edad (Black, 2000). Incluso, como bien lo ejemplifica Rathbun y Buikstra, la sínfisis púbica proporciona estimaciones de edad confiable en adultos medios y jóvenes. Sin embargo dentro de tales grupos, se advertiría una menor confiabilidad en la estimación de individuos femeninos que masculinos (Rathbun and Buikstra, 1984). Como alternativa, el análisis transicional propone una solución para salvar las principales críticas sobre los métodos anteriormente expuestos mediante

APPENDIX D (continued)

el uso de estimaciones de edad por medio de una serie de regresiones matemáticas (Boldsen et al. 2002).

Cabe mencionar que adicionalmente nuevos métodos han enfocado su atención en la micro-estructura del hueso, la cual está expuesta a resultados aleatorios de edad debido a la diferencia en términos de dieta, salud y bagaje cultural (Cox, 2000).

Table XV resume los diferentes métodos aplicados en la presente investigación, desarrollados y re-evaluados por diferentes investigadores.

De esta manera, el presente análisis ha usado preferentemente los métodos de estimación de edad más aceptados académicamente. En individuos sub-adultos se ha usado: la calcificación y erupción dental (Ubelaker), secuencia en la fusión de epífisis y largo de tibias), mientras que en los individuos adultos se ha utilizado la morfología de la sínfisis púbica (Suchey and Brooks) y la morfología de la superficie auricular (Lovejoy y colaboradores y Buckberry and Chamberlain). Cabe mencionar que en algunos casos los materiales presentes para el análisis no eran suficientes para otorgar un rango de edad confiable por ninguno de los métodos mencionados.

Ya sea por problemas de conservación, fragmentación del material, o por ausencia de los segmentos diagnósticos. En estos casos, la observación general de los restos nos permitió hacer una estimación general de la edad y donde se usaron las categorías: Sub-adulto, Adulto, Infante, Niño o Púber. Cabe resaltar, que la base de datos de Microsoft Excel, que se adjunta al presente informe, consigna las edades estimadas y los métodos usados para llegar a la estimación consignada.

APPENDIX D (continued)

TABLE XV

MÉTODOS DE ESTIMACIÓN DE EDAD EVALUADOS Y DISPONIBLES PARA ADULTOS Y SUBADULTOS

Estimación de la Edad		
Rango de Edad	Criterios Biológicos & Métodos de Estimación	Desarrollados & Re-evaluados por:
Edad Fetal	Longitud de huesos largos	Fasekas-Kósa 1966; Stewart 1979
Neonatos – 1 año de edad	Desarrollo Inmaduro <ul style="list-style-type: none"> Anillo y Lámina Timpánica Sínfisis Mandibular Sutura Metódica y Fontanelas Hueso Occipital 	Redfield 1970; Krogman et al. 1986; Gray's Anatomy 1959; Weaver 1979; Stewart 1979; Black & Scheuer 2000.
Infantes Juveniles	Desarrollo Dental <ul style="list-style-type: none"> Formación Dental Erupción Dental 	Moorrees et al 1963; Schour & Massler 1944; Gustafson & Koch 1974; Hillson 1996.
	Aparición y Fusión de diferentes Centros de Osificación <ul style="list-style-type: none"> Unión Epifiseal de los Huesos Largos Otros Centros (como centros secundarios) 	Stevenson 1924; Stewart 1934/1979; Krogman 1939; McKern & Stewart 1957; Rathbun et al 1984; Krogman & Iscan 1986.
	Crecimiento de los Huesos Largos <ul style="list-style-type: none"> Longitud de los Huesos Largos 	Maresh 1955; McKern & Stewart 1957; Allison 1982; Rathbun et al 1984; Krogman & Iscan 1986.
	Tamaño del Ilium en Infantes	Theya Molleson (unpublished); Tony Waldron 2005.
Adultos	Sínfisis Púlica <ul style="list-style-type: none"> Suchey-Brooks – desgaste de carillas. 	Suchey and Brooks 1986
	Superficie Auricular <ul style="list-style-type: none"> Graduando el desgaste de las carillas de articulación 	Lovejoy et al. 1977/ 1985; Meindly, Lovejoy & Mensforth 1980-81.
	Desgastes Dental <ul style="list-style-type: none"> Brothwell – Desgaste Molar / Smith - desgaste 	Brothwell 1985; Hillson 1996.
	Borde Estral de la 4ta. Costilla <ul style="list-style-type: none"> Iscan – Desgaste costo-esternal 	Iscan et al. 1984; Bass 1995
	Transition Analysis	Boldsen et al. 2002

APPENDIX D (continued)

1.3.- Análisis Paleopatológico

El análisis paleopatológico tiene por finalidad registrar, analizar e interpretar todo tipo de anomalía ósea presente en el esqueleto humano, bajo la premisa que todo desarrollo anormal del tejido óseo es resultado de un proceso patológico antemortem (Ortner, 2003). Sin embargo, sólo algunas condiciones patológicas o enfermedades dejan huellas en el hueso, el cual reacciona básicamente de dos formas: 1) adhiriendo nuevo tejido óseo por acción de los osteoblastos; o 2) removiendo tejido óseo por acción de los osteoclastos (Boylston, et al., 1998; Coughlan and Holst, 2000; Ortner, 2003). Consecuentemente, diferentes variaciones a nivel del tejido óseo permiten advertir la presencia o no de una patología: a) la formación anormal de hueso, 2) la destrucción anormal de hueso, 3) una densidad anormal del hueso, y 4) la forma o tamaño anormal del hueso (Ortner, 2003). Cabe advertir que un proceso destructivo a nivel del tejido óseo no sólo es causado por enfermedades (evento antemortem), sino también por eventos tafonómicos y/o modificaciones postmortem.

Las condiciones patológicas posibles de evidenciar en el tejido óseo suelen agruparse en las siguientes categorías: anormalidades congénitas y de desarrollo óseo, enfermedades metabólicas, enfermedades infecciosas, enfermedades infecciosas no-específicas, enfermedades articulares, condiciones vertebrales, enfermedades no-articulares relacionadas a actividad, traumas, patologías dentales y condiciones patológicas misceláneas (Aufderheide and Rodríguez-Martin, 1998; Ortner, 2003; Waldron, 2001, 2004/2005). Sin embargo, hemos considerado pertinente el uso de un protocolo ya establecido formalmente (Buikstra y Ubelaker 1994) y de su tipología agrupada en nueve categorías para la recolección de la información paleopatológica. Es así como consideramos las nueve categorías usadas en este informe de la siguiente manera: 1) anormalidades de forma, 2) anormalidades de tamaño, 3) pérdida de hueso, 4) formación anormal de hueso, 5) fracturas y dislocaciones, 6) hiperostosis porotica y criba orbitalia, 7) patología vertebral, 8) artritis, 9) condiciones misceláneas.

1.3.1.- Anormalidades de Forma

Las anormalidades de forma frecuentemente involucran varios huesos y consiste en la modificación de la estructura normal del tejido óseo. Dentro de esta categoría se dividen en anormalidades de forma en huesos largos, cráneo y columna vertebral. En el caso de los huesos largos se considera las curvaturas anormales, angulaciones o alteraciones en el contorno normal de las epífisis o diáfisis. Así mismo, se registran los grados de la anormalidad de forma (Ubelaker y Buikstra 1994). En el caso del cráneo, la *craneosinostosis*, o el cerramiento de la sutura de manera temprana, pueden cambiar la forma del cráneo. En la columna vertebral las anormalidades de forma están comprendidas por la anormal curvatura anterior –*kyphosis*– o curvatura lateral –*scoliosis*– de la columna vertebral. Generalmente estos cambios en la columna vertebral provocan fracturas por compresión de los cuerpos de vertebrae o anquilosis (Ubelaker y Buikstra 1994).

1.3.2.- Anormalidades de Tamaño

Dentro de las anormalidades de tamaño se encuentran la hidrocefalia y acondroplasia, que son ligados a desordenes del crecimiento y son generalmente raros en las colecciones óseas (Ubelaker y Buikstra 1994).

APPENDIX D (continued)

1.3.3.- Pérdida de hueso

La pérdida anormal de hueso para esta muestra está representada por la presencia de lesiones líticas en las diáfisis de huesos largos y la existencia de macroporosidades o microporosidades asociadas a las lesiones líticas o presentes de manera aislada.

1.3.4.- Formación anormal de Hueso

En el caso de esta muestra, la categoría de formación anormal de hueso estuvo comprendida por casos de periostitis. Periostitis es la inflamación de la membrana periosteal, que constituye la membrana de tejido conectivo que cubre las diáfisis de los huesos, sin embargo esta es un término puramente descriptivo y no un diagnóstico (Ortner 2003). La periostitis puede ser causada por una variedad de factores, incluyendo enfermedades por treponemas (e.g., osteoperiostitis o sífilis), infecciones bacteriales o parasitarias e infecciones micóticas (Ortner y Putschar 1985, Ortner 2003). La periostitis representa una respuesta inflamatoria básica, sin embargo, en inflamaciones más severas se hace presente la pus, expansión de la diáfisis de los huesos largos y la formación de cloacas -la cloaca es una apertura por donde el cuerpo drena la pus que es producto de la severa infección. Cuando existe la presencia de cloaca y ensanchamiento de la diáfisis se habla de una condición clasificada como osteomielitis (Larsen 2002: 83). Adicionalmente, las lesiones traumáticas pueden también llevar a una periostitis por la inflamación del tejido adyacente al evento traumático en el caso de fracturas o la inflamación de la zona afectada en el caso de golpes fuertes. En el caso de las fracturas complejas, que involucran la exposición del segmento óseo fragmentado y la rotura de la piel, la exposición de los tejidos blandos pueden hacerla propensa a la infección por patógenos externos que ingresan por la herida abierta, causando de esta manera la infección que causa la periostitis (Larsen 2002: 82-83, Aufderheide and Rodriguez-Martin 1998).

La condición activa de la periostitis está caracterizada por la presencia de tejido desorganizado, mientras que en el estado curado se caracteriza por una superficie más suave y ondulada que a su vez tiene pequeñas porosidades (Larsen 2002: 83). Las lesiones por periostitis pueden estar dispersas por varios elementos óseos, sin embargo, la periostitis generalmente no es fatal, a excepción de los casos de osteomielitis que pueden potencialmente involucrar los órganos vitales (Larsen 2002: 84). En muchos de los casos, el patrón de distribución de la periostitis nos puede ayudar a inferir la probable etiología de la lesión; sin embargo, no nos provee de un diagnóstico seguro para la causa de la lesión (Larsen 2002: 84).

1.3.5.- Fracturas y dislocaciones

Una fractura es la ruptura de la estructura ósea, ya sea de manera completa o incompleta de la continuidad por una fuerza extrínseca al cuerpo (Ortner and Putschar 1985). La evaluación de la frecuencia de fracturas y lesiones traumáticas en la muestra analizada nos puede dar información útil acerca del nivel general de stress físico o mecánico que comprenden las actividades realizadas por la población en estudio (Aufderheide and Rodriguez-Martin 1998). Más aún, nos provee con un esquema general del estilo y las condiciones de vida en las poblaciones del pasado, así como los niveles de violencia o lesiones causadas por accidentes que generalmente se relacionan a algún tipo de actividad (Larsen 2002).

APPENDIX D (continued)

1.3.6.- Hiperostosis porótica y criba orbitalia

Criba orbitalia es una lesión en el techo de las orbitas oculares que se cree un indicador de stress por anemia (Ortner and Putschar, 1985). Las bases para esta aseveración tiene bases fisiológicas ya que se infiere que es causado por un evento de stress anémico sufrido durante la primera niñez que resulta en la expansión del tejido hemapoietico que al encontrarse en un evento de anemia incrementa la producción de glóbulos rojos (Stuart-Macadam 1987, Aufderheide and Rodriguez-Martin 1998). Las categorías usadas para registrar esta lesión sigue las clasificación usada por Steinbock (1976:239): La de tipo *porótico* que es caracterizada por pequeños poros que se encuentran en la órbita; El tipo *cribótico*, que es caracterizada por poros más grandes y numerosos que tienden a coalescer en poros mas grandes; y finalmente el tipo trabecular que exhibe pequeños orificios que coalescen en agujeros más grandes que presentan patrones de distribución que se irradian de uno o mas centros dentro del techo de la órbita ocular. Adicionalmente, las lesiones de registraron en base a su estadio de actividad: active o curado al momento de la muerte del individuo. Cabe mencionar que en esta muestra solo se observó la presencia de lesiones de criba orbitalia del tipo porótico.

Las lesiones de criba orbitalia han sido tradicionalmente ligadas a una condición similar que se encuentra en la bóveda craneal, conocida como hiperostosis porótica, sin embargo, las dos condiciones no están ligadas a una enfermedad específica (Ortner and Putschar, 1985). The etiological association of these two bone pathologies has been confirmed by Stuart-Macadam (1987). La hiperostosis porótica se clasifica como la presencia de poros en la bóveda craneal – generalmente en la escama del occipital y parietales- debido a la hipertrofia de los tejidos formadores de glóbulos rojos de la sangre llamado diploe. (Aufderheide and Rodriguez-Martin 1998: 348-349). Las lesiones resultan de la expansion del diploe –un tejido hemapoietico- que puede ser ocasionado por una condición anémica hereditaria –raras y presents solo en el Viejo Mundo- o de anemias por deficiencias nutricionales, enfermedades infecciosas y/o parasitismo (Larsen 2002). En los casos mas severos, la hiperostosis porótica puede presentarse en la sutura coronal, en la parte central de los parietales, frontales o occipitales (Buikstra and Ubelaker 1994). La hiperostosis porótica en esta muestra solo está representada por pequeños poros que en algunos casos coalescen y engrosan la bóveda craneal. De la misma manera, el registro incluye la condición active o curada de las lesiones encontradas en la bóveda craneal y su ubicación.

1.3.7.- Patología Vertebral

Se clasifican como lesiones vertebrales en esta muestra a la presencia de osteofitosis, fracturas por compresión de los cuerpos de vértebras o nódulos schmorl's. Si bien es cierto, todas estas condiciones pueden estar relacionadas a la avanzada edad del individuo, también pueden estar presentes a temprana edad –Adultos jóvenes- debido a altos niveles de estrés localizados en la columna vertebral y causados por ciertas actividades físicas recurrentes. Por otro lado, los nódulos de schmorl's son depresiones en la superficie de los cuerpos de vértebras que ocurren debido a la presión del disco intervertebral en las superficies superiores o inferiores. Generalmente, los nódulos de schmorl's son asociados con otras formas de cambios degenerativos en la columna vertebral como los osteofitos en los cuerpos de vertebrales (Ubelaker y Buikstra 1994).

APPENDIX D (continued)

1.3.8.- Artritis

Las lesiones artríticas en esta muestra fueron clasificadas como tal al existir labiaciones, erosiones, eburnaciones o porosidades en las superficies cartilaginosas de las zonas articulares del esqueleto. La labiación es el crecimiento de tejido óseo extra en los bordes de las superficies articulares, como por ejemplo: codos, rodillas, cadera, hombros, tobillos, etc. La eburnación es la presencia de crecimiento de nuevo tejido óseo denso sobre la superficie cartilaginosa de las articulaciones, además esta se caracteriza por un aspecto “pulido” de la superficie al estar en estrecho contacto y fricción de los elementos articulares. Las erosiones o porosidades son pequeñas pérdidas de tejido óseo que se dan en las superficies de articulación. Las lesiones por erosión pueden ser aisladas, coalescentes o mixtas. Cabe resaltar que el registro incluye la ubicación de las lesiones, el grado, tipo y extensión en la articulación afectada.

1.3.9.- Condiciones misceláneas

En el presente análisis se incluyeron dentro de esta amplia y variada categoría la existencia de lumbarizaciones de la primera vertebral sacral.

Como parte del análisis paleopatológico, se incluirá también el registro de entesopatías (o entesofitos), las cuales son básicamente irregularidades óseas a modo de osteofitos causadas por la excesiva y prolongada actividad muscular. Es decir, es una alteración morfológica del tejido óseo que es inducida por una actividad repetitiva. Estas suelen localizarse a nivel de las inserciones de tendones y ligamentos; preferentemente a nivel de las inserciones rotulares, plantar y aquiles. El registro de estas condiciones es importante ya que su ubicación y tamaño nos otorga información valiosa respecto a qué patrones de movimientos se pueden relacionar algunas actividades diarias que realizó un individuo, las cuales comprometen músculos específicos (Capasso, et al., 1999; İşcan and Kennedy, 1989; Kennedy, 1989; Clarks Spencer Larsen, 1997; Merbs, 1989). De esta manera, el conjunto de entesopatías nos puede servir como una herramienta para llegar a inferir la existencia de marcadores ocupacionales de estrés. Los cuales también no son necesariamente son considerados una condición patológica pero sí una alteración morfológica ósea y dental distintiva atribuible a una amplia gama de actividades laborales o comportamientos habituales; que –a diferencia de las entesopatías, no sólo se desarrollan en el punto de inserción de ligamentos y tendones, sino también en el cartílago y/o tejido fibroso (Capasso, et al., 1999; Clarks Spencer Larsen, 1997). De esta manera, para llegar a inferir la existencia de marcadores ocupacionales de estrés en una población es necesaria la existencia de patrones en la ubicación de las lesiones.

Finalmente, la muestra de Chen-Chen se caracterizó por la presencia de modificaciones culturales premortem como la modificación craneana artificial. Durante la infancia, los huesos de los infantes son maleables y pueden ser moldeados obedeciendo a prácticas culturales. Cada cráneo se evaluó para determinar el tipo de deformación craneana que presentaba. Para esto se usó las categorías más comunes de modificaciones craneanas presentes en los Andes como son: la Circular y la Tabular (Dembo e Imbelloni 1938:249-277). Estos dos tipos de deformación (Figure 227) difieren notablemente en forma y se distinguen notablemente de los cráneos que no tienen modificaciones intencionales de forma. La modificación craneal hacia la forma tabular resulta de la compresión de almohadillas o tablas rígidas que aplanan la parte anterior y posterior, lo que crea una expansión pronunciada del ancho del cráneo. Mientras que en la forma circular la presión es creada por la aplicación de vendas alrededor del cráneo, lo cual produce

APPENDIX D (continued)

una forma tubular y alargada hacia atrás, con la consecuente reducción en el ancho del cráneo y aumento de la longitud. Las variaciones hacia el subtipo erecto u oblicuo se definen en el ángulo posterior que forma el cráneo. La presencia o ausencia de la modificación craneana se determinó a partir de lo notorio de la modificación en la forma del cráneo (Torres-Rouff 2007). En los casos que los cráneos muestran modificaciones leves en la forma natural del cráneo se registraron como sin modificación craneana, esto debido a que existe un rango previsible de modificación craneana que existe producto del uso de cunas rígidas.

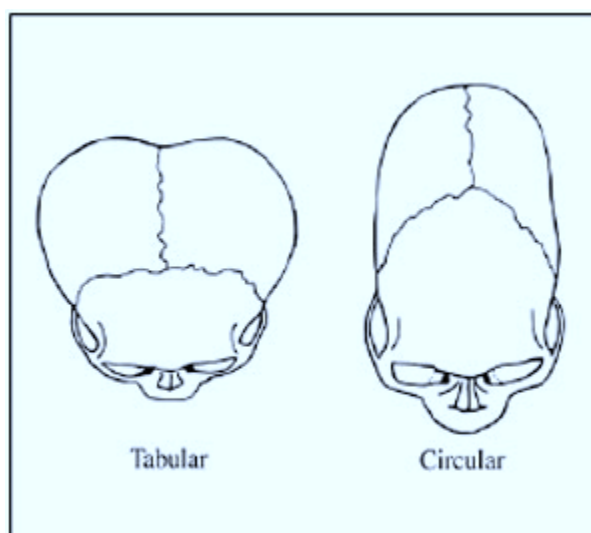


Figure 227. Formas comunes de deformación craneana en los Andes (Modificado de Antón 1989).

1.4.- Análisis Dental

La información dental fue registrada siguiendo diferentes métodos de análisis sintetizados en el sistema de registro dental de Hillson. Este sistema de registro integra diferentes indicadores dentales que aportan valiosa información sobre la dieta, nutrición y salud dental de las poblaciones estudiadas mediante indicadores dentales tales como: caries dentales, medición del grado de desgaste oclusal (Smith and Garn, 1987), formación y erupción dental (Moorress, et al., 1963), cantidad de sarro dental (Brothwell 1981) y enfermedades periodontales. En el registro se consigna la presencia/ausencia de dichos indicadores, como también la ubicación y grado de desarrollo de cada condición (Hillson, 1996, 2000, 2001). Paralelo al análisis físico dental se realizó un registro fotográfico general de la evidencia dental, acompañado ante el hallazgo de alguna condición dental en particular de un registro fotográfico más detallado.

APPENDIX D (continued)

1.4.1.- Caries Dentales:

La caries dental es una enfermedad crónica multifactorial que afecta el tejido calcificado de los dientes –esmalte, dentina y cemento, en los cuales los periodos de iniciación y desarrollo del proceso de desmineralización está fuertemente influenciado por las relaciones establecidas entre la placa bacteriana, la ingesta de carbohidratos (es decir la dieta), y la propia propensión de los dientes a contraer caries (Hillson, 1996; Houte, 1994; Legler and Menaker, 1980; Silverstone, et al., 1981). La relación directa existente entre el pH de la placa bacteriana y la ingesta diaria se ve claramente reflejada en este proceso de desmineralización causado por una elevada concentración de ácidos orgánicos producidos por especies de estreptococos y lactobacilos que incrementan su número bajo el consumo de una dieta rica en carbohidratos (Hillson, 1996, 2001; Houte, 1994; Liljemark and Bloomquist, 1996). En cuanto a su desarrollo, en sus fases iniciales las caries dentales tienden a visualizarse microscópicamente mediante la aparición de una marca pequeña y superficial de tonalidad blanca o castaña, seguida por la aspereza y rotura de la superficie dental hasta alcanzar una cavidad como tal, observable con claridad macroscópicamente. Respecto a su ubicación preferencial, se evidencia mayormente en sitios y/o superficies de reducida exposición salival, con mayor retención de partículas de comida y por ende susceptibles a un aumento de placa bacteriana; sitios tales como: fisuras oclusales, orificios bucales y áreas de contacto interproximal. Dependiendo el tamaño y consecuentemente retención de la partícula de comida –o su escasa movilidad en la cavidad oral, no sólo de la higiene oral propia del individuo sino también del tipo y modo de preparación de la ingesta (Godoy Allende, 2005; Hillson, 1996, 2001; Houte, 1994; Clarks Spencer Larsen, 1997).

El registro de esta condición dental nos permitió evaluar la existencia o no de diferencias cariogénicas entre los diferentes segmentos sociales de los dos cementerios; es decir, evaluar quiénes –mujeres u hombres, niños o adultos, fueron más propensos a desarrollar caries dentales, así como evaluar intra-poblacionalmente el grado de desarrollo y severidad de dicha condición. Sin embargo, se debe de considerar que una mayor abundancia de caries dentales no indica necesariamente un nivel de severidad mayor en la lesión dental, ni tampoco refleja un desarrollo más temprano de la condición. Por otra parte, teniendo en consideración los criterios antes mencionados (exposición salival, retención de partículas alimenticias, etc.) a los cuales están sujetos el tamaño, la localización y el desarrollo de la lesión cariosa, durante el análisis, los datos se agruparon y evaluaron dentro de las siguientes categorías dentales: caries afectando la superficie oclusal o de contacto entre diente-y-diente, caries afectando la raíz del diente y caries afectando la corona del diente.

1.4.2.- Desgaste Dental:

El desgaste dental es resultado del funcionamiento cotidiano de los dientes, como parte del proceso de envejecimiento y en relación estrecha a un estilo de vida poblacional determinado (Godoy Allende, 2008; Hinton, 1981; Larsen, 1985; Molnar, 1972a). Es decir, se relaciona directamente con el proceso de masticación, procesado de alimentos y dieta diaria.

El término ‘desgaste’ hace referencia a una pérdida de superficie dental, la cual se suele clasificar a partir de su origen en dos categorías: a) atrición dental, es decir un desgaste dental causado por el contacto diente-con-diente, dejando claras facetas de desgaste a nivel oclusal e interproximal; y b) Abrasión, un desgaste causado por el contacto diente-con-objeto extraño y partículas abrasivas presentes en el fluido oral (Hillson, 1996; Shafer, et al., 1986). En el

APPENDIX D (continued)

presente estudio se usa el término general de ‘desgaste dental’, entendido como la pérdida de superficie dental independientemente de su origen, el cual se ha de evaluar.

La proporción y patrón de desgaste dental están influenciados por las características biológicas –posición del arco, tamaño y forma del diente, por factores físicos –dureza del material abrasivo, y por factores socioeconómicos o actividades en las cuales los dientes son partícipes (Barret and Brown, 1975; Hinton, 1982; Hinton, 1981; Molnar, 1972a, 1972b).

1.4.3.- Sarro o Calculus Dental:

Como bien lo explican Hillson y Brothwell, el sarro está constituido por depósitos de placa dental mineralizada, la cual se acumula, deposita y finalmente adhiere sobre la superficie del diente (Brothwell, 1981; Hillson, 1996). La saliva suele jugar un rol crucial en el transporte de minerales y por ende, en la formación de sarro dental. Consecuentemente, los sitios cercanos a los ductos de las glándulas salivares serán los más afectados: a nivel de los dientes molares está más afectada la superficie bucal, y a nivel de los dientes anteriores está más propensa la superficie lingual (Hillson, 1996). Finalmente, se sabe que ambos factores, una higiene oral pobre y el consumo de carbohidratos, incrementan la producción de sarro a nivel dental (Godoy Allende, 2008).

En el presente análisis se registró siguiendo la propuesta de Brothwell (1981), la presencia de calculus supragingival (observable sobre la corona y algunas veces parcialmente sobre la raíz del diente), en cuya escala se reconocen tres categorías: leve, medio o moderado y considerable o abundante presencia de sarro dental. A este registro cualitativo se sumó información referente a la localización específica del depósito de sarro –superficie bucal o lingual. El estado de conservación del material dental influyó indudablemente en la carencia de casos puntuales afectados por esta condición. Considerándose que la formación de sarro requiere de tiempo, es decir, no es inmediata, su presencia nos sugiere por un lado que tuvo que pasar un periodo largo de acumulación y deposición de placa bacteriana para su adherencia a la superficie dental, así como una pobre higiene dental por parte de la población afectada (Hillson, 1996, 2000).

1.4.4.- Hipercementosis:

La raíz del diente está compuesta principalmente por cemento, el cual continuamente se deposita, regenera y es reabsorbido durante la vida del individuo (Hildebolt and Molnar, 1991). La Hipercementosis es una condición dental que alude a una sobreproducción masiva de cemento a nivel de la raíz del diente, generando el engrosamiento y aparición de bulbos a nivel apical de la raíz dental (Hillson, 1996). La causa de esta sobreproducción de cemento no es del todo entendida, sin embargo, factores como una mala-oclusión y un excesivo desgaste dental suelen estar asociados a esta condición dental (Hillson, 1996; Larsen, et al., 1991).

2.- Resultados del Análisis Osteológico: Análisis de lesiones patológicas y no patológicas, análisis dental, modificaciones culturales y marcas de estrés muscular presentes en la muestra.

En esta sección se presentan los resultados del análisis de 129 individuos provenientes de las excavaciones del sitio Chen-Chen que pertenecen cronológicamente al Horizonte medio en el

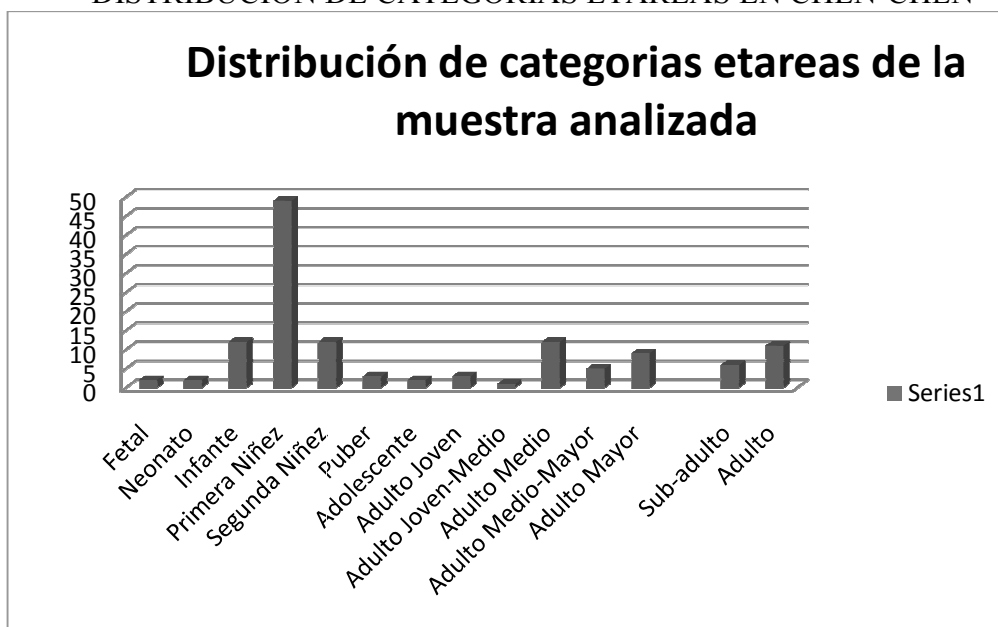
APPENDIX D (continued)

valle de Osmore, Moquegua. En general, el estado de conservación de los materiales fue bueno, con algunos individuos con estado de conservación regular o malo. Generalmente, cuando se tiene un mal estado de conservación del esqueleto, este no facilita ni asegura la óptima conservación de los indicadores morfológicos óseos necesarios para el análisis osteológico o paleopatológico; afortunadamente, debido a su buen estado de conservación, en pocos casos no se tuvo los elementos para estimar el sexo o la edad de los individuos.

La conformación etaria de la muestra –de acuerdo a los rangos definidos líneas arriba- se divide en: dos (2) fetales, dos (2) neonatos, doce (12) Infantes, cuarenta y nueve (49) en la primera niñez, doce (12) en la segunda niñez, tres (3) púberes, y dos (2) adolescentes, todos estos de sexo indeterminado (Tabla XVI y XVII). Dentro de la categoría de adultos se obtuvo: tres (3) adultos Jóvenes, dos de sexo femenino y uno de sexo masculino; un (1) Adulto Joven-Medio de sexo femenino; doce (12) Adultos Medios, de los cuales cuatro son de sexo masculino, tres masculinos probables, tres femeninos, uno femenino probable y uno indeterminado. A su vez, se tienen tres (3) individuos adultos Medio-Mayor, de los cuales dos son femeninos probables y uno femenino. En la categoría Adulto Mayor hay once (11) individuos de los cuales nueve son femeninos, uno masculino y uno masculino probable. Adicionalmente, durante el análisis se consideró la categoría “Adulto” para clasificar a los individuos cuyo mal estado de conservación no permitía clasificarlos con mayor precisión –por ejemplo: Adulto Joven, Adulto Medio, Adulto Mayor-. En esta categoría “Adulto” se encuentran: nueve de sexo indeterminado y dos de sexo femenino.

TABLE XVI

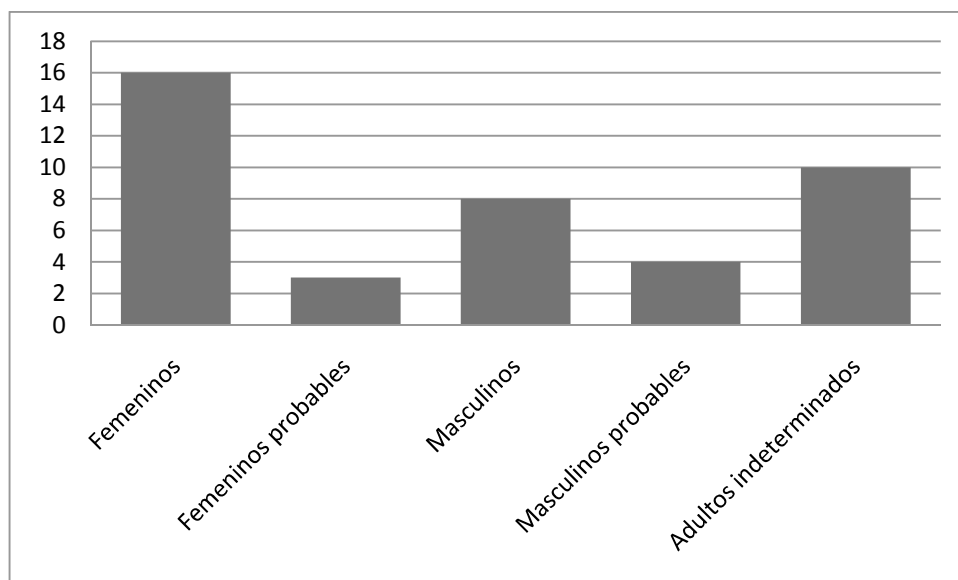
DISTRIBUCIÓN DE CATEGORÍAS ETÁREAS EN CHEN-CHEN



APPENDIX D (continued)

TABLE XVII

DISTRIBUCIÓN DE FRECUENCIAS DE SEXO EN LA MUESTRA DE INDIVIDUOS ADULTOS



La significancia estadística en la presencia/ausencia de ciertos indicadores de salud entre los individuos que componen la muestra será evaluada estadísticamente usando el test Fisher's exact. Este test fue usado para evaluar la significancia estadística de las presencia/ausencia de lesiones patológicas y no patológicas. El uso de este test es apropiado ya que la muestra es pequeña. De esta manera, el factor "two-tailed" sería considerado como un indicador para observar la significancia estadística de las frecuencias de presencia/ausencia de las lesiones, donde $p = 0.05$ o menor sería considerado como estadísticamente significativo en el caso de muestras arqueológicas (Cowgill 1977).

Es importante mencionar que inicialmente se evaluaron las frecuencias de individuos en base a cada categoría etaria, sin embargo, las frecuencias en muchos casos eran muy bajas. Considerando esta limitación y la probable no significancia de los test estadísticos, se usaron las categorías subadultos y adultos para comparar las frecuencias de las lesiones patológicas o no patológicas entre los individuos adultos o subadultos al interior de la muestra.

Al evaluar si la frecuencia de lesiones paleopatológicas entre individuos adultos (de los 41 individuos adultos, 29 presentaban patologías) y subadultos (de los 88 individuos subadultos, 48 presentaban patologías) era significativa, los resultados estadísticos nos mostraron que la diferencia de frecuencias entre las dos categorías no era significativa (two tailed $P = 0.4477$). Esta falta de significancia estadística nos quiere decir que en la muestra analizada, a pesar de tener una mayor proporción de individuos subadultos con lesiones patológicas, la diferencia no es estadísticamente significativa. Adicionalmente, se realizaron comparaciones entre las frecuencias

APPENDIX D (continued)

de individuos con presencia o ausencia de patologías y entre hombres y mujeres que componen la muestra. Al evaluar estas frecuencias se obtuvo que la diferencia entre hombres y mujeres con patologías no es significativa. Ya que de los treinta y un (31) adultos con sexo determinado, 17 son femeninos y 10 son masculinos, obteniéndose un valor “two Tailed” $p=1.0000$. Esto significa que al interior de la muestra de adultos con sexo determinado, no se evidencian diferencias significativas en la incidencia de patologías entre los dos sexos.

Mediante el análisis del material óseo se identificaron algunas patologías resaltantes. Siguiendo la clasificación de las categorías definidas líneas arriba para la recolección de la información paleopatológica haremos una síntesis de los hallazgos. En la categoría Anormalidades de forma se encuentran dos individuos –INV 06: femenino adulto mayor, e INV 12: primera niñez de sexo indeterminado- que presentan diáfisis de huesos largos curvados (Bowing). En la categoría Perdida Anormal de Hueso, se encontraron dos manifestaciones de este tipo. La primera, consiste en la presencia de lesiones líticas a lo largo de las inserciones musculares de los huesos largos y en un caso en las superficies ventrales de los cuerpos de vértebras. En todos los casos –INV 09, 23, 24, 40, 81, 84 y 102.- se trató de sub-adultos que se encuentran en las categorías de infantes, primera niñez y segunda niñez. No se sabe la etiología de estas lesiones, pero están generalmente acompañadas de lesiones erosivas en las diáfisis de los huesos largos afectados y en muchos de los casos también periostitis. La segunda manifestación dentro de la categoría perdida anormal de hueso consiste en la presencia de macroporosidades o microporosidades activas en las diáfisis de los huesos largos y en las principales inserciones musculares. Al igual que en las lesiones líticas, se encontró una mayor incidencia en individuos subadultos (INV 18, 72, 77 y 78; primera niñez e infantes), sin embargo también se presentó en un individuo Adulto Mayor de sexo femenino (INV 46).

En el caso de la categoría Aumento anormal de hueso, se encontró la presencia de periostitis en los huesos largos de subadultos (Neonato, Infantes, Primera niñez y Segunda niñez; INV 09, 18, 19, 23, 30A, 32, 40, 68A, 72, 75, 81, 102, 105, 106, 107, 119.) y de un Adulto Medio de sexo masculino (INV 90). Como se comentó líneas arriba, la etiología de la periostitis es poco clara y se puede deber a diversas causas, entre ellas la presencia de fracturas asociadas o fuertes traumas. Por otro lado, los individuos con número de inventario 39 y 18 poseen fracturas de las costillas 8va a 11va y 7ma a 12va del lado izquierdo respectivamente, la cual también muestra periostitis en los cuerpos de costillas fracturadas y las aledañas. En estos casos, es muy probable que la periostitis asociada haya sido producto del evento traumático que causó la fractura de las costillas. Cabe resaltar que el individuo del inventario 39 es un adulto medio de sexo masculino, pero en el caso del INV 18 se trata de un individuo en la primera niñez, con 4 años +/- 9 meses y de sexo indeterminado que tiene la fractura de seis de las costillas izquierdas además de una lesión traumática en el parietal izquierdo.

Además de la periostitis, en esta categoría se observó la presencia de formaciones anormales de hueso que ensanchaban en todos los casos el grosor de las diáfisis de los huesos largos. En todos los casos estaba acompañada de microporosidad activa pero sin la presencia de cloacas. Esto último nos hizo descartar el engrosamiento de las diáfisis como parte de un proceso de osteomielitis, ya que en esta sí bien se presenta el engrosamiento y deformación de los contornos de las diáfisis de huesos largos, existe la presencia de cloacas que se encargan de liberar la pus producto de la infección. Los individuos que manifestaron este engrosamiento de la

APPENDIX D (continued)

diáfisis sin la presencia de cloacas son: INV 40, 77, 97 y 118. En dos de los casos se trata de individuos infantiles además de dos que se encuentran en la primera niñez.

En la categoría de fracturas se encuentran dos causas diferenciadas. Una de ellas probablemente se debe a casos de violencia interpersonal evidenciada por lesiones en el tercio proximal de los cuerpos de costillas izquierdas y en uno de los casos en el parietal izquierdo (INV 06, 18, 39 y 104). En el caso del INV 18, la fractura de la costilla se encuentra en la 6ta costilla del lado izquierdo, y presenta una fractura lineal en proceso de remodelación. Tal vez, asociado a este mismo evento traumático, se presenta también periostitis activa y difusa en la parte externa del cuerpo de las costillas 7ma, 8va, 9na, 10ma y 12va del mismo lado, cerca del ángulo del cuerpo de la costilla. Adicionalmente a la fractura de las costillas, el individuo posee una fractura del parietal izquierdo en proceso final de remodelación del tejido óseo. Actualmente sólo se aprecia una depresión de forma semicircular de 17.06 cms x 21.94 cms. Fractura contusa-contundente en proceso remodelativo que se ubica en el parietal izquierdo, parte delantera central. La fractura parece del tipo contusa-contundente (“blunt force trauma”) y pudo haber sido causada por un golpe contundente compresiva. Si bien no se observan las típicas fracturas irradiadas del centro de impacto, es posible que dada la corta edad del individuo al momento de la muerte (4 años +/- 9 meses al momento de la muerte), los huesos del cráneo que son altamente maleables a más corta edad no hayan generado las fracturas irradiadas que típicamente se aprecian en cráneos adultos.

El segundo caso (INV 39) se trata de un individuo adulto medio de sexo masculino que tiene fracturas en proceso de remodelación en el tercio proximal del cuerpo de las costillas 8va a 11va del lado izquierdo, cerca del ángulo del cuerpo. Las fracturas todavía se encuentran en proceso final de remodelación, viéndose un callo óseo denso que es un poco más ancho que la costilla. Anatómicamente, esta sección pertenecería a región posterior y lateral de la caja torácica, lado izquierdo. El traumatismo parece haber estado focalizado en dos o tres de las costillas llegando a fracturarlas a la altura del ángulo del cuerpo de las costillas. Un tercer caso de posible violencia interpersonal que se evidencia en la muestra analizada lo constituye el individuo INV 06. Se trata de un individuo Adulto Mayor de sexo femenino que presenta una fractura en la parte medial de ambos huesos nasales. Sin embargo, esta fractura también pudo ser causada por una caída u otro tipo de accidente. Un cuarto caso de probable violencia interpersonal se aprecia en las fracturas de cráneo del individuo 104. Las fracturas en el cráneo son dos lesiones traumáticas en la parte superior de escama de occipital, el trauma parece contuso, en proceso de curación evidenciado por microporosidades activas y crecimiento de hueso nuevo (callo oseo?). El individuo en este caso es un adulto medio de sexo femenino. Adicionalmente el mismo individuo 104 posee una fractura curada en el ángulo de la 10ma costilla derecha. La fractura se encuentra alineada, curada y en las últimas fases remodelativas.

Los demás tipos de fracturas son aparentemente causadas por caídas accidentales, tal vez relacionadas a las actividades cotidianas. Entre ellas se encuentran: fracturas de segunda costillas izquierda (INV 42), Fractura de clavícula (INV 45), Fractura de tercera costilla izquierda (INV 48A), probable fractura remodelada de tercio proximal de diáfisis de humero izquierdo (INV 76), Fractura de radio derecho (INV 79) y fractura de antebrazo izquierdo (INV 86). En estos casos, los individuos fueron todos adultos medios o mayores de sexo femenino (4) o masculino (2).

En la categoría de hiperostosis porótica y criba orbitalia se encontraron varios casos (14 individuos) de los cuales todos presentaron hiperostosis porótica activa, curada o mixtas (mezcla

APPENDIX D (continued)

de lesiones activas y curadas). Sin embargo, sólo un individuo sub-adulto (INV 24, primera niñez) presentaba también simultáneamente la lesión activa de criba orbitalia. Los demás individuos presentaban lesiones de hiperostosis porótica, las cuales se ubicaban generalmente en la parte superior del occipital, a lo largo de la sutura lambdoidea o en los parietales; y en pocos casos en la parte anterior de los parietales o en los frontales. En cuanto al estado de las lesiones, en los individuos subadultos (10) se encontraban generalmente activas, mientras que en los adultos (5) se encontraban curadas o con una mezcla de lesiones activas y curadas o en proceso de curación. Como se mencionó anteriormente, la etiología de estas dos lesiones es variada.

En la categoría de patologías vertebrales en su mayoría se registraron osteofitosis marginales de los cuerpos de vertebrales dorsales o lumbares (INV 39, 41, 42, 45, 46, 48A, 49, 86, 92, 96, 100, 101, 103, 109) con severidades leves, moderadas o graves. Otra lesión vertebral importante la constituyeron las fracturas por compresión (INV 41 y 42). Adicionalmente, se encontraron tres individuos que presentaron múltiples tipos de lesiones artríticas y vertebrales y que a su vez poseían huesos largos y/o vértebras ligeras (osteoporosis?). Cabe resaltar que en los tres casos se trató de individuos Adultos Mayores de sexo femenino (INV 45, 86, 103, 109?). Otras lesiones presentes fueron las anquilosis de cuerpos de vertebrales cervicales o dorsales, o arcos neurales dorsales y nódulos de schmorl's.

En la categoría de artritis se hace evidente la mayor incidencia de esta lesión en individuos adultos Medios o mayores, con la excepción de un Adulto Joven (INV 101) que tiene lesiones artríticas leves en el ilión (cadera). Los demás individuos poseen lesiones artríticas leves o graves en la cadera (INV 01, 101), clavículas (INV 01, 06), mandíbula (INV 06, 39), cuello (INV 06), costillas (INV 06), codos (INV 41, 46), hombros (INV 46, 48A, 96), pies (INV 86, 96, 103, 109) y manos (INV 49, 79, 96, 103).

En la categoría miscelánea se encontraron seis individuos (INV 27, 51, 52, 76, 103, 104) que presentaban lumbarización de la primera vertebra sacral ("caudal shift S1"). En todos los casos los individuos fueron Adultos mayores, medios o jóvenes; de sexo femenino (5) o masculino (1). Adicionalmente, el individuo INV 104, tiene además de la lumbarización de S1, la pérdida de la apófisis lateral de la tercera vértebra lumbar. Ambas condiciones serían de tipo congénito.

Como ya se mencionó anteriormente, como parte del registro paleopatológico se incluyó el registro de entesopatías o irregularidades óseas que serían causadas por una excesiva y prolongada actividad muscular repetitiva. Los de incidencia de estas lesiones al interior de esta muestra son: INV 01, 27, 39, 47, 79, 86, 91, 96, 101, 103, 109. En todos los casos los individuos fueron adultos Jóvenes (1), Medios (4) o Mayores (6) y con las lesiones ubicadas a nivel de las inserciones de brazos, piernas y manos. Si bien el registro de estas lesiones es importante, y su ubicación o tamaño nos otorga información valiosa respecto a que actividades podrían estar realizando estos individuos, no se podría llegar a determinar los tipos de actividades realizadas a no ser que existan patrones claros en la recurrencia de una o un conjunto de lesiones y patrones en su ubicación.

En cuanto al registro de modificaciones craneanas (también llamadas deformaciones craneanas) se evidenció la presencia de un tipo de modificación: Tabular, sin embargo en la región Andina, especialmente en la zona sur Andina, se han registrado dos tipos de modificaciones craneanas: Tabular y Circular. Del total de la muestra analizada (129 individuos), sólo 35 individuos mostraban modificación craneana del tipo tabular, 14 individuos sin

APPENDIX D (continued)

deformación craneana, 79 individuos en donde no fue observable (generalmente por tener el cráneo fragmentado o no contar con él) y 1 en donde no fue aplicable (individuo fetal). Al evaluar la composición de los individuos con deformaciones craneanas, tenemos a 20 individuos subadultos y 15 adultos. Es interesante notar que Chen-Chen es considerado como un período de influencia Tiwanaku en el valle de Osmore. Sin embargo, la forma circular de modificación craneana, la cual predomina en el Altiplano (Conocida como forma “Aymara”) no se encuentra presente en este cementerio (Torres-Rouff 2007). No obstante, no se puede descartar la probable presencia de este tipo de modificación craneana entre los 79 individuos de esta muestra donde no se pudo observar la presencia o no de algún tipo de modificación craneana.

Resultados del Análisis Dental:

El tamaño de la muestra dental analizada estuvo definida por el número de individuos adultos y sub-adultos con una dentición completa o parcialmente completa, con o sin desgaste dental, incluyendo adultos mayores con edentulismo²⁹⁷, lo cual se relaciona por un lado al mecanismo de ingesta –limitado en el caso de edentulismo-, y por otro a la presencia de caries dentales y enfermedades del periodonto. El presente análisis tuvo como objetivos: revelar diferencias en términos de salud y patología dental, específicamente caries dentales, entre los diferentes individuos.

Todos los dientes registrados y analizados pertenecen a un total de 82 individuos, procedentes de diferentes grupos etarios –adultos, juveniles e infantes- y categorías sexuales -mujeres y hombres-. El estado de conservación predominante de la evidencia ósea-dental tuvo un buen estado de conservación, con pocos individuos con regular a mal estado de conservación. Sin embargo, no se dejó de evidenciar la pérdida post-mortem de dientes. Como suele apreciarse normalmente en colecciones arqueológicas, en los individuos con mal estado de conservación se conservó mayormente el hemisferio óseo inferior –la mandíbula-, a diferencia del superior de la cavidad oral, con sus respectivas piezas dentales. La información almacenada en fichas se digitalizó en una tabla Excel, para ser luego exportada y procesada estadísticamente.

Siguiendo el enfoque poblacional del análisis, la evidencia se ha de presentar grupalmente, buscando evaluar y responder a la luz de los resultados estadísticos los objetivos antes mencionados. Adicionalmente se ilustran los casos dentales más resaltantes dentro de cada condición dental, así como observaciones dentales “atípicas” y/o detalles que merecen ser considerados de forma individual, sin dejar de perder el enfoque poblacional del estudio.

En cuanto a la presencia y/o ausencia de piezas dentales, 17 individuos (de los 80 que presentaron piezas dentales) tuvieron una a más pérdidas antemortem de dientes. Siendo resaltante el caso del INV 45 (femenino, adulto mayor), con la pérdida antemortem de 22 dientes; e INV 46 (femenino, adulto mayor) y 48A (masculino, adulto medio), ambos con pérdida antemortem de 13 dientes. En el caso del segmento femenino, se aprecia que 12 individuos presentan pérdida antemortem de dientes, mientras que en el caso de los individuos masculinos, sólo se ve la incidencia de 5 individuos. Siendo, por lo tanto, ligeramente mayor en el segmento femenino la pérdida dental antemortem o ‘en vida’, en comparación con el masculino. Sin embargo, al evaluación estadística nos muestra que la relación entre la frecuencia

²⁹⁷ Pérdida parcial o total de la dentición permanente, la cual es irremplazable de forma natural.

APPENDIX D (continued)

de pérdida antemortem de piezas dentales entre hombres y mujeres no es estadísticamente significativa ($p=0.3157$).

En poblaciones arqueológicas la diferencia sexual en la prevalencia de pérdida dental antemortem no presenta un patrón consistente, siendo en la mayoría de los casos los hombres el segmento ligeramente más afectado que las mujeres. Ciertamente esta tendencia se observa también en la muestra de estos dos cementerios M1-02 y M1-95C. Cabe denotar que esta diferencia estaría más bien relacionada a prácticas de higiene oral, no así a una preferencia o predisposición sexual determinada de pérdida dental antemortem (Hillson, 1996; Clarks Spencer Larsen, 1997). Por otro lado, como lo enfatiza Larsen, las poblaciones arqueológicas con un alto consumo de carbohidratos y una dieta bien procesada presentarían mayor proporción de enfermedades periodontales y consecuentemente la pérdida antemortem de los dientes, en comparación a aquellas con un alto consumo de proteína animal (Clarks Spencer Larsen, 1997). Por otro lado, la pérdida antemortem de piezas dentales se registra sólo en los individuos adultos, lo cual está vinculado a procesos infecciosos y/o patológicos que suelen preceder a la pérdida de una pieza dental. Sobresale el hecho de que el porcentaje de pérdida dental en vida no difiere dentro de los adultos jóvenes, medios y mayores; es decir, el factor edad –fuertemente asociado a procesos de desgaste dental, no ha sido un factor determinante en la pérdida dental antemortem en la población adulta de Chen-Chen. Lo cual nos sugiere que quizás el factor determinante en dicha pérdida dental antemortem sería más bien patológico –como la presencia de caries dentales y/o enfermedades del periodonto, no así el proceso de envejecimiento propio de cada individuo. El mismo patrón se ve reflejado en la presencia de remanentes radiculares, siendo ligeramente mayor en individuos adultos en edad media, pero también se ha de registrar en adultos jóvenes y mayores.

En el caso de las caries, tanto individuos adultos como subadultos estuvieron afectados con lesiones cariosas de grado 1 (“pit caries” o pequeñas fisuras) en su mayoría. Sin embargo, también se presentaron caries de grado 2 (fisuras medianas que abarcan menos de la mitad de la corona), grado 3 (fisura grande que abarca más de la mitad de la corona) y grado 4 (toda la corona destruida). De los 52 individuos afectados por caries: 38 mostraron grado 1; 18 grado 2; 5 con grado 3; y 10 con grado 4. No obstante, en muchos casos un mismo diente estuvo afecto a dos tipos de lesiones cariosas que pudieron afectar las diferentes superficies de la corona. Cuando evaluamos la frecuencia de las caries entre adultos o subadultos, observamos que 29 subadultos y 23 adultos estuvieron afectados. Sin embargo al evaluar estadísticamente esta diferenciación de frecuencias, esta no fue estadísticamente significativa. Lo que quiere decir que la incidencia de caries entre individuos adultos o subadultos se encuentra dentro de la variación normal de la muestra. Más aún, al considerar sólo los individuos adultos y comparar la diferente frecuencia de caries dentales entre el segmento femenino y masculino, se encontró que las mujeres (14/23) presentaban una mayor incidencia de caries dentales a diferencia del segmento masculino (4/23). Al evaluar estadísticamente esta relación no se encontró significativa estadísticamente, pero sí con un valor muy cercano a $p=0.0500$ ($p=0.0528$). Una diferencia leve entre ambos segmentos nos permite sugerir que ambos grupos estuvieron similarmente propensos al desarrollo de lesiones cariosas. Sin embargo, al evaluarse el grado de severidad de las lesiones, se observó que las lesiones cariosas en el segmento femenino alcanzaron un estadio en términos de severidad de la lesión mucho mayor, denominados estadios de “gross caries”, en

APPENDIX D (continued)

los cuales la desmineralización del esmalte genera la destrucción casi total de la corona dental, comprometiendo no sólo el esmalte, sino también dentina, e incluso conlleva la exposición la cámara o cavidad pulpar y consecuentemente una infección apical dental. En el caso de los hombres, las lesiones cariosas generaron como mucho una cavidad a nivel oclusal, suficientemente amplia para general una exposición de la dentina. Por lo tanto, mujeres y hombres de Chen-Chen estuvieron casi similarmente afectados por caries dentales—con una predominancia en el segmento femenino. Sin embargo, el grado de desarrollo de este tipo de lesión cariosa fue notoriamente mayor y más severo en las mujeres.—Análogamente, la literatura nos recuerda que las caries dentales tienden a ser más comunes en mujeres que en hombres, y su desarrollo está fuertemente relacionado al factor edad (Hillson, 2000; Clarks Spencer Larsen, 1997; Thylstrup and Fejerskov, 1994), todo lo cual arqueológicamente se evidencia en Chen-Chen.

Por el contrario, en el caso de los niños, la lesión cariosa desarrolló estadios de severidad leve y sólo en dos casos de severidad grado 4. Una ausencia de estadios de severidad mayor de la lesión cariosa en este grupo etario está relacionada al periodo de cambio de dentición (de decidua a permanente) durante la niñez, en cuyo proceso natural de desarrollo dental los dientes han de cambiar antes de contar éstos con el tiempo necesario para alcanzar una severidad en la lesión cariosa mayor.

En el presente análisis, se registró el desgaste dental aplicando el sistema de grados de desgaste oclusal propuesto por Smith (Smith, 1984) e integrando las categorías propuestas por Hillson (Hillson, 2001). De los 88 individuos que presentaban piezas dentales se detectó que 31 de ellos tenían diferentes tipos de desgaste, dentro de los que se encontraban 16 subadultos y 15 adultos. En el caso de los subadultos el desgaste fue mayoritariamente del tipo leve (8/12), además de un individuo con grado 3 de desgaste y tres con grado 4 de desgaste. En el caso de los adultos se encontraron siete que presentaron desgaste leve, uno con grado 2, tres con grado 3 de desgaste; y 10 con desgaste grado 4 o grave. La distribución de sexo en el caso de los desgastes dentales es de 10 individuos femeninos afectados con grados 1 (4 individuos), grado 2 (un individuo), grado 3 (3 individuos), grado 4 (siete individuos). Cabe resaltar que más de un individuo presentó diferentes tipos de desgaste simultáneamente. Por otro lado, cinco individuos masculinos presentaron desgaste dental, de los cuales: dos presentaron desgaste grado 1, uno con grado 3, y tres con grado 4 de desgaste, al igual que en los individuos femeninos, los masculinos también presentaron más de un grado de desgaste simultáneamente. Sin embargo, cuando se evaluó estadísticamente las diferentes frecuencias entre individuos femeninos y masculinos, la diferencia de frecuencias no fue estadísticamente significativa ($p= 1.0000$). A pesar de esta diferencia en la proporción de desgaste o pérdida de la superficie dental entre el segmento de subadultos, mujeres y hombres de Chen-Chen, la tendencia de desgaste dental observable en los tres segmentos fue similar. De igual manera, el desgaste de los tres segmentos de la corona fue similar; es decir, a una pérdida de superficie oclusal dental le siguió en proporción una pérdida de la superficie mesial y finalmente distal. La similitud en la tendencia de desgaste dental, independientemente de la proporción, reflejaría de algún modo que ambos segmentos están sujetos a un mismo tipo de procesamiento de alimentos y dieta diaria. Por otro lado, la predominancia de un desgaste del tipo oclusal en la población adulta femenina, quizás pueda estar relacionada al mayor porcentaje de dientes afectados por fracturas en dicho segmento, lo cual de todos modos habría influido no sólo en el proceso de masticación, sino también en una

APPENDIX D (continued)

aceleración de la pérdida de superficie dental, rápida exposición de la dentina, entre otros posibles factores. Independientemente de la proporción, el desgaste se hace evidente a partir de la edad adulta joven, incrementándose con los años y alcanzando sus estadios de mayor pérdida de la superficie dental a edad adulta mayor. Es decir, existe una correlación directa entre la presencia de desgaste dental y el factor edad. A mayor edad mayor desgaste y viceversa, como lo confirma la literatura antes citada. En términos generales, son las mujeres adultas las que mostraron el desgaste oclusal más severo, además de contar con un mayor número de individuos afectado por esta condición dental.

En términos generales, las mujeres y los hombres adultos constituyeron el grupo más propenso a la acumulación de depósitos de sarro, afectando mayormente la superficie bucal de los dientes posteriores, especialmente molares, y en menor proporción premolares. Sin embargo, escaso fueron los casos hallados. En la mayoría de los casos se reportó sarro sobre la superficie bucal del diente, y menos frecuente fueron los casos de sarro sobre la superficie lingual de dientes anteriores. La categoría predominante fue “leve”; es decir, los depósitos de sarro evidenciados en la población adulta de Chen-Chen fueron pequeños.

Finalmente, uno de los individuos adultos (INV 109, Adulto mayor de sexo femenino) presentó hipercementosis en un diente monoradial (premolar). La presencia de este tipo de ‘anomalía’ radicular se asociaría, en este caso a un fuerte desgaste oclusal dental, debido a que el diente afectado por hipercementosis presenta abundante pérdida de la superficie oclusal.

3.- Discusión y conclusiones:

La conformación paleodemográfica de la muestra, como se expresa en la población funeraria analizada, posee los esperados picos de mayor frecuencia entre el grupo etáreo de la primera niñez y en un segundo momento en el ciclo de vida en la etapa Adulto Medio. Por otro lado, la incidencia de patologías observables en el tejido óseo en los individuos adultos o subadultos no es significativa. Sin embargo, la presencia de patologías vertebrales sí es numerosa y solamente presente en individuos adultos. En donde la mitad de individuos que también sufrieron patologías vertebrales tenían también asociada la presencia de artropatías en las principales articulaciones. Adicionalmente, podemos mencionar que cuatro de los seis individuos que presentan fracturas, presentan también el desarrollo de artritis en las principales articulaciones o patologías vertebrales. Esto quiere decir que la incidencia de patologías vertebrales o artritis podría estar relacionada, por lo menos en la mitad de los casos, a la presencia de fracturas. Complementariamente, se ha observado que la probable etiología de las fracturas debe a golpes que pueden haber sido producidos por caídas y tres casos de posible violencia interpersonal. Sin embargo, no se puede descartar que la incidencia de patologías vertebrales o artropatías en las principales articulaciones que no están asociadas a fracturas se deban a actividades frecuentes que practicaban los individuos. Como se mencionó anteriormente, la presencia de osteofitos no es siempre signo de una condición patológica, es decir, suele ser normal su aparición a medida que se envejece, e incluso incrementa con los años. La presencia de las mismas suele estar no sólo asociado al factor edad –a mayor edad, y por ende desgaste óseo, se espera encontrar un mayor desgaste a nivel del cuerpo vertebral- sino que también estaría asociado a la actividad laboral que ejerza el individuo. Sin embargo es posible también su

APPENDIX D (continued)

identificación en individuos jóvenes cuya actividad diaria demanda fuerte presión o tensión en las principales articulaciones de manera intensa y localizada.

A manera de síntesis del análisis estadístico de las incidencias de una o más patologías en los individuos que componen esta muestra, podemos decir que: 1) el test estadístico Fisher exact clasificó como una diferencia estadísticamente no significativa la diferente incidencia de patologías entre individuos adultos y subadultos. Sin embargo, es importante mencionar que en muchos análisis paleodemográficos de poblaciones antiguas es esperable encontrar mayores tasas de mortalidad entre los individuos subadultos, por ser estos los más propensos a contraer enfermedades o contar con pocas reservas para enfrentarlas (Wood et.al. 1992, Boldsen et al. 2002). Adicionalmente, se realizaron otras comparaciones entre incidencias de lesiones paleopatológicas entre individuos con sexo determinado pero estas comparaciones resultaron estar dentro de la variación esperada al interior de una muestra arqueológica. Sin embargo, tomando en cuenta que la muestra analizada es pequeña, las posibles correlaciones de presencia/ausencia entre las diferentes categorías etarias usadas para el análisis pueden estar presentes pero no se reflejarían estadísticamente.

En cuanto a la incidencia de modificaciones craneanas, el Horizonte Medio en el valle de Osmore se caracteriza por ser el período de influencia Tiwanaku. Sin embargo, las formas de modificación craneana circular –predominantes en el altiplano- no se encuentran presentes en la muestra analizada de Chen-Chen. Dada la importancia de la modificación craneana como elemento crítico y permanente hacia la identificación individual con un grupo (Barth 1998:11), sería interesante ampliar las investigaciones de los tipos de deformaciones craneanas en los períodos Intermedio temprano y Intermedio Tardío, con el fin de evaluar los cambios que se produjeron en las elecciones de identificación étnica grupal a lo largo de los diferentes períodos temporales.

Como síntesis, a partir del análisis dental, se puede decir que mujeres, hombres y niños estuvieron propensos al desarrollo de diferentes tipos de condiciones y lesiones dentales. En cuanto al análisis dental y la prevalencia de caries dentales ¿Qué pudo causar esta predominancia cariogénica femenina? A partir de los resultados presentados, planteamos dos posibles factores. El primero, causado por el uso de los dientes en procesos no-masticatorios, lo cual genera fracturas y un desgaste masivo dental; condicionando el diente a una mayor propensión a desarrollar una lesión cariosa. Son justamente las mujeres el grupo más afectado por este tipo de fracturas dentales no-intencionales a nivel del borde oclusal de la corona dental. Una segunda opción –y menos probable- sugiere la dieta como factor predominante para este mayor nivel cariogénico femenino; sin embargo, por la estrecha diferencia de frecuencias de caries entre hombres y mujeres esta opción es poco probable. De haber tenido hombres y mujeres realmente una alimentación distinta entre sí, la diferencia en términos cariogénicos habría sido mucho más notoria u amplia. Quizás más que una diferencia de dieta, habría sido una diferencia en términos de higiene dental lo que pudo condicionar una leve predominancia cariogénica del sector femenino. En cuanto a la severidad de las lesiones cariosas, en todos los tipos de caries dentales evaluados, los grados más altos de severidad se evidenciaron con más frecuencia en mujeres. Cabe mencionar que no siempre se halló una correspondencia entre una mayor propensión a desarrollar caries dentales y un mayor grado de severidad de la lesión. El segmento adulto masculino, por su parte, no sólo estuvo menos propenso al desarrollo de caries dentales, sino también alcanzó los menores grados de severidad de la lesión.

APPENDIX D (continued)

En cuanto al desgaste dental, no es sólo de carácter oclusal -proceso relacionado al factor dieta como también al propio proceso masticatorio-, sino también de carácter oblicuo, preferentemente hacia la superficie bucal. Ello nos sugiere que no sólo en el proceso masticatorio, pero también el acto de extraer, morder y procesar el alimento es generador del desgaste dental. Sin embargo, aún falta esclarecer aspectos relacionados al probable uso de los dientes en actividades laborales. En cuanto a la presencia de enfermedades periodontales, la presencia de abscesos y/o granulomas es leve, evidenciándose básicamente en la mayoría de los casos gingivitis, y poca frecuencia de estadios mayores de infección.

Finalmente, el factor dieta debió tener indudablemente una influencia en el desarrollo de ciertas condiciones dentales como caries dental, desgaste oclusal y sarro supragingival; sin embargo otros factores tuvieron igualmente un rol crucial, tales como: una pobre higiene oral y fracturación dental antemortem del borde oclusal. Todo lo cual generó las condiciones necesarias para la formación y desarrollo de caries dentales, y una exposición de la superficie dental que derivó en el desgaste y pérdida de la misma. Una predominancia de estas condiciones en las mujeres adultas enterradas en Chen-Chen, no sólo expresa una mayor propensión al desarrollo de cada condición, sino también un vínculo más estrecho entre este segmento social en particular y actividades cotidianas que de alguna manera condicionaron una mayor prevalencia y grado de severidad de estas condiciones en dicho segmento social.

APPENDIX E

EXCAVATIONS IN THE CEMETERIES AT TUMILACA LA CHIMBA

The following details excavations in the four cemeteries (units 44 - 47) at Tumilaca la Chimba, conducted under the auspices of Proyecto Arqueológico Cerro Baúl in 2006 and 2007 (Figure 228). For each tomb, I describe architectural data, summarize the bio-archaeological data and detail the cultural inclusions. Analytical methods are described in Appendix B. The bio-archaeological analysis was conducted Jennifer Starbird, the botanical fine screen samples were analyzed by David Goldstein, and further details are available in their respective reports (Appendices F and G).

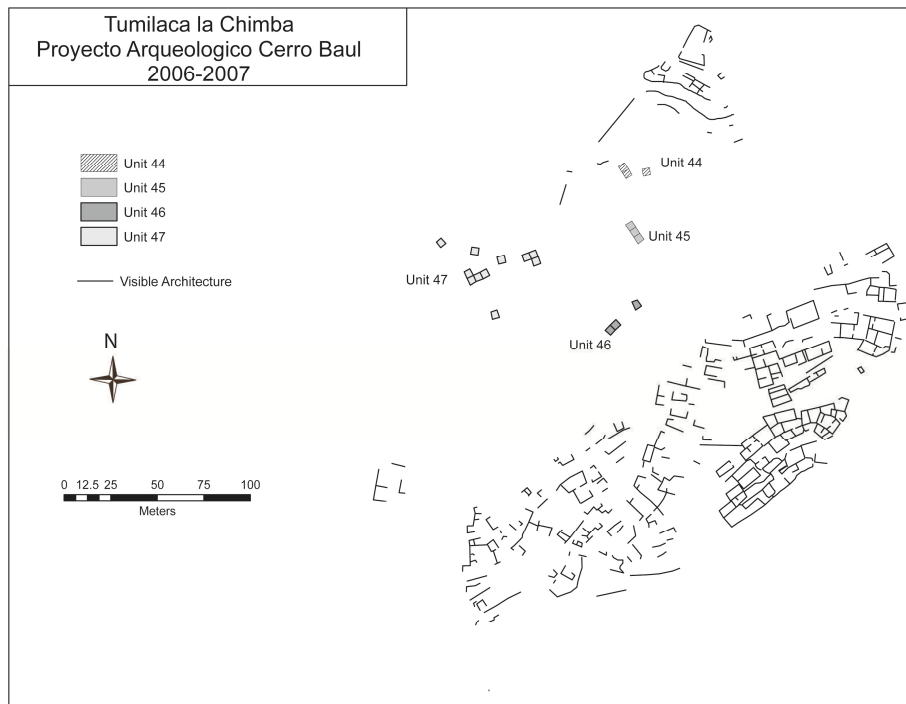


Figure 228. 2006/7 excavation units at Tumilaca la Chimba.

In the ceramic drawings accompanying the burial descriptions, ceramic drawings are colored using the following code (Figure 229). Percentages refer to the level of Grayscale coloring used.

APPENDIX E (continued)

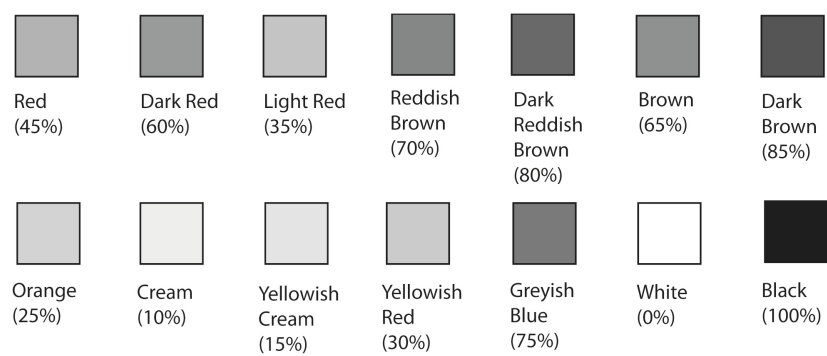


Figure 229. Color codes used in gray-scale drawings of ceramics from Tumilaca la Chimba. Percentage refers the grayscale level used.

Unit 44

Unit 44 is located near the top of the ridge, on the east slope, and north of Unit 45. It is the smallest of the four cemeteries, covering 620m². Two rows of tombs aligned on an east/west axis were visible from the surface. Three areas, each 4m², were excavated in Unit 44, and a total of six tombs recovered.

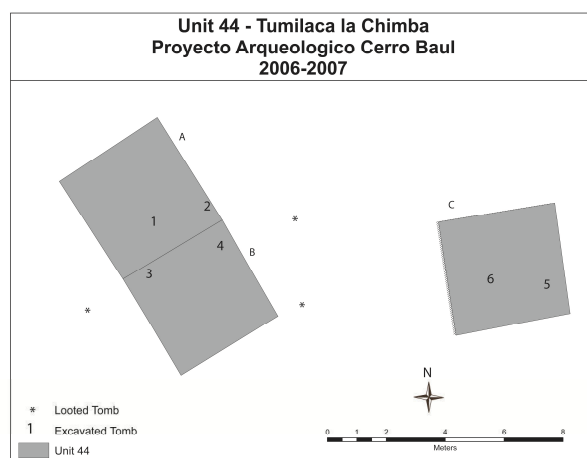


Figure 230. Unit 44.

APPENDIX E (continued)

Area A

Area A was located toward the northern most limit of Unit 44, towards the crest of the ridge. There was no surface evidence for any tombs further north than Area A. The north profile of Area A including a chalky subsoil, likely sterile and confirming that this was beyond the boundary of the cemetery. The area was oriented on the natural slope of the *cerro*.

Layer S/A was between 44 and 58cm thick, and comprised loose soil and large stones. Few cultural or skeletal materials were recovered from this layer, likely given to the position of the excavation area at the top of a steep slope. Four ceramics sherds were recovered, including a red slipped *tazon* rim, and a red-slipped decorated body sherd.

There were two tombs in Layer B. One was disturbed, the other was intact.

Tomb 44-1

Tomb 44-1 was a looted tomb, located in the center of Area A. It had been disturbed by modern looters. Tomb 1 was a stone-lined cist, with eight rows of stones on the west side of the tomb interior, and seven on the east. There was mortar in-between the stones. A small stone wall partially encircled the tomb on the south and east of the tomb, suggesting that the tomb originally had an outer ring. The cap of the tomb was constructed of several flat stones, some of which had been removed and placed to the west of the tomb. The circular mouth of the tomb was constructed of smaller stones, placed flat against the ground surface. The diameter of the mouth was 60cm. The circular floor was made of beige soil that had been hard packed and contained pebble inclusions. The diameter of the floor was 54cm. The depth of the tomb from mouth to floor was 83cm.

The tomb contained the skeleton of an adult male, aged 40-50 years at time of death. Slight tabular cranial modification was in evidence. The individual showed signs of dental wear and degenerative joint disease. The skeleton was notable for a hole in the sternal body near the xyphoid process. The lower body was undisturbed. The individual was seated flexed, and based on the placement of the vertebrae against the western side of the tomb and the position of the still articulated feet, it was likely facing east.

Braided fiber rope fragments were found at the base of the tomb. In addition the tomb contained fragments of brown, woolen textile.²⁹⁸ The wool had been spun ZS, and the weave was either warp or weft faced.²⁹⁹ Some un-spun wool was also recovered. The tomb contained some wooden chips and an incomplete wooden spoon, 18.5cm in length, with a carved handle with indeterminate design. 24 chrysocolla beads, with diameters between 0.1 and 0.4cm were found at the base of the tomb. Five dark red slipped ceramic sherds, probably from a decorated *tazon*, were also in the tomb. Seeds of *Arracacia* (Andean parsnip) were recovered from the tomb as well as a single *Echinocactus* (cactus) seed. There were also seeds from the wild plants *Sonchus* and *Schkuria* (see Appendix G).

²⁹⁸ Wool is presumably camelid.

²⁹⁹ Because there was no border, it was not clear which threads were the warp and which the weft. However, the weave was definitely not interlocking warp/weft.

APPENDIX E (continued)

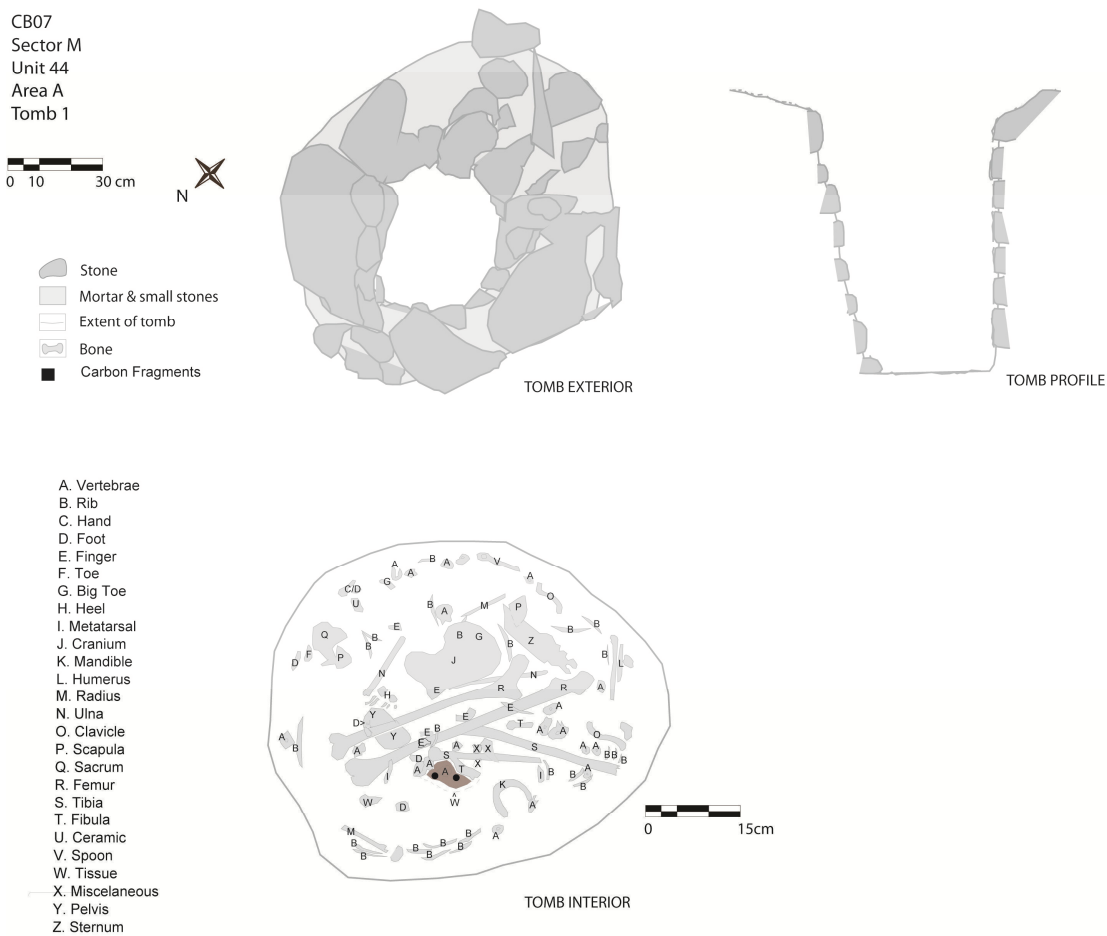


Figure 231. Unit 44, Area A, Tomb 1.

APPENDIX E (continued)

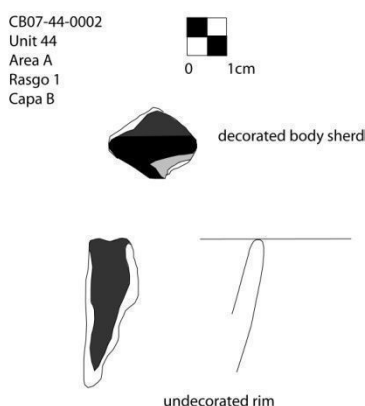


Figure 232. Ceramic Sherds, Tomb 44-1.

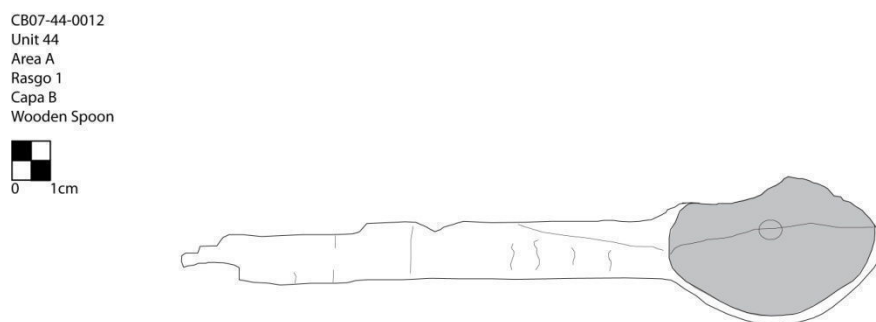


Figure 233. Wooden Spoon, Tomb 44-1.

Tomb 44-2

Tomb 44-2 was in the east corner of Area A. The tomb was intact. It was a stone lined cist, with four courses of stones and mortar between the stones. There was no outer ring of stones, although three stones were placed standing up around the capstone. The capstone was made of a single stone with mortar. The circular mouth was of stones and mortar and had a diameter of 23cm. The circular floor was comprised of packed soil and had a diameter of 7.5cm. From mouth to floor, the tomb was 37cm deep.

APPENDIX E (continued)



Figure 234. Unit 44, Area A, Tomb 2.

The tomb contained the skeleton of an infant, aged less than 1 year old, of undetermined sex. Cranial modification was undetermined due to the fragile nature of the cranial bones. There were no signs of pathologies. The infant was sat, flexed, facing east.

An intact ceramic *jarra*³⁰⁰ (pitcher) was recovered from the tomb. The vessel was to the east of the infant and was un-slipped and decorated with a black design of panels of step-stair motifs, small circles and wiggly lines.

³⁰⁰ Height 10.6cm, Rim Diameter 7cm, Base Diameter 7cm.

APPENDIX E (continued)

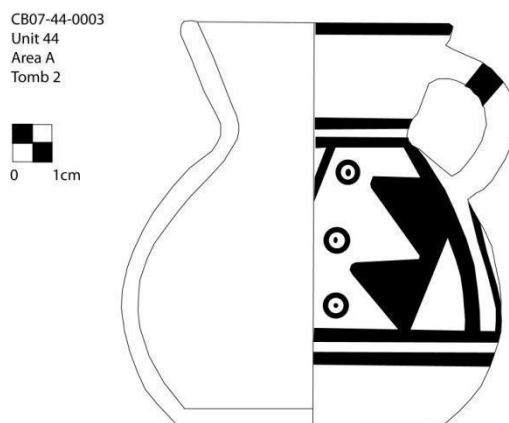


Figure 235. Ceramic one-handed pitcher, Tomb 44-2.

Area B

Area B was located immediately south of Area A. At its deepest, Layer S/A was 28cm deep. Only one ceramic sherd was found on in Layer S/A; a red slipped decorated body sherd. However, 2100g of human skeletal fragments were recovered. In addition, a small unidentified metal fragment was recovered. There were two tombs in Layer B. Both were disturbed.

Tomb 44-3

Located in the northwestern limit of Area B, to the south of Tomb 44-1, this tomb was disturbed by modern looters. The tomb was a stone lined cist, with mortar between the stone courses. There were six courses of stones. There was possible evidence of an outer stone ring. The capstone was of stone, but it had been removed and placed to the side of the cist. The circular mouth was made of stone and mortar and was 47cm in diameter. The circular floor was of packed soil and 26cm in diameter. From mouth to floor, the tomb was 63cm deep.

APPENDIX E (continued)

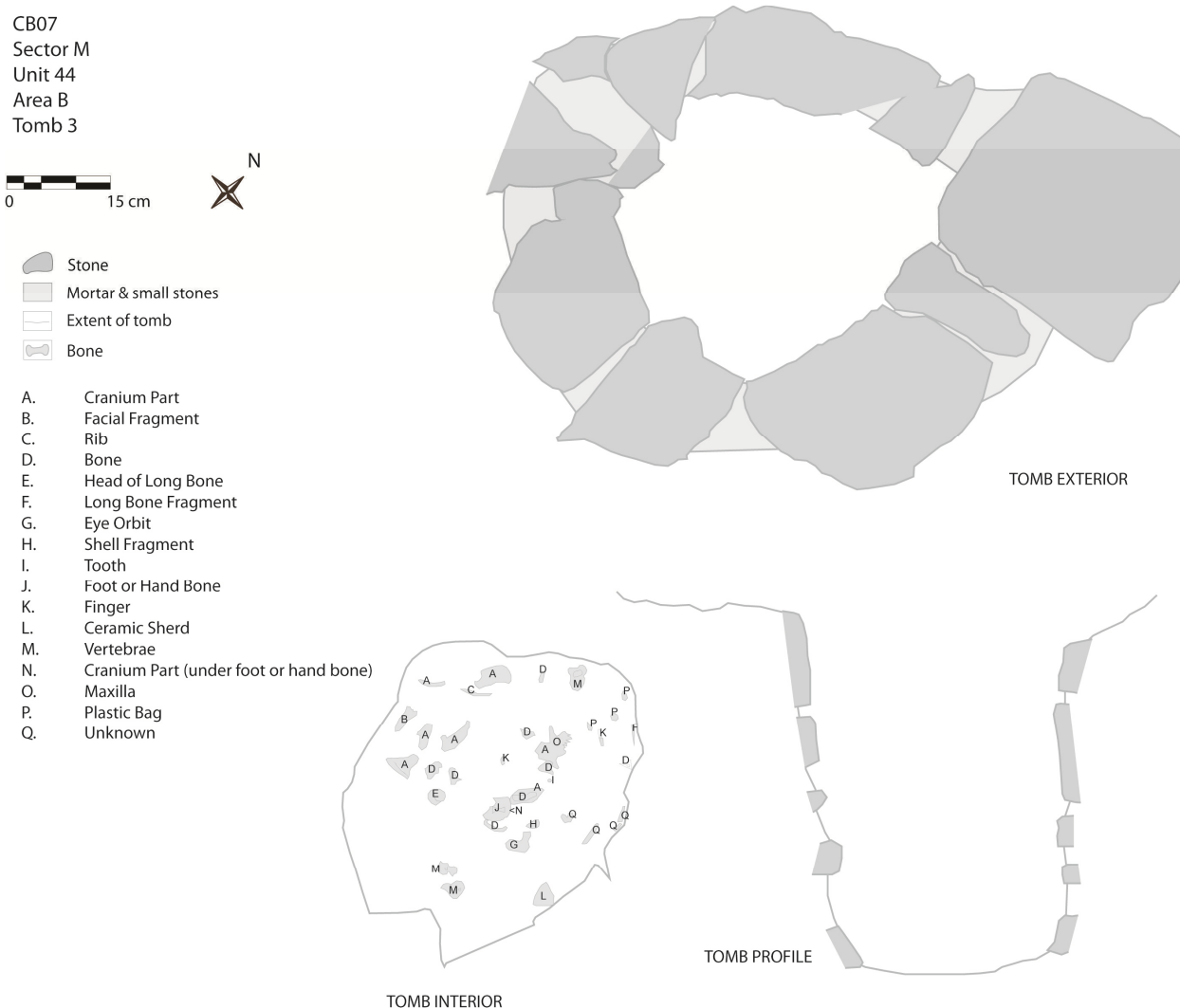


Figure 236. Unit 44, Area B, Tomb 3.

The tomb contained the weathered bones of an adult individual. The fragmentary and weathered condition of the bones made a sex and age determination impossible, although a very robust, possibly male, mandible found on the surface near to Tomb 3 may be associated with the individual which had suffered some pre-mortem tooth loss. The cranium was too fragmentary to examine cranial modification. The only possible grave inclusion was a red slipped ceramic sherd with evidence for a black step stair motif. A few lithic flakes were found in the tomb. The tomb

APPENDIX E (continued)

also contained evidence for animal activity, with reptile bones and reptile skin, as well as scraps of plastic bag.

Tomb 44-4

Located in the northeastern limit of Area B, Tomb 44-4 was a heavily disturbed grave. It had been a stone lined cist, with mortar between the stone courses. The north side of the tomb was constructed using comparatively large stones and thin layers of mortar. The south side was constructed with smaller stones and thicker layers of mortar. The capstone was absent. The cist was very shallow (34cm) in relation to its diameter (59cm), suggesting the possibility that upper portions of the wall, in addition to the capstone, had been removed during looting. The circular floor was 52cm in diameter, and appeared untreated.

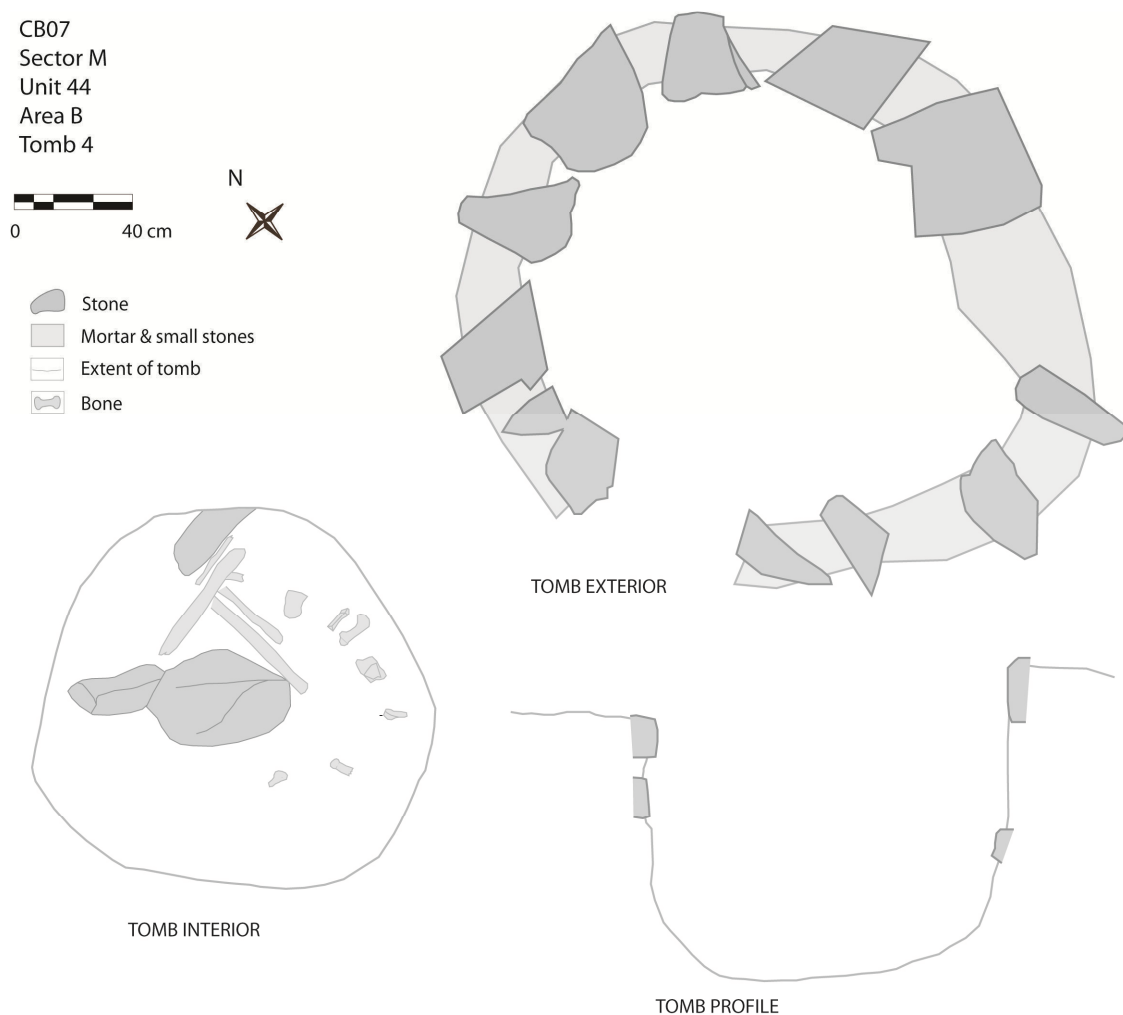


Figure 237. Unit 44, Area B, Tomb 4.

APPENDIX E (continued)

Skeletal remains were fragmentary and had suffered considerable post-mortem damage. There were no cranial elements. The pelvis was fragmentary. Age and sex determinations, as well as cranial modification style, were impossible. The individual was likely an adult based on the size of elements present. The robust chin suggested a possible male, but there was no other evidence for sex. The individual had a possible healed fracture on one tibia, and dental wear. Position of the individual was impossible to determine, due to the disturbed nature of the context.

No cultural inclusions were recovered from Tomb 44-4. Some faunal remains, from rodent and toad were recovered.

Area C

Area C was located in the east limit of Unit 44. Layer S/A was between 23 and 30cm deep. It was comprised of loose soil and stones. 19 ceramic sherds were recovered from Layer S/A, none of which were slipped or decorated. They included a rim and two bases, one of which showed evidence of sooting on the exterior. An obsidian flake was also recovered. Layer B contained two tombs. Both were disturbed.

Tomb 44-5

Located on the northeast side of Area C, Tomb 44-5 was looted. A stone lined cist, comprised of two courses of stone and mortar in-between the stones. The walls were predominantly mortar with smaller stones. Half of a neatly arranged outer ring of rectangular stones radiating lengthways out from the capstone was preserved. The tomb had been looted from the southeastern side, leaving the single stone capstone and mortar in place. The circular mouth of the tomb was of stones and mortar and had a diameter of 55cm. The circular floor comprised packed soil with small stone inclusions. The diameter of the floor was 60cm. One flat, triangular stone was placed on the floor, beneath and behind the pelvis of the individual. The tomb was 95 cm deep from mouth to floor.

The tomb contained disturbed skeletal material. The cranium was absent. The individual was likely a male (due to robust mandible and male innominate traits) and 50+ years at time of death (based on pelvic traits). The individual had suffered considerable pre-mortem tooth loss, significant dental wear, had possible evidence for degenerative joint disease, and very robust muscle attachments on the long bones. Some clumps of black hair were found in the tomb. Although loose, they were twisted in such a way as to indicate the hair had been braided.

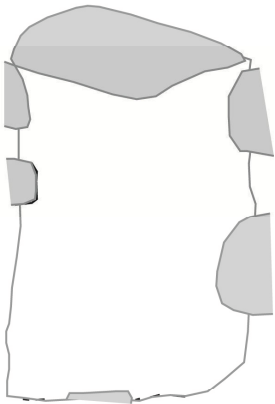
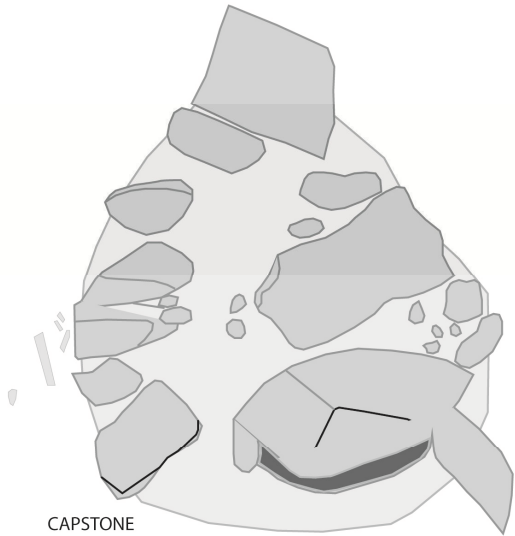
A textile fragment was found underneath the vertebrae and pelvis. The textile was heavily disintegrated and embedded in congealed soil, making analysis impossible. Fragments of fiber rope were associated with the cervical and upper thoracic vertebrae. A very small fragment of wood was located in the eastern part of the tomb. Lithic flakes, including one with retouch were recovered.

APPENDIX E (continued)

CB07
Sector M
Unit 44
Area C
Tomb 5

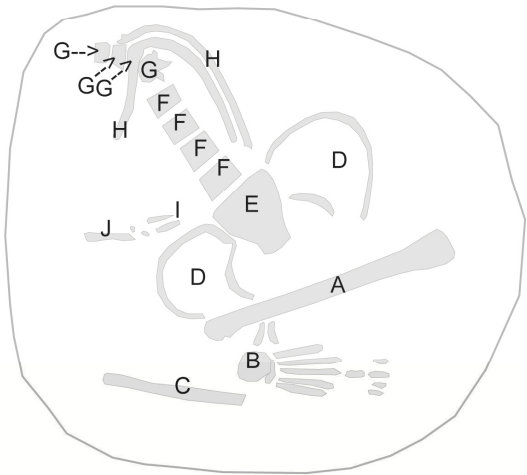


- Stone
- Mortar & small stones
- Extent of tomb
- Bone
- Looters' hole



TOMB PROFILE

- A. Femur
- B. Right Foot
- C. Fibula Fragment
- D. Os Coxae
- E. Sacrum
- F. Lumbar Vertebrae
- G. Thoracic Vertebrae
- H. Ribs
- I. Right Hand
- J. Radial Fragment



TOMB INTERIOR



Figure 238. Unit 44, Area C, Tomb 5.

APPENDIX E (continued)

Tomb 44-6

Located to the southwest of Tomb 44-5, in Area C, Tomb 44-6 was a looted, stone lined cist. The cist had five courses of stone, with mortar in-between. Part of an outside ring was preserved on the northern side of the tomb. The cap-stone was missing. The circular mouth was constructed from stones and mortar. It had a diameter of 23cm. The circular floor was constructed of hard packed earth and small stones and had a diameter of 37cm. The tomb was 73cm deep from mouth to floor. No human remains were found in the tomb. Given the small dimensions of the tomb, it is probable that the tomb was constructed for a younger child.

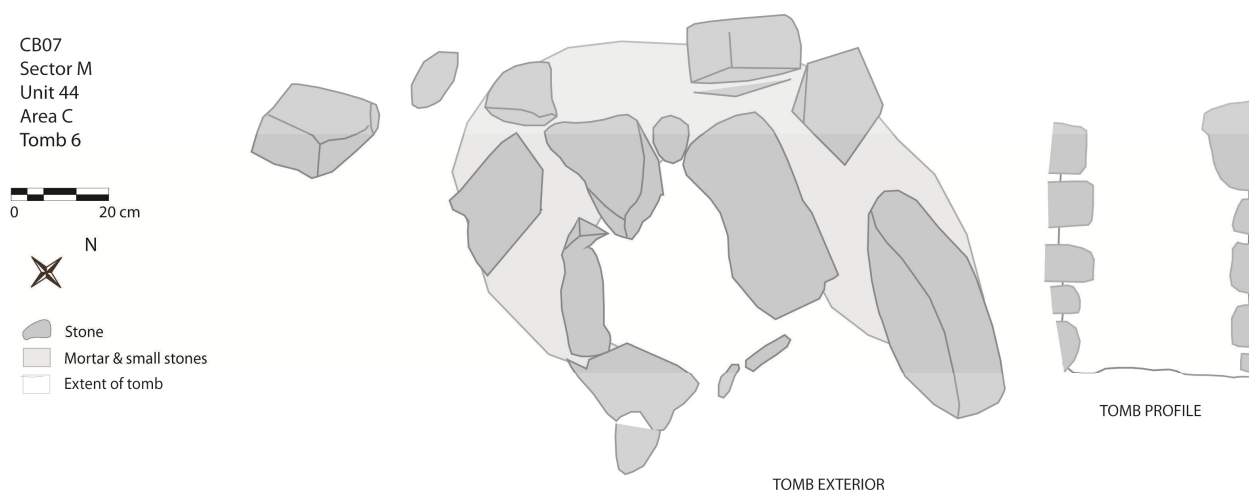


Figure 239. Unit 44, Area C, Tomb 6.

Summary of Unit 44

Unit 44 is a small cemetery, considerably smaller than the other three at Tumilaca la Chimba. Although only six tombs were excavated, these represented the only tombs identified in the three excavation areas. In Unit 44 then, only two tombs were found per 4 meters squared. All tombs in Unit 44 were stone lined cists. Few grave inclusions were identified; only one intact vessel was recovered. The ceramic diagnostic sherds were Tiwanaku in style and form. Unit 44 contained burials of adults, infants, and likely small children. The sexed adults were male. Funerary treatments similar to those at Chen Chen were in evidence; individuals were seated, flexed and facing east. There is evidence for the inclusion of woolen textiles woven in ways very similar to those at Chen Chen. Corpses appear to have been wrapped with fiber rope. Goldstein's analysis of macro-botanical remains from Unit 44 indicates the presence in a grave of the

APPENDIX E (continued)

domesticated Andean parsnip. He also notes that few pupae were recovered from Unit 44, in comparison with the other cemeteries and raises the possibility that corpses were de-fleshed or dried before burial. Alternatively, the presence of other insects (beetle and ant) might indicate that burial did not coincide with fly seasonality (see Goldstein, Appendix G).

Unit 45

Unit 45 is also located on the eastern side of the ridge, to the south of Unit 44. The cemetery covers 860m². Unit 45 was the focus of Pari's 1980 excavations. From the surface, the cemetery appears to contain a far denser concentration of burials than Unit 44, and there is evidence for extensive looting in Unit 45. In 2007, three 4m² areas were excavated, and a total of sixteen burial contexts recovered. Two obsidian flakes, one with retouch, were recovered from the surface of Unit 45 but outside the three excavation areas.

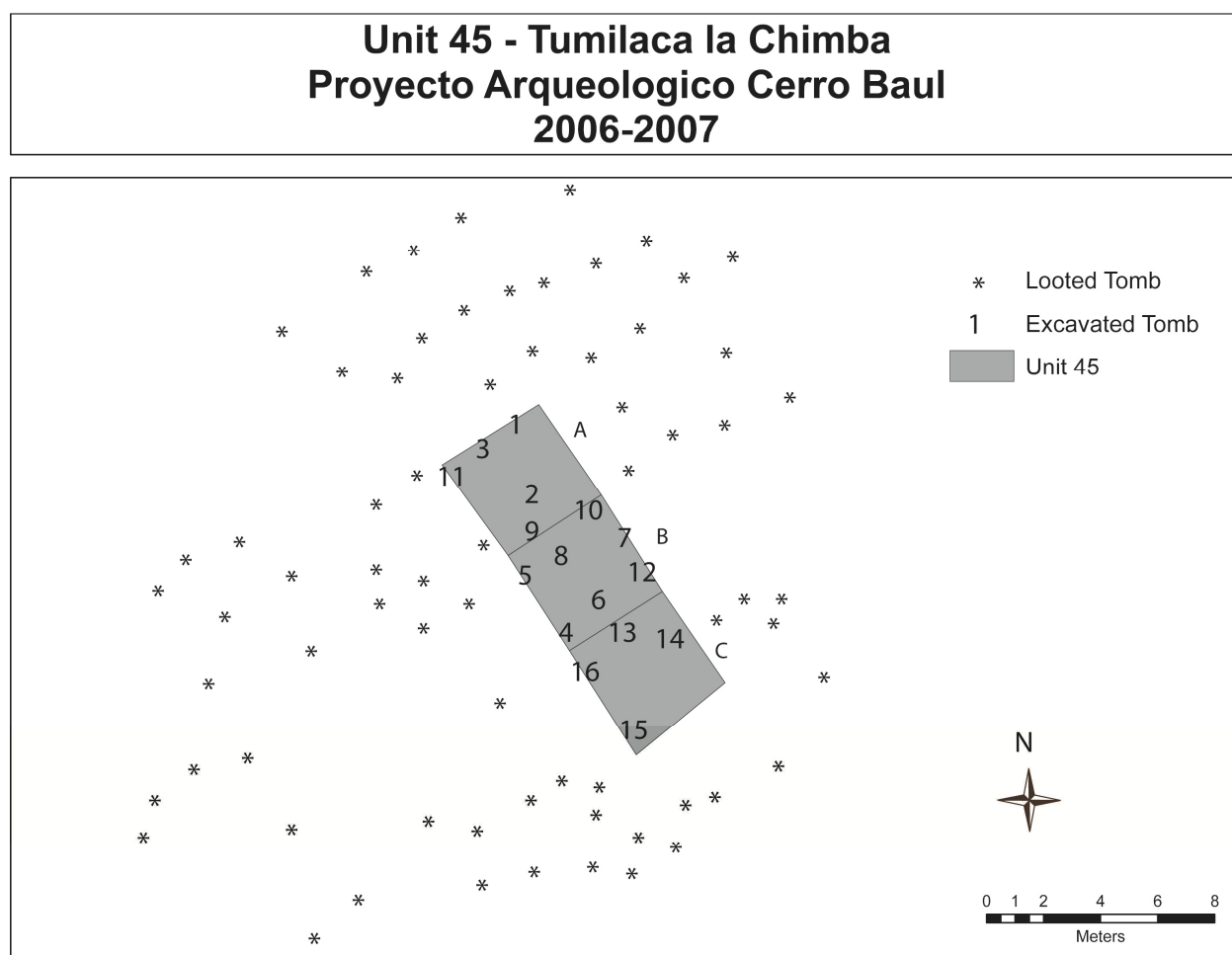


Figure 240. Unit 45.

APPENDIX E (continued)

Area A

Area A was located in the center of Unit 45. There are looted tombs surrounding Area A in all directions. The Area was oriented on the natural slope of the *cerro*. Five tombs were identified in Area A.

Layer S/A was between 1 and 22cm deep, due to the steep slope of the *cerro*. The Layer comprised a loose deposit with cultural materials. Six ceramic sherds were recovered from Layer S/A. All were undecorated, non-diagnostic pieces. 460g of fragmentary human skeletal materials were also recovered. Lithic flakes and an obsidian flake were also recovered from Layer S/A. Five tombs were excavated in Layer B. Two were intact, three were disturbed.

Tomb 45-1

Tomb 45-1 was located in the northern corner of Area A. The tomb was a looted stone lined cist. The cist had six courses of medium sized stones filled in with considerable amounts of mortar. It did not have an outer stone ring. Half of the stone capstone remained in situ. The circular mouth was made of stone and mortar, with rectangular stones placed flat lengthways. The diameter of the mouth was 47cm. The circular floor appeared untreated, of loose soil, with a diameter of 45cm. The depth from mouth to floor was 86cm.

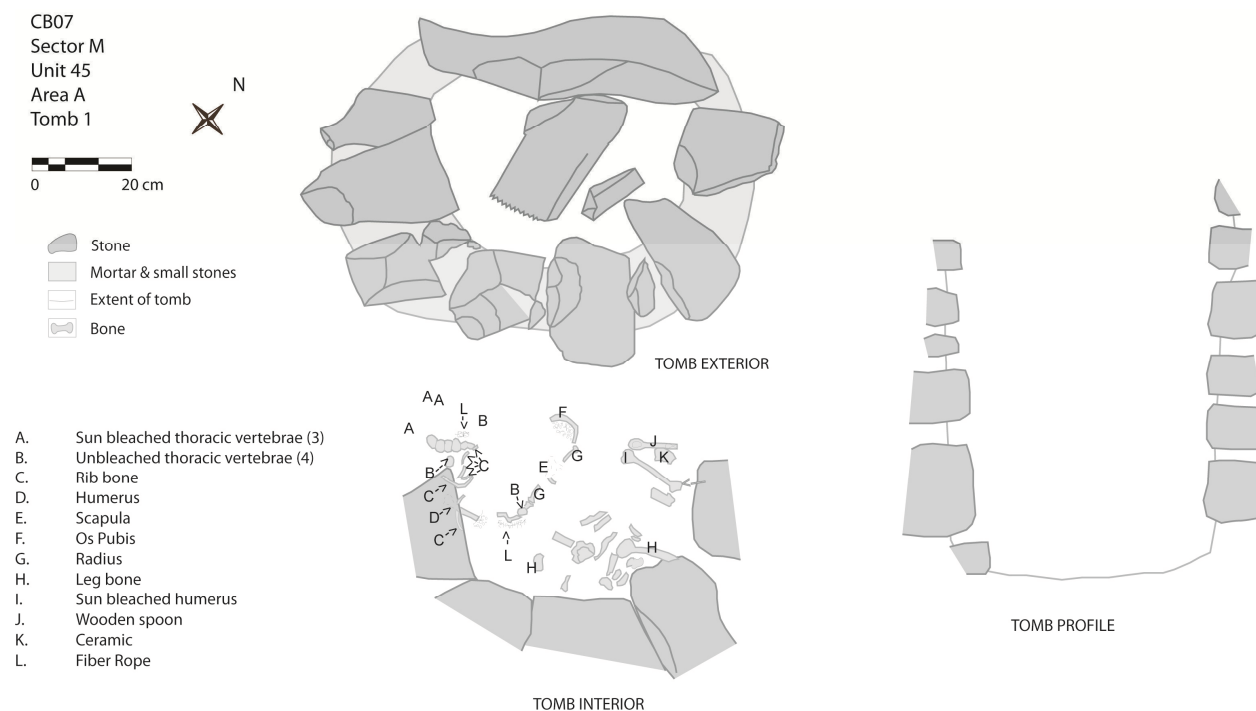


Figure 241. Unit 45, Area A, Tomb 1.

APPENDIX E (continued)

The tomb contained the skeletal remains of a possible female, aged 15-20 years at time of death. Most of the cranium was missing, due to looting activity, and this prevented analysis of cranial modification. Some of the capstone had fallen into the tomb, further damaging the skeletal material. The individual had minor dental wear. The individual was sat flexed, with the feet facing east. At some point the individual had fallen onto its right side, to the south.

Rope and textile were found on the individual. The fiber rope was fragmentary and it was unclear if it had been braided or twisted. The rope appeared to have been first wrapped around the trunk of the body, and then the arms were held in place by additional rope. The textile fragments were cotton, finely spun ZS, and woven that the warp and weft interlaced. The tomb also contained a complete wooden spoon, in the northern corner of the tomb. The spoon was 14.5cm long, and its handle was incised with a geometric design. Next to the spoon were rim and body fragments of a red-slipped decorated *tazon*. The vessel had a rim diameter of 17cm, and was decorated with a black fine line motif. Two chrysocolla beads, with diameters of 0.1cm were located in the middle of the tomb, approximately where the cranium would have been. Lithic flakes were recovered from the tomb. A cotton, *Gossypium*, seed was recovered from the grave (Appendix G).

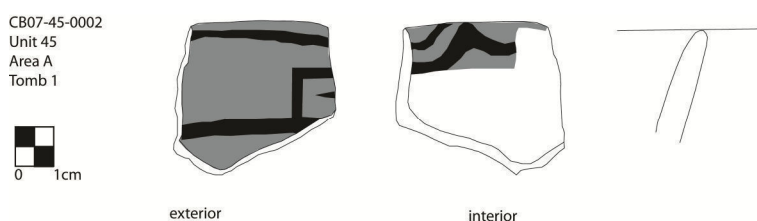


Figure 242. Fragments of red-slipped *tazon*, Tomb 45-1.

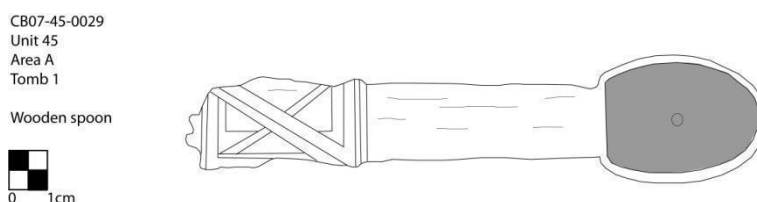


Figure 243. Wooden Spoon, Tomb 45-1.

Tomb 45-2

Tomb 45-2 was apparent from the surface before excavation of Area A began. The tomb was located southeast, or down-slope, of Tomb 45-1. The tomb was heavily looted, all that

APPENDIX E (continued)

remained of grave architecture was an outer ring, and an incomplete tomb wall. The tomb wall was comprised of partial stone lining, i.e. stones only faced part of the tomb wall. In Tomb 45-2, the upper 40cm of the interior of the tomb had stone courses, and the lower portion was comprised of earth. The stones in the courses were irregular and unevenly spaced across the walls. The opening of the tomb was roughly circular and 115cm across. This represents the extent of the outer ring, not the mouth which had been destroyed. The floor was oblong in shape and 78cm across. The depth of the tomb from base of the outer ring to floor was 58cm.



Figure 244. Unit 45, Area A, Tomb 2.

APPENDIX E (continued)

The only skeletal remains were highly fragmentary. No age or sex determinations could be made, although the size of the tomb suggests that it was built for an adult. Small fragments of animal bone were recovered. Three non-diagnostic, undecorated ceramic sherds were also found. Two were red-slipped, one had a black slip. Rodent and toad bones were present.

The tomb was full of an ash deposit. The deposit was 66cm deep. It was similar in color and texture to the ash layers found in the Moquegua Valley that resulted from the eruption of the Huaynaputina Volcano in Arequipa in 1600. The evidence that the tomb had been disturbed and the contents removed before 1600 supports the argument for pre-Hispanic burial disturbance in the Moquegua Valley (Owen, personal communication 2008).

Tomb 45-3

Tomb 45-3 was located to the west of Tomb 45-1. This intact tomb was a stone lined cist, constructed of two courses of irregularly shaped stones with mortar in-between. The upper stone coursing stretched around the entire interior diameter of the tomb, the lower stone coursing only halfway. The tomb did not have an outer ring. The cap of the tomb was present; it was comprised of several uneven stones piled on top of the tomb, with no evident use of mortar. Mortar did fill in the stones comprising the circular shaped mouth. The diameter of the mouth was 29cm. The floor was circular in shape and had a diameter of 41cm. Placed on the floor was a large flat stone, on which the skeleton was sitting. The depth of the tomb from mouth to floor was 45cm.

The tomb contained the skeleton of a child, aged 4 years +/-1 year. The sex was indeterminate. Cranial modification style was undetermined. The child showed signs of cribra orbitalia, porotic hyperostosis and possible scurvy. The child was sat flexed, facing east. The cranium had fallen to the southwest during decomposition, but the trunk appeared in situ.

The only cultural inclusions in the grave were fragments from two distinct textiles. One was very finely spun, brown cotton woven in an interlocking pattern, possibly a *manta* (shawl). The other was threads of gray or cream wool, spun far more loosely than the cotton, also woven in an interlocking pattern. Cotton was also identified during the macro-botanical analysis (Appendix G).

APPENDIX E (continued)

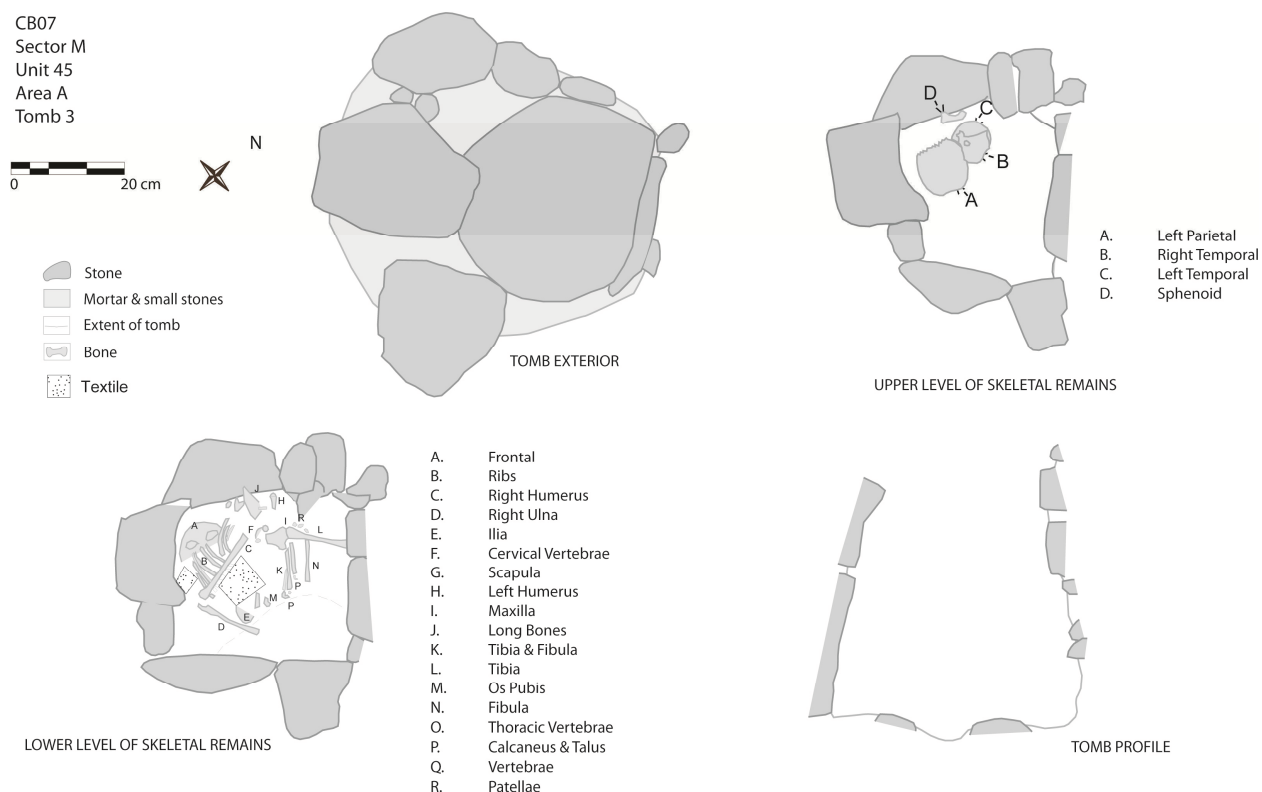


Figure 245. Unit 45, Area A, Tomb 3.

Tomb 45-9

Tomb 45-9 was completely obscured until Layer S/A had been excavated. It was situated on the southeastern edge of Area A, to the south of Tomb 45-2. The tomb was intact, with 2 outer rings. The tomb had a cap made of stone, with mortar. The interior of the tomb was an unlined pit. 23cm below the capstone, a second was located. This was comprised of a large stone, which had partially fallen into the grave. The original mouth of the tomb was around this second capstone. It was circular, constructed of large stones, arranged horizontally around the hole, and with a diameter of 33cm. The circular floor was untreated, and had a diameter of 29cm. The depth of the tomb from second mouth to floor was 89cm, but from the original mouth to floor it was 70cm. The later mouth and capstone, then were constructed some 19 cm above the original grave architecture and the two outer rings were then placed around the structure.

APPENDIX E (continued)



Figure 246. Unit 45, Area A, Tomb 9.

The grave contained the skeletal remains of a child, aged 4 years +/- 1 year, of indeterminate sex. The individual showed signs of extreme circumferential cranial modification. The only pathology was minor cribra orbitalia. The individual was seated, flexed, facing east, although the head had fallen downwards.

Located on the north side of the tomb, approximately level with the top of the child's head, was a ceramic vessel. The vessel was on its side, with the rim pointing west, and the base towards the east. The vessel appears to have originally been a *kero*³⁰¹ with a torus in the upper body. The vessel was shaved off just above this torus resulting in a vase shaped vessel. The

³⁰¹ Height 13.2cm, Rim Diameter 12cm, Base Diameter 10cm.

APPENDIX E (continued)

relative flatness of this secondary rim suggests that the vessel was intentionally remodeled, perhaps following damage. The vessel was of a fine paste, had a burnished, red-slipped exterior. The interior was not slipped, but the original rim probably was, given the pattern for a band of red slip, approximately 5cm thick on the interior rim of Tiwanaku *keros* and *tazones*. The main body of the vessel was decorated with alternating panels of step-stair motifs and wiggly lines. Above and beneath the main body were bands containing stylized birds. A tiny fragment of fiber rope was found inside the tomb. Some possible faunal remains were also found.

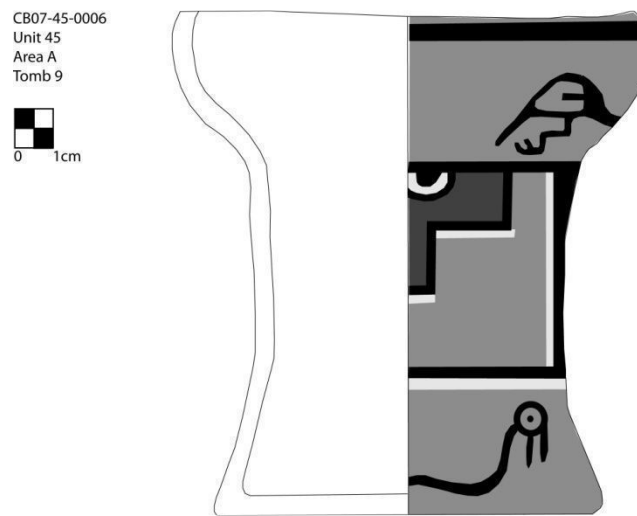


Figure 247. Ceramic vessel, Tomb 45-15.

Tomb 45-11

Tomb 45-11 was located to the west of Tomb 45-3, on the very southwestern limit of Area A. The tomb was a looted, partially stone lined cist. It had between two and three courses of stone, with mortar between the courses. The stone courses reached a third of the way into the tomb, the rest of the walls appeared to be mortar mixed with sediment. There was no outer ring. The capstone was missing. The circular mouth had a diameter of 29cm, and was constructed from small, neat, angular stones and mortar. The circular floor had a diameter of 21cm. A large flat stone was placed on the floor, and the corpse was sitting on this stone. The tomb was 64cm deep from mouth to floor.

APPENDIX E (continued)

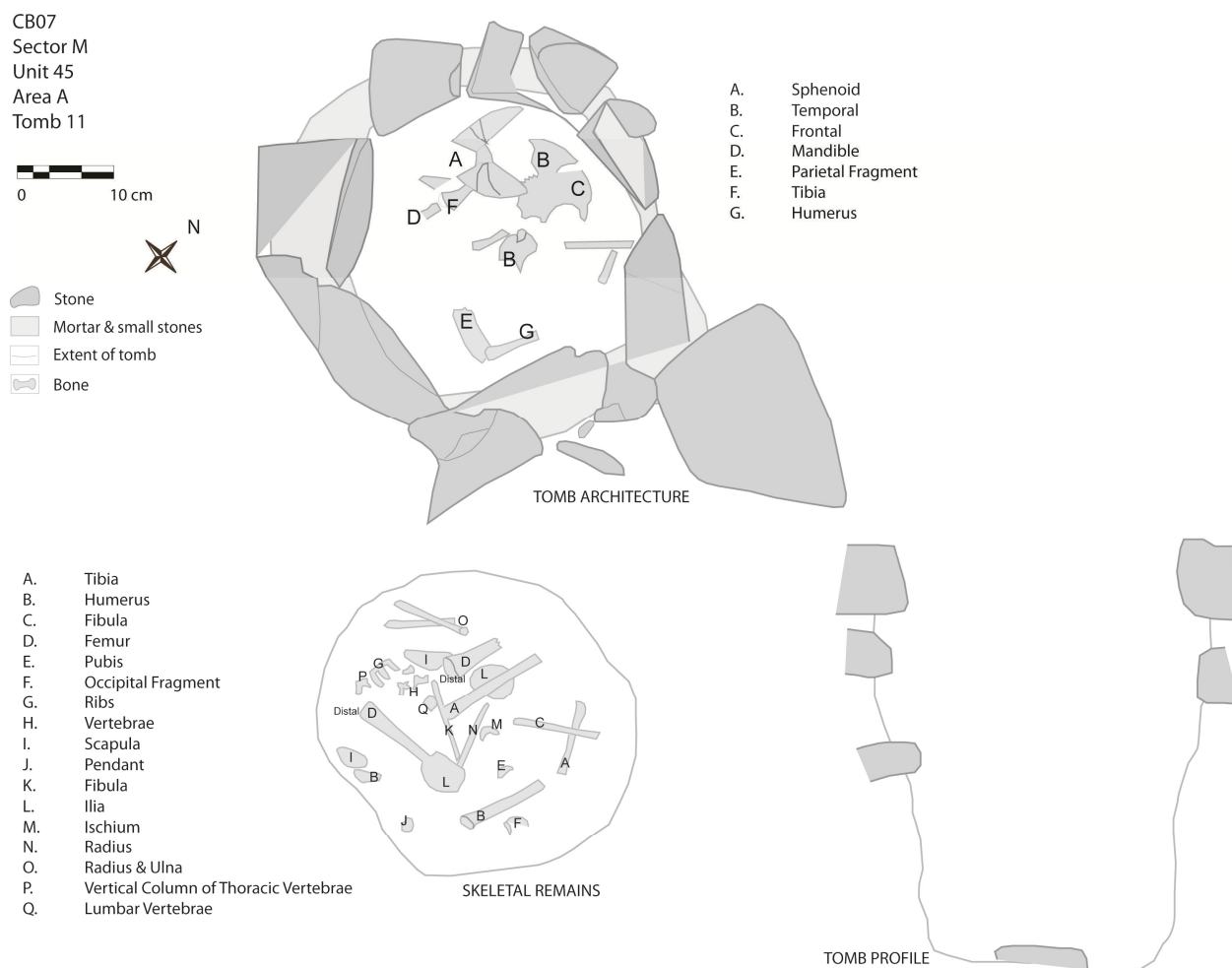


Figure 248. Unit 45, Area A, Tomb 11.

The skeletal remains were of a very young child, 2 years +/- 8 months, of indeterminate sex. Most of the skeletal elements were present. Cranial modification was unobservable. No pathologies were present. Some of the skeletal elements were scattered. Based on the position of the vertebrae and ribs against the west side of the tomb, and the feet pointing east, it is probable that the child was facing east. The child was in a flexed position.

In the southeast corner was a sodalite pendant. Measuring 1.7 by 1 cm, the bead was in a 'cloud' shape. It was approximately 0.1 cm thick. A hole had been drilled through one end, the thinner end of the pendant. A hole had been begun in the thicker end, and apparently abandoned.

APPENDIX E (continued)

Four lithic flakes were also found during excavation of the tomb. The association with the skeletal remains was not as definite as for the pendant, and the flakes may just be part of the fill that had fallen into the open tomb.

Area B

Area B was located immediately down-slope from Area A, so that it shared its northwest side with the southeast limit of Area A.

As elsewhere, Layer S/A consisted of loose sediment mixed with cultural and skeletal materials, likely the result of extensive looting in the cemetery. The layer was between 1 and 63cm deep, depending on the slope of the hill. The layer contained 129 ceramic sherds, all of which were non-diagnostic and undecorated. Only a few were slipped – either in brown, dark red or black. There was a considerable (500g) quantity of fragmentary human skeletal remains on the surfaces. Lithics on the surface consisted principally of flakes without retouch. There were also seven pieces of obsidian, six of which were flakes without retouch and one was a point. The point and two of the flakes were translucent obsidian, the other flakes were a black obsidian. A small copper bell was also found in Layer S/A.

Seven tombs were excavated in Layer B. Six were disturbed, one was intact.

Tomb 45-4

Tomb 45-4 was located in the southern corner of Area B. The tomb was a looted, stone lined cist. The walls comprised three to four stone courses, with only small amounts of mortar in-between the stones. The tomb had no outer ring. The capstone was missing, and the hole had filled in with loose soil. The circular mouth was constructed of angular stones placed with the longer edge against the mouth opening. It had a diameter of 21cm. On the floor was a large flat stone, the infant skeletal remains were sitting on it. The floor was circular with a diameter of 21.5cm. The tomb was 49cm deep from mouth to floor.

The tomb contained the disturbed skeletal remains of an infant, aged 18 months +/- 6 months, of indeterminate sex. The cranium was fragmentary, as it and some of the post-cranium bones had been crushed either during looting or during later a land slide. Cranial modification style was undetermined due to damage and because cranial bones were un-fused. There were no pathologies. The individual was flexed, although the legs had fallen to the left. The feet were pointing east.

The tomb's cultural contents appear to have been at least partially looted. Seven brown-slipped ceramic fragments were located. They were decorated with a white slip, and included a rim, either from a *kero* or *tazon*. A flake was also found. The individual had textile fragments over and behind the torso and legs. The textile was brown, woolen, spun ZS and the weave was warp-faced. Fragments of fiber rope were also found behind the vertebrae and under the legs, suggesting the corpse had been bound in a flexed position. The rope was too fragmentary to determine if it was braided or twisted. Unidentified animal remains were also recovered.

APPENDIX E (continued)

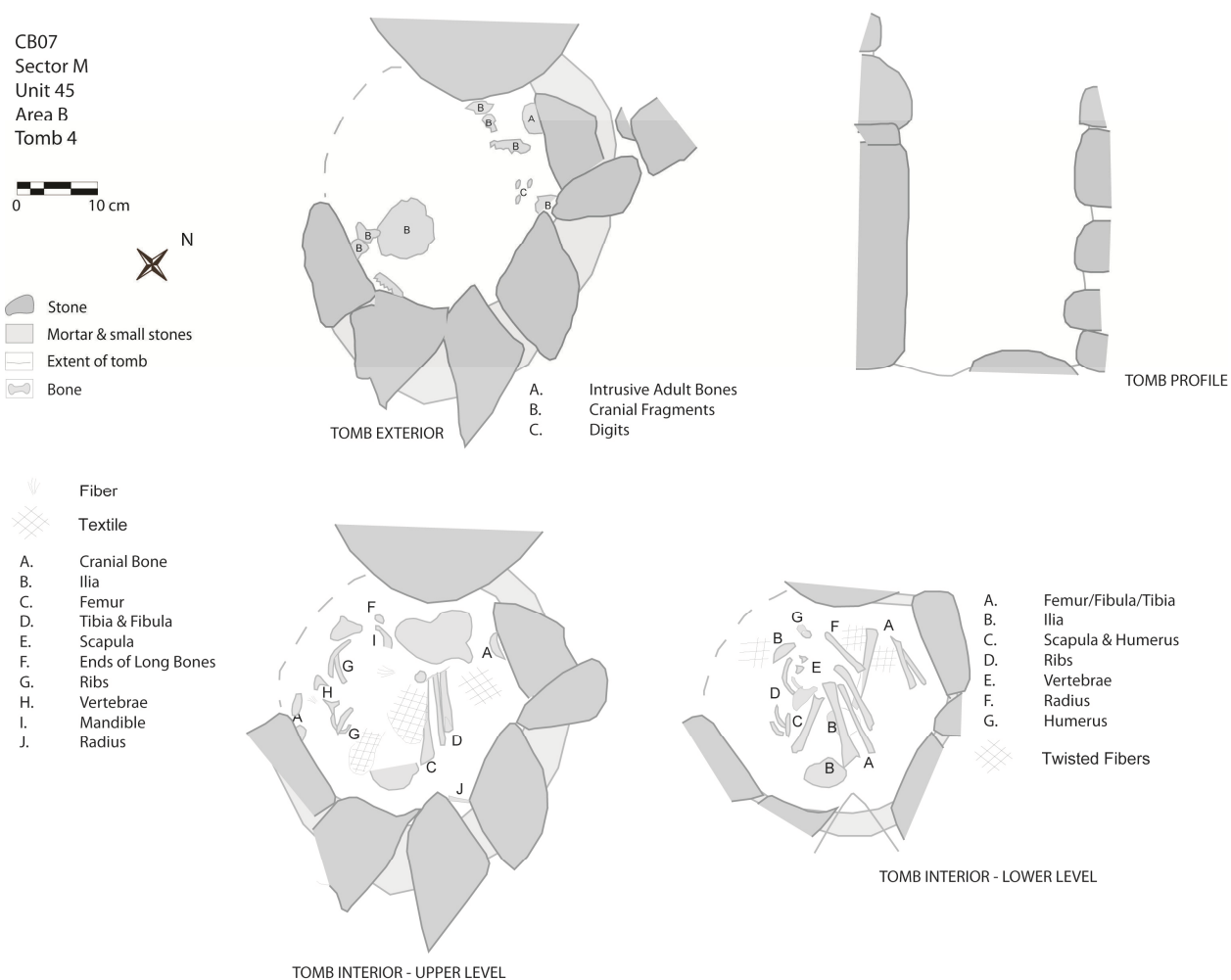


Figure 249. Unit 45, Area B, Tomb 4.

Tomb 45-5

Tomb 45-5 was a looted tomb located on the south west limit of Area B, near the western corner. The tomb was a stone lined cist. The walls were comprised of only one stone coursing; large, flat rocks lined the tomb, with mortar in-between them. There was no outer ring. The tomb initially appeared intact because the stone capstone was in place. It was comprised of a single, oval shaped stone. On top of the capstone was a small deposit of carbon and the Huyanputina ash layer superimposed that. Underneath the capstone, inside the tomb was a layer of slightly

APPENDIX E (continued)

packed, very smooth deposit, with the consistency of clay. This was likely the result of groundwater. The mouth of the tomb was roughly circular, although the stones lining the tomb were large for a small tomb and the mouth was more geometric and angular than others. The mouth had a diameter of 36cm. The floor was similarly roughly circular, but more angular than others. It comprised loose soil and had a diameter of 32cm. The tomb was 58.5cm deep from mouth to floor.

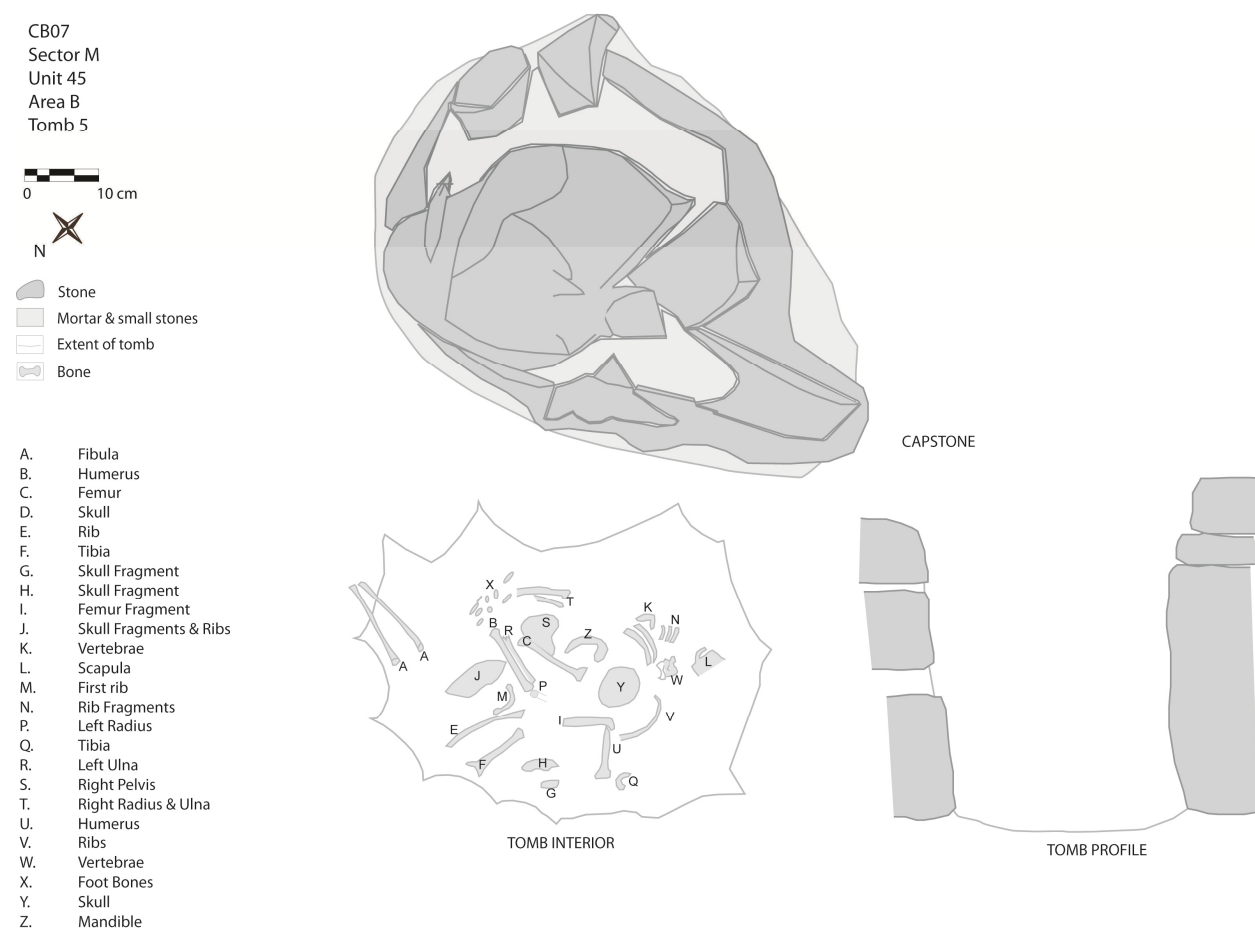


Figure 250. Unit 45, Area B, Tomb 5.

The skeletal fragments were very disturbed. The cranium was smashed in the center of the tomb, one arm was disarticulated, and an ulna, radius and ribs were found in the southern wall of the tomb just below the mouth. Although initially appearing intact, the tomb had been looted from the south, with a hole made in the side, and these bones had been displaced and

APPENDIX E (continued)

partially pulled up and out of the tomb during looting. The individual was an infant, 18 months +/- 6 months, of indeterminate sex. Cranial modification was unobservable due to damage and because cranial bones were un-fused. Disturbance of the bones limited interpretation of the corpse's position. It appears to have been placed, flexed and seated with its back against the southwest wall, with its feet pointing south, to the left of the body. It had fallen on its left side so the spine curved around to the northwest side of the tomb.

In addition to the carbon deposited on top of the capstone, there was a piece of wood and a few lithic flakes scattered around the tomb. Inside the tomb was a tiny fragment of carbon, and a single ceramic red-slipped, non-diagnostic, undecorated ceramic sherd. Toad bones were also present.

Tomb 45-6

Tomb 45-6 was located along the southeast limit of Area B, to the east of Tomb 45-4. The tomb was a looted, stone lined cist. There were seven courses of stone, with mortar in-between the stones. The stones were increasingly smaller towards the upper portion of the tomb. There was no outer ring. The capstone had originally comprised several flat stones, but some of these were missing so that approximately 60% of the tomb opening was exposed. The circular mouth was constructed of small stone, but very little mortar was evident. It had a diameter of 55cm. The floor was loose soil, circular, with a 62cm diameter. The tomb was 87cm deep from mouth to floor.

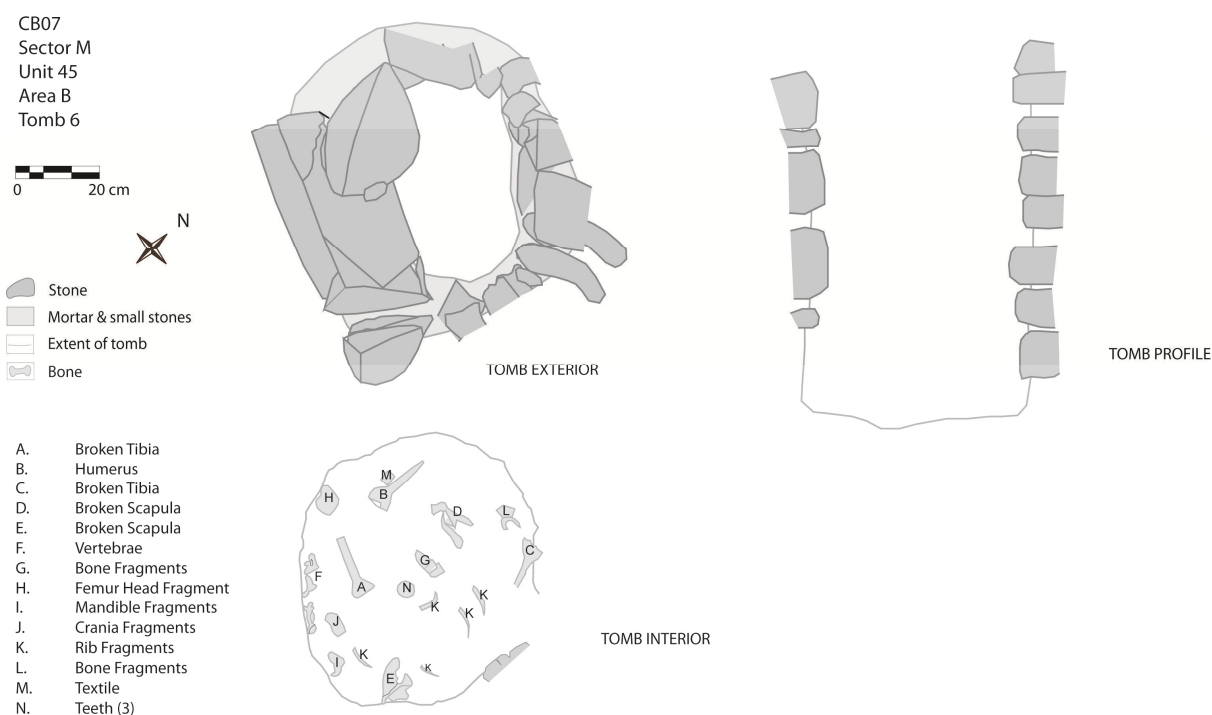


Figure 251. Unit 45, Area B, Tomb 6.

APPENDIX E (continued)

The tomb contained the incomplete skeleton of an adult, at least 45 years old at time of death, of indeterminate sex. The fragmentary cranium made determination of cranial modification style impossible. There were possible signs of degenerative joint disease; the right 2nd and 3rd metacarpals had fused, indicating possible trauma, a possible healed fracture, and robust muscle attachment sites on the arm bones. The position of the individual in the tomb was undetermined, given extensive disturbance.

A smashed red-slipped *tazon* decorated with panels with horizontal wiggly lines. The vessel showed considerable weathering. Its association with Tomb 45-6 was unclear, and may well have been looted from another tomb, dropped and abandoned when it was smashed.³⁰² The tomb contained a single undecorated, non-diagnostic, red-slipped sherd. In addition, there were fragments, of a warp-faced brown textile, woven from very finely spun wool, as well as fragments of fiber rope (whether braided or twisted was undetermined).

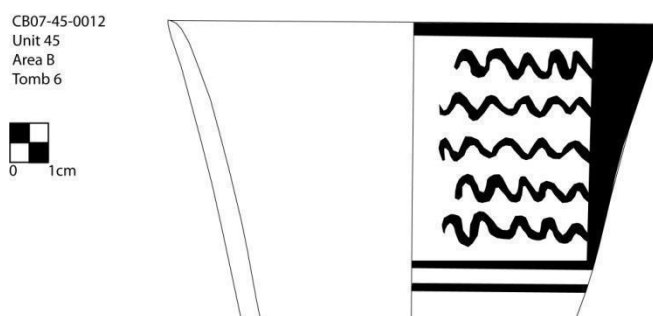


Figure 252. Broken *tazon*, recovered from the surface of Tomb 45-6.

Tomb 45-7

Tomb 45-7 was a looted, stone lined cist, located on the northeastern limit of Area B. The tomb had three stone courses, with very little mortar in-between the stones. The walls were neatly finished, aside from the northern, or up-slope, side of the tomb where the stones were much smaller at the base. The upper courses of the tomb were better finished than the lower ones. The cap of the tomb was missing. The mouth was circular shaped, constructed of stone, with very little mortar, and had a diameter of 35cm. The floor was a loose soil, but had two large, pointed

³⁰² Looting activity at Upper Valley Tumilaca sites is evident not only in the destruction of archaeological contexts, but also in the form of abandoned looted vessels, apparently dropped by ‘*huaqueros*’. One of the most elaborate vessels found at an Upper Valley Tumilaca site was a portrait head vessel, found smashed in a bag on the edge of Santa Rita la Chica, likely dropped by a looter (Sims, personal communication 2006).

APPENDIX E (continued)

stones, embedded into it, resulting in an uneven surface. The floor was roughly circular, with a diameter of 19cm. The tomb was between 31 and 40cm deep from mouth to floor.

The tomb contained disturbed skeletal remains of a young child, aged 2-3 years old, of indeterminate sex. The cranial and arm bones were incomplete, and cranial modification was unobservable. There was a resorptive lesion on a small vault fragment. The individual was in a flexed position. The mandible was facing east, but had fallen during displacement of the cranium. The position of the ribs and pelvic bones supported the interpretation that the individual was facing east.

Some lithics were found on the surface near Tomb 45-7, but their association with 45-7 was unclear. Similarly, ceramic sherds were found near 45-7. Inside the tomb was unidentified botanic material, and fragments of a woven, brown woolen textile. The textile was in a very poor state of preservation, and little analysis could be undertaken. The spin was ZS. There were also fragments of fiber rope, although whether it was braided or twisted was undetermined.

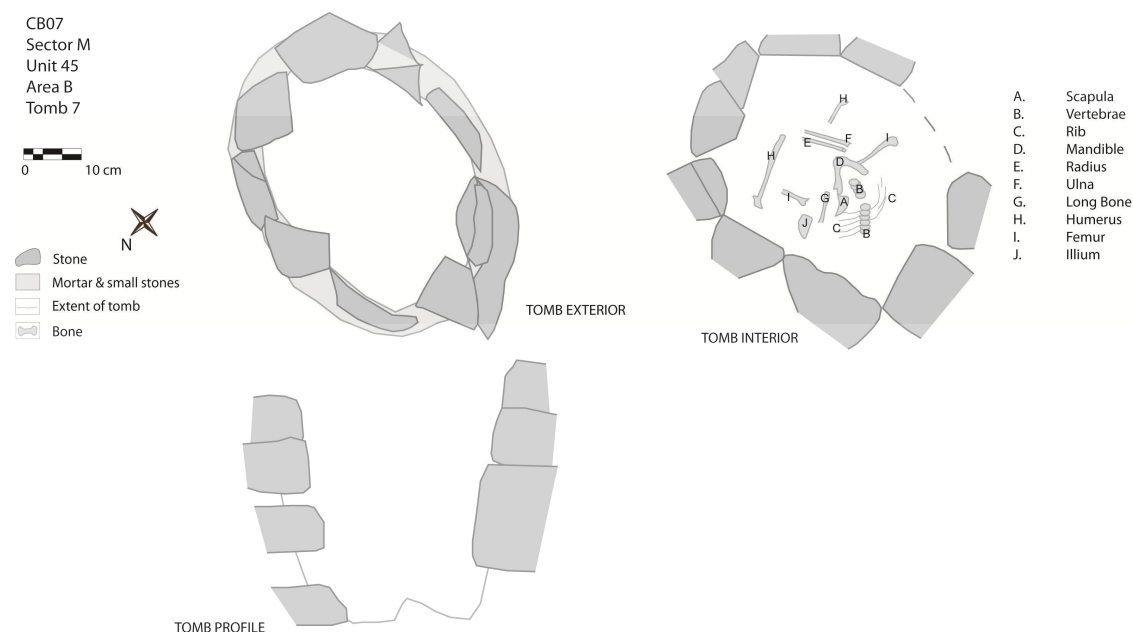


Figure 253. Unit 45, Area B, Tomb 7.

Tomb 45-8

Tomb 45-8 was located north of Tomb 45-5 and west of Tomb 45-7, almost in the center of Area B. The tomb was an intact, partially stone lined cist, with two to three courses of stones on the south-east, and mortar in-between stones. The north-west walls were comprised of packed

APPENDIX E (continued)

earth. No capstone was identified, but the pristine contents of the tomb support the designation that the tomb interior at least was intact. The mouth was constructed of stones, with very little mortar evident between them. The stones were very irregular in size, and included a large, rectangular stone pointing southeast away from the tomb. The mouth was circular with a diameter of 39cm. The floor was circular with a diameter of 35cm. There was a large, flat stone placed on the floor, and the pelvis of the skeleton was rested against the edge of it. The tomb was 55cm deep from mouth to floor.

The tomb contained the skeleton of an infant, aged 9 months +/- 3 months at time of death, of indeterminate sex. The cranium was fragmented and un-fused, preventing analysis of cranial modification. There were no pathologies. The infant was flexed, with the body facing east. The legs had fallen to the left. The tomb contained a *tazon*,³⁰³ located to the southeast of the individual. It was an un-slipped vessel, made of a fine, beige colored paste. The *tazon* was decorated with two birds, painted in black, separated by horizontal 'S' and dots. A black band was painted approximately 3cm above the base. The interior of the rim was decorated with four sets of 2 semicircles. 3 lithic flakes, one with retouch, were also in Tomb 45-8.

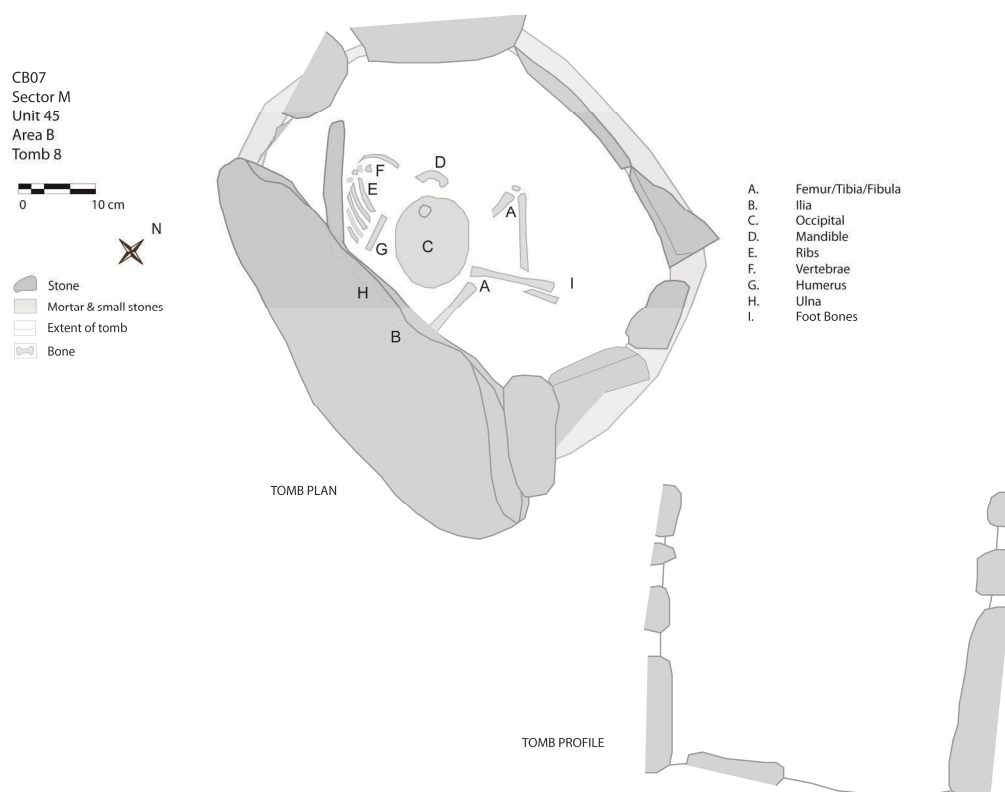
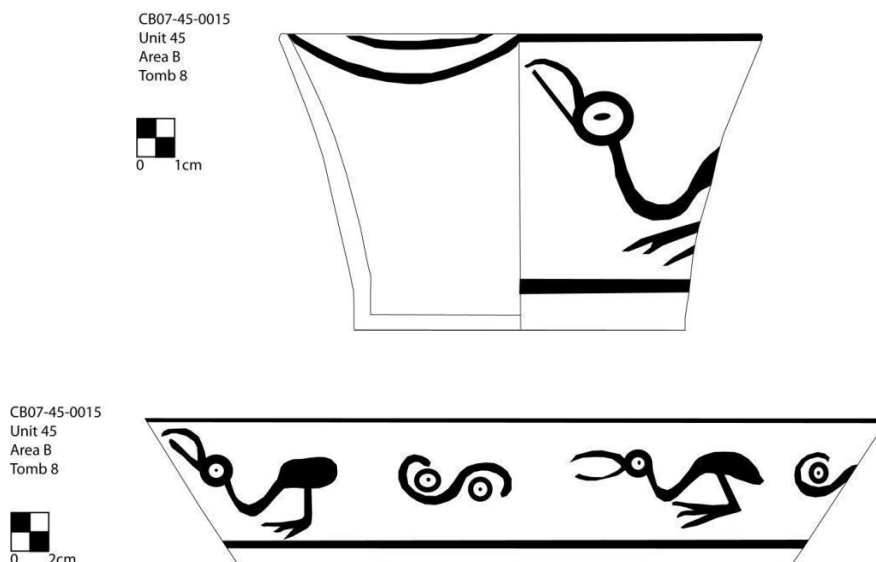


Figure 254. Unit 45, Area B, Tomb 8.

³⁰³ Height 8cm, Rim Diameter 13cm, Base Diameter 9cm.

APPENDIX E (continued)

Figure 255. Ceramic *tazon*, Tomb 45-8.**Tomb 45-10**

Tomb 45-10 was located in the northern corner of Area B. The tomb was a looted, unlined pit. Aside from one column of irregular stones on the northeast, the walls were comprised of gravel and soil. The cap was not in situ, although one stone almost filling the interior of the tomb may originally have comprised part of the cap. The mouth was roughly circular in shape with a diameter of 37cm. Most of the mouth was untreated, although there was a large stone in the mouth on the west side of the tomb, and a smaller on the east. The floor of the tomb was roughly circular, with a diameter of 22cm. There was a flat stone embedded in the base, covering about 80% of the floor. There were no cultural remains under this stone. The tomb was 20cm deep from mouth to floor.

APPENDIX E (continued)

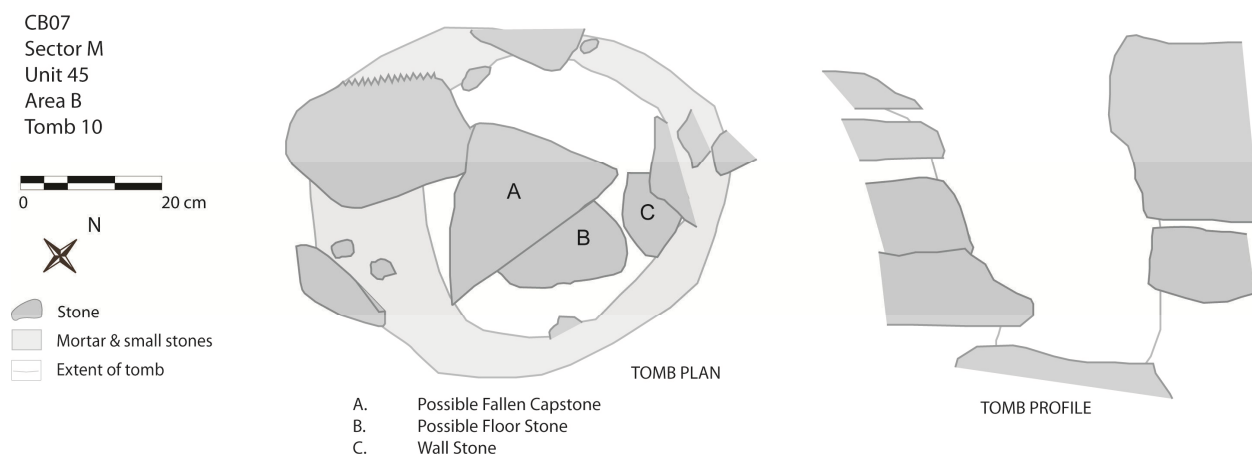


Figure 256. Unit 45, Area B, Tomb 10.

The tomb contained only a few skeletal fragments. Based on the small dimensions of the tomb, it was likely constructed for an infant or small child. There were seven non-diagnostic ceramic sherds near the surface of Tomb 45-10, 4 of which were red-slipped. There were also two red-slipped non-diagnostic sherds at the base of the tomb. A black obsidian point was found on the surface of the tomb, and a translucent obsidian flake was found in the fill of the tomb.

Tomb 45-12

Tomb 45-12 was located east of 45-7, along the northeastern limit of Area B. It was a looted, stone lined cist, with four to six stone courses, and mortar in-between the stones. The capstone was still partially in situ, in the form of a thick, oblong stone, 66cm long. The mouth was constructed of stones and mortar. It was circular in shape, with a diameter of 42cm. The floor was circular, comprised of soil with lots of small stones, and a larger, flat, rectangular stone to which fiber rope was stuck. The diameter of the floor was 24cm. The tomb was 86-90cm deep from mouth to floor.

APPENDIX E (continued)

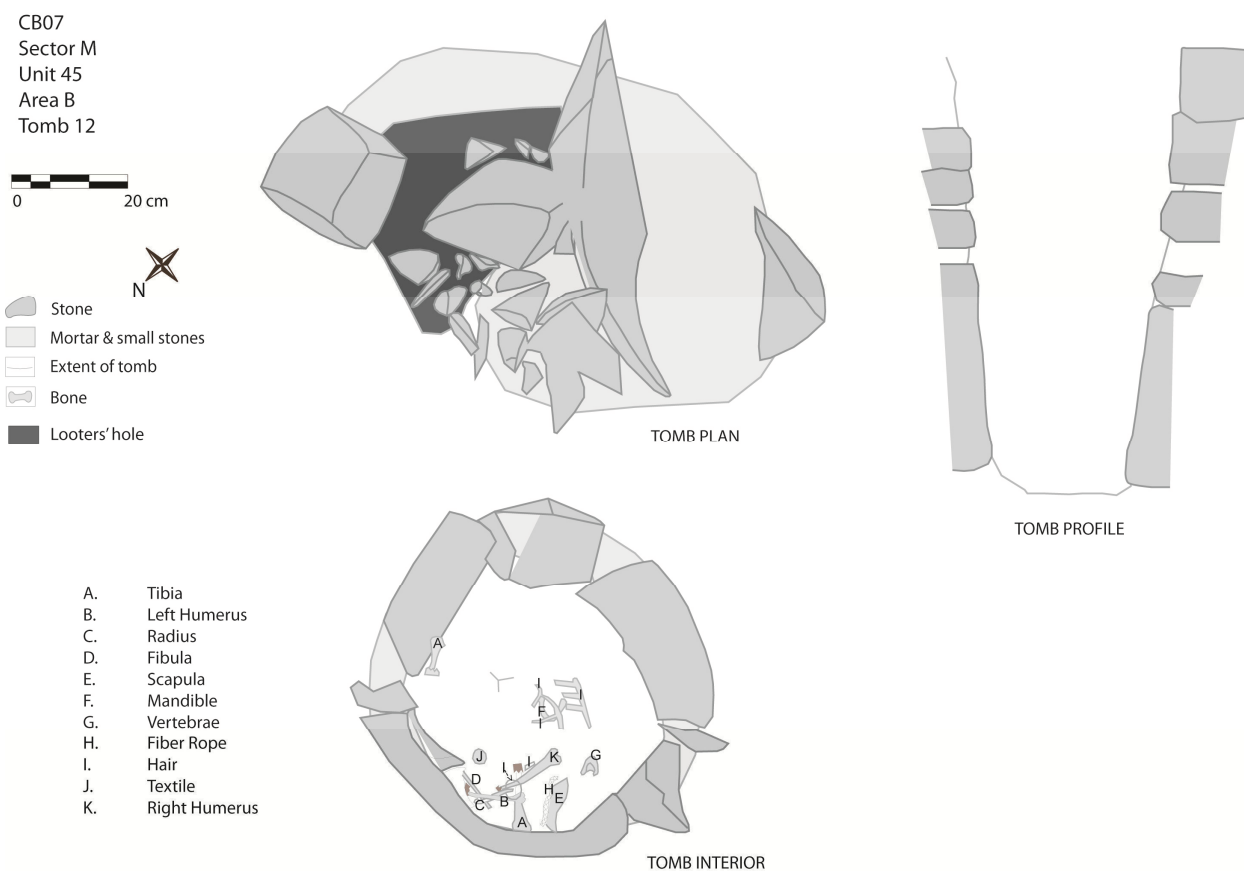


Figure 257. Unit 45, Area B, Tomb 12.

The tomb contained the skeleton of a juvenile, aged 10 years \pm 2.5 years, of indeterminate sex. The cranium was missing making cranial modification unobservable. The lower cervical vertebral arch was twisted, suggesting a possible healed trauma. The individual was in a flexed position, the feet were pointing east. Although the cranium was missing, there was braided human hair. Dark brown in color, the hair was divided into at least 8 narrow braids, which hung vertically from a thicker horizontal braid.

A black obsidian flake was found on the surface of 45-12, as well as several lithic flakes. The tomb contained five red-slipped ceramic sherds at the base of the tomb. Several more were found on the surface of the tomb. The base and several wall fragments of a fiber basket were located on the floor of the tomb. Tomb 45-12 was notable for the quantity and variety of textile inclusions. Large fragments of a brown, woolen textile, woven in a warp-faced pattern were

APPENDIX E (continued)

recovered. Vertical lines in green and red decorated the textile. The wool was finely spun in ZS, and the weave was fine enough to suggest a *manta* (shawl) instead of a *frazada* (blanket). There was also a mass of light brown, very silky cotton, twisted into thick threads. This is interpreted as some form of headdress or hairpiece. The tomb also contained un-spun, brown wool, recovered in clumps throughout the grave. Lengths of braided, fiber rope, the longest 10.1 cm, were also found in the tomb, mostly on the interior limits of the tomb.

Area C

Area C was located immediately down-slope from Area B, so that it shared its northwest side with the southeast limit of Area B.

Layer S/A was comprised of loose soil, mixed with cultural and skeletal materials. It was between 3 and 10cm deep. It contained 67 ceramic, sherds. Most of these were undecorated non-diagnostic, as well as several undecorated rims and bases. In addition, there were 377g of human skeletal material, and 20 lithics.

Four burial contexts were excavated in Layer B. Three of these were definite tombs, the fourth was either an almost completely destroyed tomb, or articulated human remains that had been disinterred and then partially buried as a result of natural forces. None of these contexts were intact.

Tomb 45-13

Tomb 45-13 was located on the northwestern site of Area C. The tomb was a looted stone lined cist. Looting was evident both in the damage to architecture and in plastic bag remnants in the tomb. The tomb had been looted from the top, but there was also a small hole in the northern wall. The cist had two to three stone courses, with considerable amounts of mortar in-between the stones. The lower courses were made of larger stones than the upper courses. There was no outer ring. The cap was originally comprised of at least two stones, only one of which remained, covering half of the tomb opening. The oval shaped mouth was made of irregularly shaped stones with mortar in-between them. The mouth measured 48 by 32cm. The floor was made of packed soil, and was oval shaped, and also measure 48 by 32cm. The depth of the tomb was 68cm from mouth to floor.

The tomb contained a child, aged 4-5 years, of indeterminate sex. The cranium was absent, rendering observation of cranial modification style impossible. No pathologies were visible. The right medial mandibular incisor was congenitally absent. The child was sat semi-flexed in the tomb, with the feet facing east. The vertebrae were leaning against the western side of the wall, supporting the interpretation that the individual was facing east.

Associated with the surface of 45-13 were fragments of human bone, and a few lithic flakes. The tomb also contained two very small fragments of red-slipped, non-diagnostic ceramic. There was a small flake of black obsidian, as well as a lithic flake. There were also 145 chrysocolla beads, in four different sizes with diameters between 0.3 and 0.05cm. Likely the remains of a necklace, the beads were found around the cervical vertebrae. The base of a fiber basket was located in the southeast of the tomb. Near to the basket were remnants of a wooden spoon, 9.8cm long. Finally, fragments of a brown cotton, interlocking -weave textile were attached to soft tissue. Spun ZS, the weave was of average fineness, and was woven finely enough to be a *manta* (shawl). Fragments of fiber rope were also attached to the soft tissue.

APPENDIX E (continued)

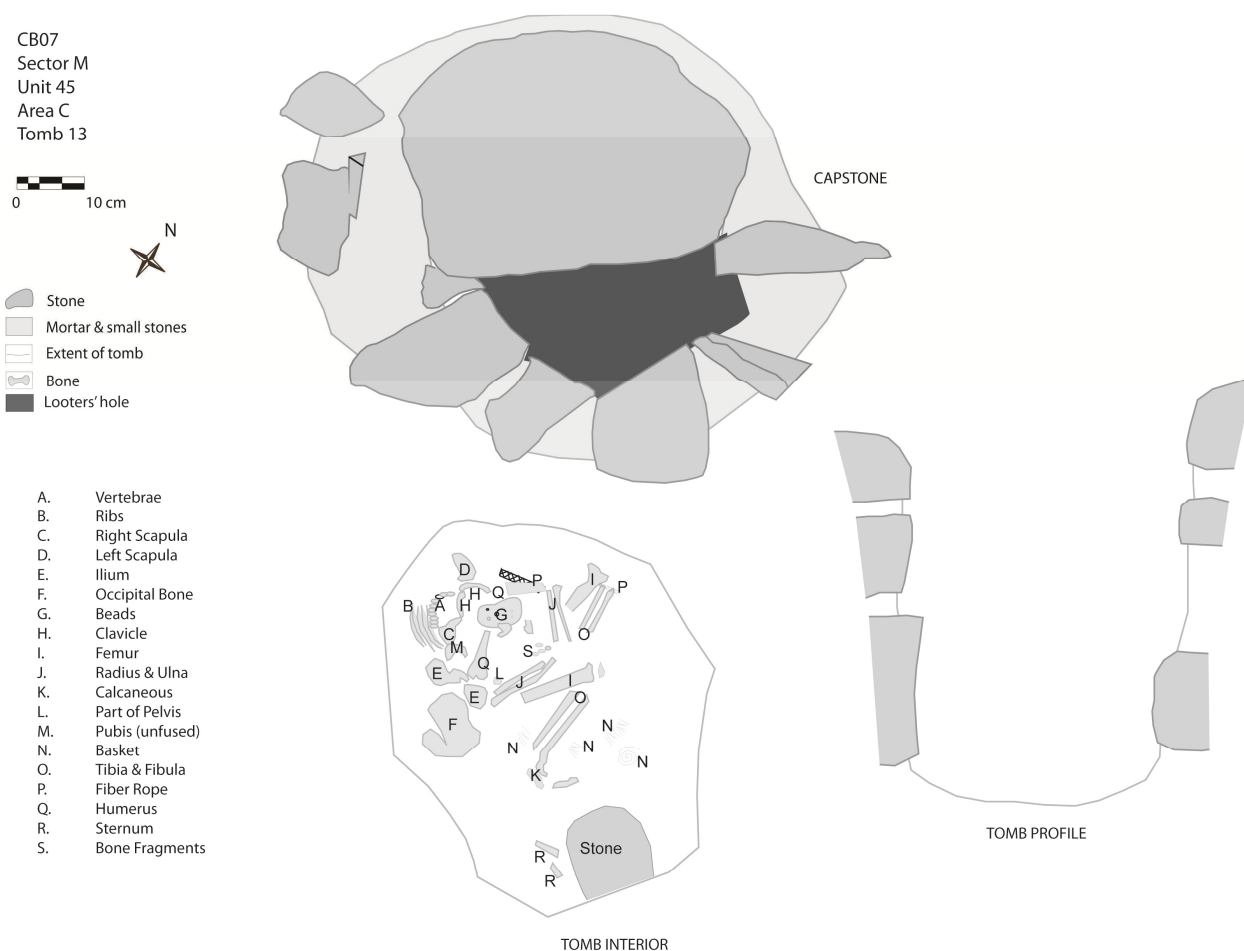


Figure 258. Unit 45, Area C, Tomb 13.

Tomb 45-14

Tomb 45-14 was a looted stone lined cist located to the east of 45-13. The tomb walls comprised four uneven courses of small stones, with mortar in-between them. There was no outer ring. The stone capstone remained in place, as the tomb had been looted from the southern side of the tomb. The mouth was of stones and mortar, was circular in shape and had a diameter of 39cm. The floor was of packed earth with very small stone inclusions. It was circular and had a diameter of 37cm. The tomb was 51cm deep from mouth to floor.

The tomb contained the skeletal remains of a juvenile, aged 7 years +/- 2 years, of indeterminate sex. The skeletal elements had suffered post-mortem exposure damage, and the

APPENDIX E (continued)

lower leg bones were missing. The cranium was fragmented and observation of cranial modification style was impossible. No pathology was evident. The individual was seated flexed. The feet were facing east, the cranium had collapsed face down, and the body had slumped forward, apparently after interment. Given the position of the ribs and vertebrae, the individual was likely facing east at interment.

Associated with the surface of 45-14 were fragments of human bone, and a red-slipped non-diagnostic ceramic sherd. Inside the tomb, very poorly preserved textile fragments were located around the torso of the child. The condition of these fragments prevented detailed analysis. A very small obsidian flake was also recovered from the tomb.

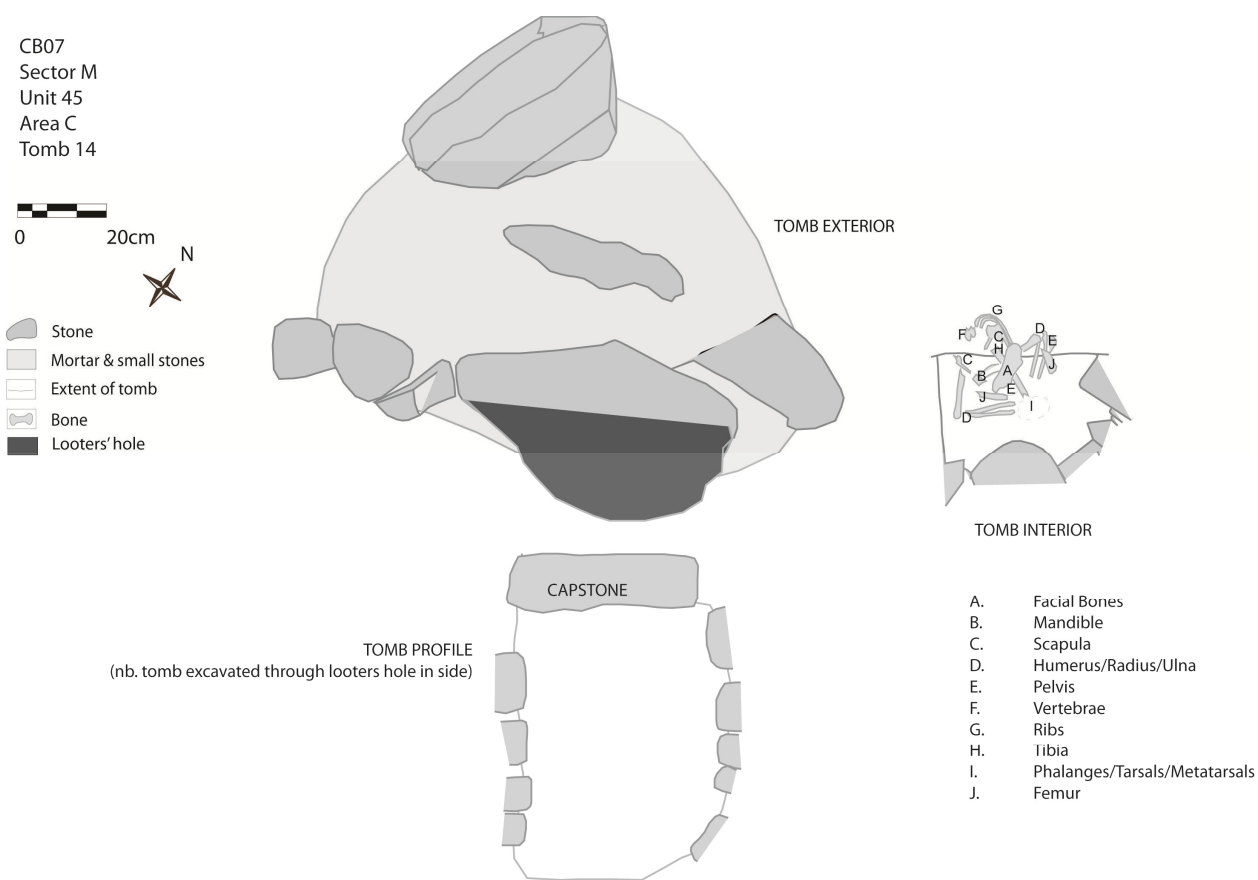


Figure 259. Unit 45, Area C, Tomb 14.

APPENDIX E (continued)

Tomb 45-15

Tomb 45-15 was a looted stone lined cist, located in the southern corner of Area C. The tomb's lining comprised three to four courses of irregularly shaped stones, with mortar in-between. There was no outer ring. The tomb initially appeared intact, but what seemed to be the capstone was stones that had fallen into the tomb, and crushed many of the skeletal remains. The circular mouth was constructed from stones and mortar, and had a diameter of 40cm. The circular floor was untreated and had a diameter of 25cm. The tomb was 82cm deep, from mouth to floor.

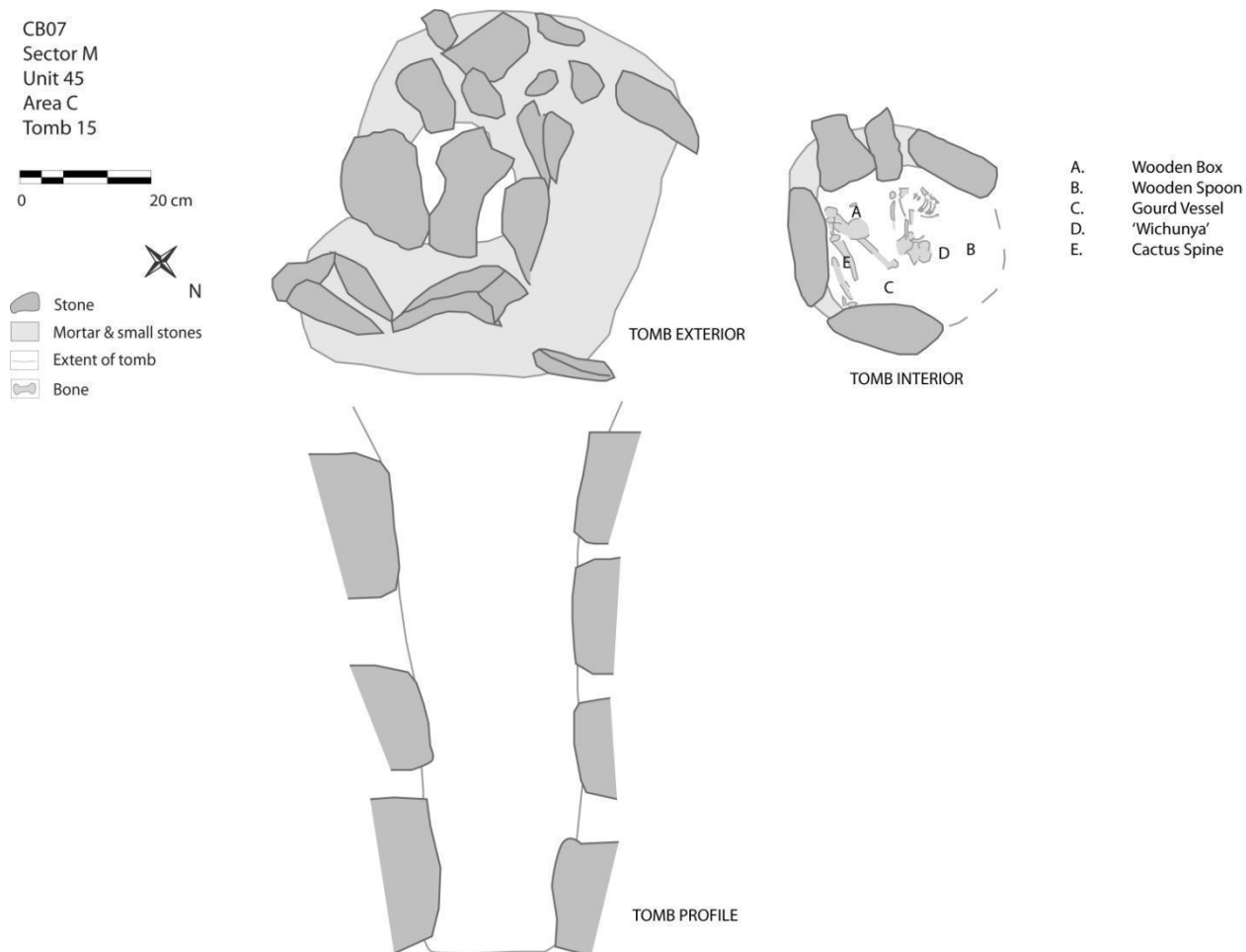


Figure 260. Unit 45, Area C, Tomb 15.

APPENDIX E (continued)

It contained the remains of an adolescent, aged 12-15 years old, of indeterminate sex. The cranium showed signs of tabular modification. There was a small resorptive lesion on the endocranial surface of the left parietal, thickening at the sagittal sutures, pitting on the posterior side of the sternum, and the epiphyses on the metacarpals and phalanges were fusing. The skeletal remains were disturbed in the tomb, as a result of rock fall into the tomb. The individual was flexed, and the position of the feet, ribs and vertebrae indicate that the corpse was facing east when interred.

The tomb also contained non-decorated ceramic fragments including the base of a dark red-slipped vessel (this was unusual because the interior was slipped as well as the exterior). There were two cactus spines, one broken and one intact, which were frequently used as needles in the Moquegua Valley. There was a small corn-cob. There was a 4-compartment wooden box, measuring 3.2 by 4.2cm. An incomplete wooden spoon and two gourds were recovered from 45-15. The more intact of the gourds was 8.0cm high and had a small hole near the rim, perhaps for suspension. Finally, there was a modified faunal bone in the grave. This was identified as the worked shaft of a long bone from a large mammal by Dr DeFrance. Its finished shape is similar to that of a *wichuñya*,³⁰⁴ the weaving tool used for selecting threads. Although too small to have been functional (it is approximately one twentieth the size of a viable *wichuñya*), it perhaps represents a model or toy.

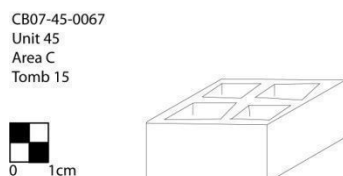


Figure 261. Wooden Box, Tomb 45-15.

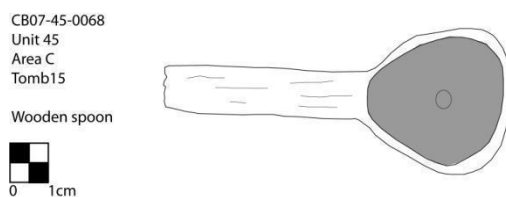


Figure 262. Wooden Spoon, Tomb 45-15.

³⁰⁴ *Wichuñya* is the Aymara word. It is also called *ruqui* in Quechua.

APPENDIX E (continued)

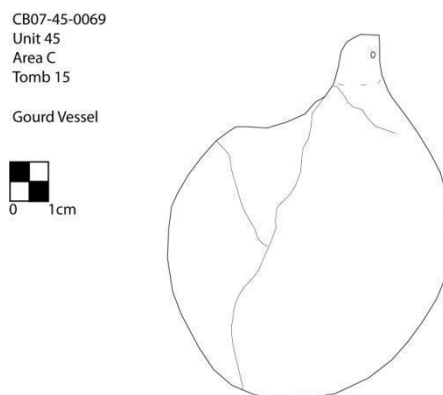


Figure 263. Gourd vessel, Tomb 45-15.

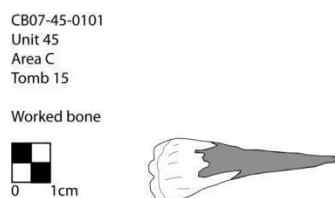


Figure 264. ‘Wichuñya’, Tomb 45-15.

‘Tomb’ 45-16

The burial context 45-16 presented a considerable interpretative challenge. Located on the southwestern side of Area C, the context was initially visible as several skeletal elements apparently surrounded by some stone tomb architecture. Excavation revealed the incomplete remains of adult male, aged in their mid 30s. Only skeletal remains from the lumbar vertebrae down were present, the skull and dentition were completely absent, rendering analysis of cranial modification impossible. There was a minor porosity in the acetabulum, suggesting degenerative joint disease, and a resorptive lesion on a distal foot phalange. Three ceramic sherds, including a dark red-slipped rim were associated with the body.

The lower body was articulated, seated flexed and facing southwest. Thus, the lower body was in this location and position when decomposition began, and does not seem to have been disturbed during recent looting. Excavation also suggested that what was originally thought

APPENDIX E (continued)

to be stone architecture was very partial, and may be unrelated to the individual. Two interpretations are possible; firstly that the context was a tomb and the stones represent the remnants of tomb walls, the portion in line with the torso having been completely destroyed. If so, the position of the body facing southwest is extremely unusual. Perhaps this accounts for the violent destruction of the rest of the tomb. Alternatively, the unusual positioning and incompleteness of the body may be a result of disturbance to the tomb, with the individual pulled out of the tomb and placed to one side, in which case the stones would not represent associated architecture. If so, disturbance must have taken place fairly soon after burial, before decomposition was complete. Pre-Hispanic looting does seem to have taken place at Tumilaca la Chimba based on the deep volcanic ash deposit in 45-2, and 45-16 may serve as additional evidence for this. I am inclined to favor the second interpretation. Although the arrangement of stones initially suggested tomb architecture, the diameter of such a tomb would be very small for an adult individual. There is no other evidence for opposite positioning of the corpse elsewhere in the site. Lithic flakes and non-diagnostic ceramic sherds were recovered from the context.

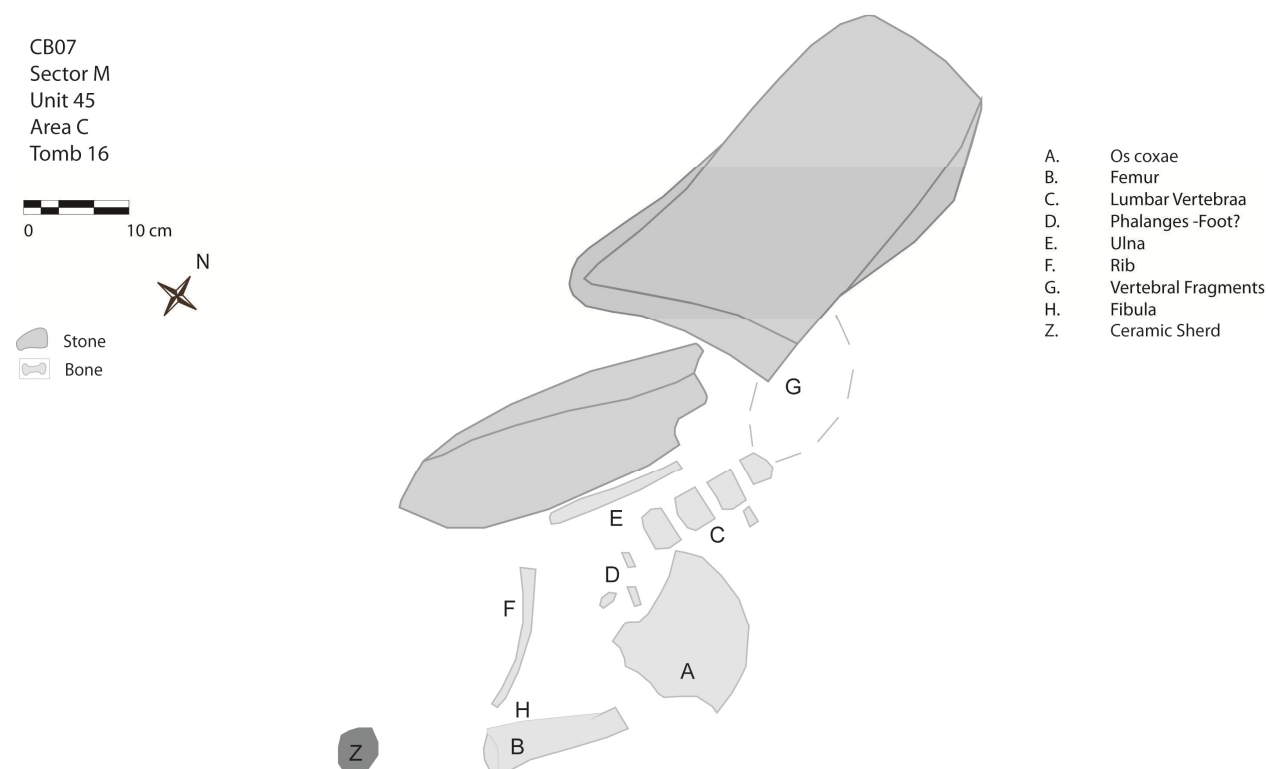


Figure 265. Unit 45, Area C, 'Tomb' 16.

APPENDIX E (continued)

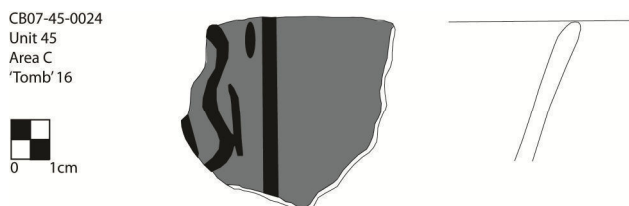


Figure 266. Rim sherd associated with 'Tomb' 45-16.

Summary of Unit 45

Unit 45 represents a considerably larger cemetery than Unit 44. Evidence from two contexts in Unit 45 supports suggestions made by other scholars that there was looting activity in Moquegua before the Spanish conquest. Although similar patterns of funerary behavior are apparent in Unit 45, particularly in terms of corpse preparation and positioning, there is also considerably more diversity in funerary behavior in 45 than in 44. This challenges the uniformity suggested by Pari's (1980) description of the burials he excavated in 45. Stone lined cists, partially stone lined cists, and unlined pits were all found in Unit 45. Outer rings were present in a few of the graves, but they were not common. A range of ages and sexes was represented. Damage to crania in particular limited analysis of cranial modification practices.

Tumilaca style pottery was recovered. Grave inclusions were not necessarily pristine, as demonstrated by the repaired and modified vessel in 45-9. A greater range of grave inclusions was recovered, including tools associated with textile production, and a variety of botanical artifacts. Finally, there was a notable presence of obsidian, translucent and black, both flakes and points, in Unit 45. Although some of this was in Layer S/A, obsidian was also recovered from tombs. The macro-botanical analysis demonstrated the presence of *Schkuria* seeds in six contexts, including an intact grave (45-11). Noting that seeds from *Sonchus* and *Schukuria* are concentrated in very specific places, as are domesticated plants, Goldstein (Appendix G) raises the possibility that the *Schkuria* seeds represent the deposition of flowers in grave contexts.

Unit 46

Unit 46 is located on the eastern side of the ridge, to the south of Unit 46, stretching almost to the base of the slope. The cemetery covers 660m². From the surface, the concentration of tombs appeared denser than Unit 44 but not quite as dense as Unit 45. The surface of Unit 46 was notable for the presence of heavily worn grinding stones. At least 14 were visible on the surface (compared with 4 in Unit 45 and 1 in Unit 44). Observation and excavation suggested that they were likely reused as capstones when they were no longer viable as grinding stones. In 2007, three areas 4m² including a total of fifteen tombs were excavated.

APPENDIX E (continued)

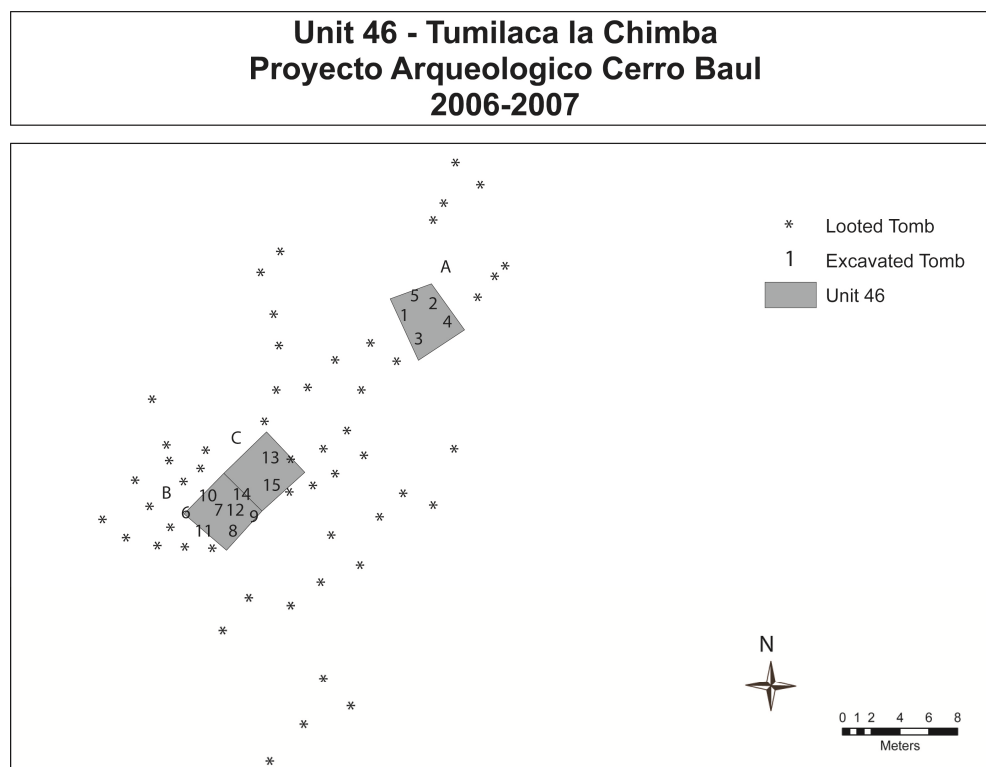


Figure 267. Unit 46.

Area A

Area A was located along the northeastern limit of Unit 46. No burials were apparent to the northeast of Area A. Several looted tombs were evident in Area A before excavation.

Layer S/A was between 1 and 55cm deep. As with other areas, this vast difference can be attributed to the steep slope of the hill. Only seven ceramic sherds were recovered from the layer. They included a red-slipped ceramic sherd that had been modified into a round, flat disc. A black obsidian point was found, as well as a chrysocolla bead with a diameter of 0.05cm, and lithic flakes. Fragments of fiber rope were mixed into the deposit. 240g of human bone fragments were also recovered, some of which was burnt. There was a burnt area 1 meter west of the mid point of the northeastern limit of the Area. Five tombs were excavated in Layer B. Four were looted, the fifth was intact.

Tomb 46-1

Tomb 46-1 was located on the western side of Area A. A looted tomb, Tomb 46-1 was a looted stone lined cist. There were 3-5 stone courses, with mortar in-between them. Stones were

APPENDIX E (continued)

larger in the lower section of the tomb walls than the upper. Part of the south wall was constructed from half of a broken grinding stone, which stood vertically. Two large stones remained in the capstone, there were likely originally three. The circular shaped mouth was made of stones and mortar, and had a diameter of 54cm. The floor was comprised of packed soil, was circular and had a diameter of 59cm. The tomb was 93cm deep from mouth to floor.

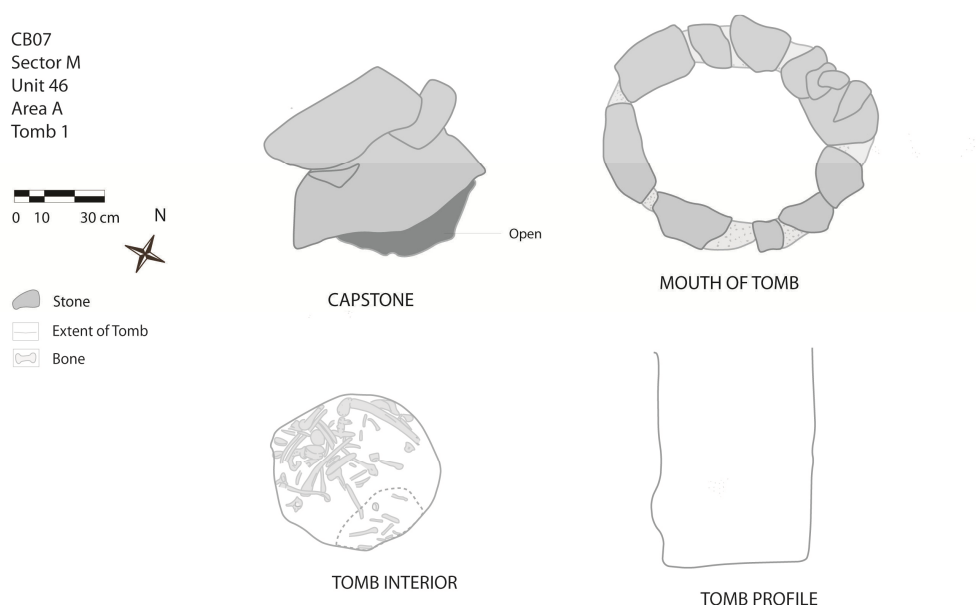


Figure 268. Unit 46, Area A, Tomb 1.

It contained the skeleton of an adult, aged in their 30s, of indeterminate sex. The cranium was fragmentary and cranial modification style was unobservable. There was occlusal wear on the maxillary incisors. There was also a septal aperture in the left humerus. Although the upper bones had been disturbed by looting and suffered weathering damage, most of the skeleton was in situ and position was determined. The spinal column was leaning against the west wall, and the individual was sat flexed, facing east.

Around the surface of the tomb were several bone fragments, as well as a black slipped rim ceramic sherd. Inside the tomb were more of the rim and a body sherd from the same vessel (same slip and paste). The tomb also contained braided fiber rope, the longest piece was 5.9cm long, 0.9cm wide, and 0.3cm thick. A comparatively well preserved textile fragment was recovered. It was a brown, woolen, manta. The wool was tightly spun ZS (22 spins per cm in the warp and weft threads), and woven in a warp-faced pattern. The piece was unusual for the site because some of the *acabado* (border) was preserved. This appeared to have been constructed

APPENDIX E (continued)

from braided spun fibers which were then attached to the textile using a needle. There were also some strands of black human hair. Although loose, they were twisted in such a way as to suggest that they had been braided at some time. A fish eye lens was recovered from the grave. This was unique to the site and may represent fish deposition or the contents of the individual's stomach (Appendix G).

Tomb 46-2

Tomb 46-2 was located to the east of 46-1, close to the northeastern limit of Area A. The tomb was a looted, stone lined cist with 4-5 courses of stones and a little mortar in-between the stones. It did not have an outer ring. The stone capstone was still present, as the tomb had been looted from the southern side. There was no mortar holding the capstone in place on the mouth. The circular mouth was made of stones and had a diameter of 23cm. The floor was comprised of packed soil with some large stone inclusions. It was circular with a diameter of 31cm. The tomb was 68cm deep from mouth to floor.

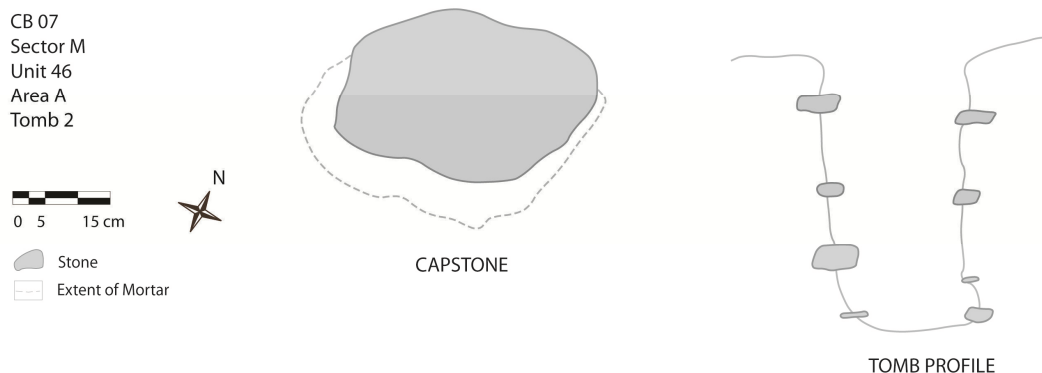


Figure 269. Unit 46, Area A, Tomb 2.

Only a few skeletal fragments, including a very small rib were present in the tomb. Given the dimensions of the tomb, it was likely constructed for an infant or small child. One non-

APPENDIX E (continued)

diagnostic, un-slipped ceramic sherd with evidence for burning was found on the surface of the tomb.³⁰⁵ A lithic flake and some red stones were found in the tomb.

Tomb 46-3

Tomb 46-3 was located in the southern corner of Area A. The tomb was heavily disturbed and much of the surface architecture had been destroyed. Some of this architecture had fallen into the tomb, causing considerable damage to the grave inclusions. Although no definite outer ring was identified, there were several large stones around the mouth of the tomb, which might be the remains of a tomb superstructure. The tomb was a partially stone lined pit; there were only a few irregularly shaped stones in the tomb walls. The only large stone was at the bottom of the west wall, against which the skeleton was leaning. Construction was very poor compared with other tombs at the site. There was no capstone present. The mouth was untreated, and was distinct for its oval shape. Its dimensions were 95cm east/west and 70cm north/south. The floor was also untreated and oval in shape, with dimensions 85cm east/west and 50cm north/south. The tomb was 61cm deep from mouth to floor.

The skeletal remains were badly damaged from the destruction to the tomb. They represented a possible male, in his 40s. The cranium had been especially badly damaged but there was possible evidence for tabular cranial modification. Pathologies included small resorptive lesions on endocranial parietal fragments, degenerative joint disease (minor lipping on lumbar and thoracic vertebrae), significant pitting on the posterior surface of the sternum, and carious lesions. The upper torso of the individual was leaning against the one large rock on the west of the tomb, with its in-situ feet at the east end of the tomb, and was thus facing east. However, in stark contrast with the tomb contexts detailed above, the individual was only in a semi-flexed position, and most of the torso was probably lying horizontal on the tomb.

Aside from one flake, no cultural inclusions were found in the tomb.

³⁰⁵ Given the close association of the burning stain and the burnt ceramic and bones, I question whether this is the remains of looting activity, it seems reminiscent of a pago. Alternatively, is this indicative of funerary ritual associated with the internment of the individual in 46-2?

APPENDIX E (continued)

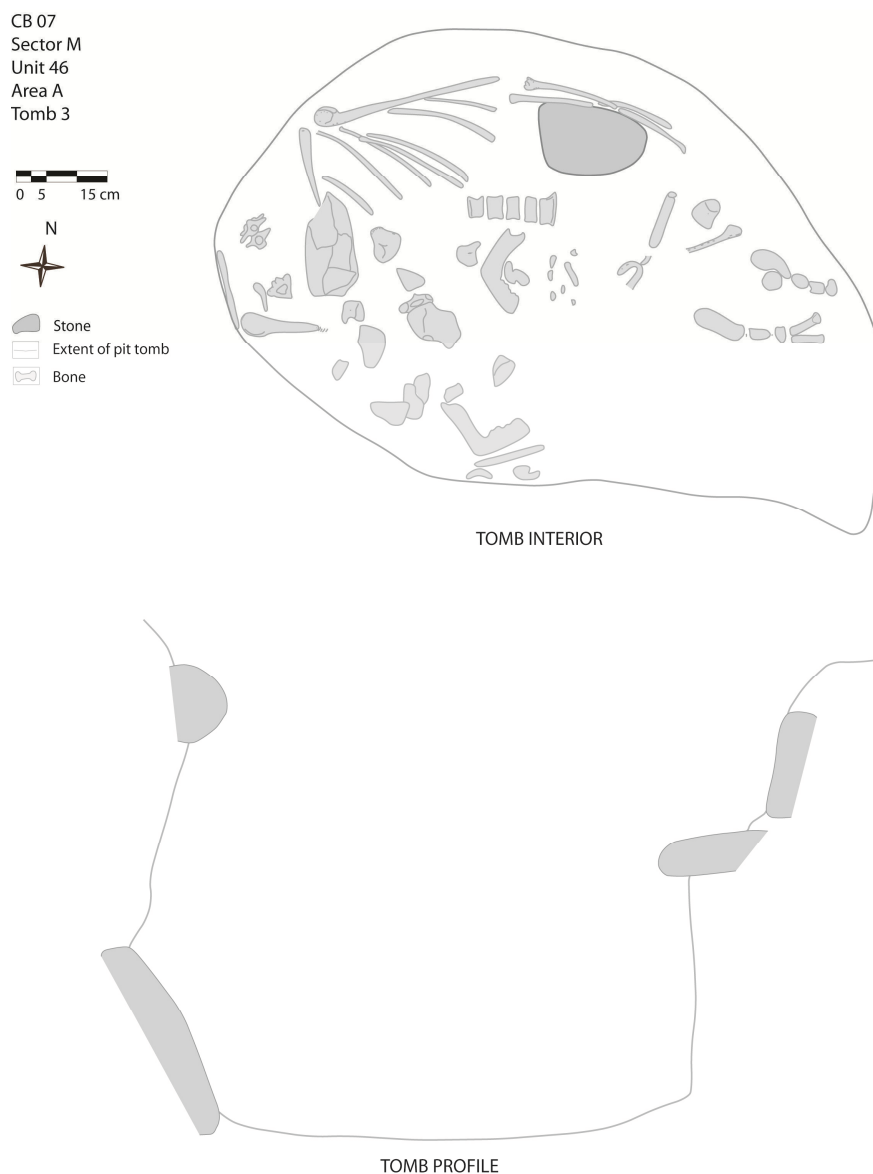


Figure 270. Unit 46, Area A, Tomb 3.

Tomb 46-4

Tomb 46-4 was located to the northwest of 46-3. In better condition than 46-4, it was very similar to the adjacent tomb. From the surface it appeared to be just a looter's pit. Upon

APPENDIX E (continued)

clearing the context, a tomb containing skeletal and faunal remains was uncovered. The tomb was an unlined pit, the capstone was absent. As with 46-4, medium sized stones that had fallen into the pit may have been the remains of a tomb superstructure, but no definite outer ring was identified. The mouth was also oval, larger than 46-3, with an east/west length of 120cm. The floor was untreated, oval shaped and an east/west length of 77cm. The tomb was 92cm deep from mouth to floor.

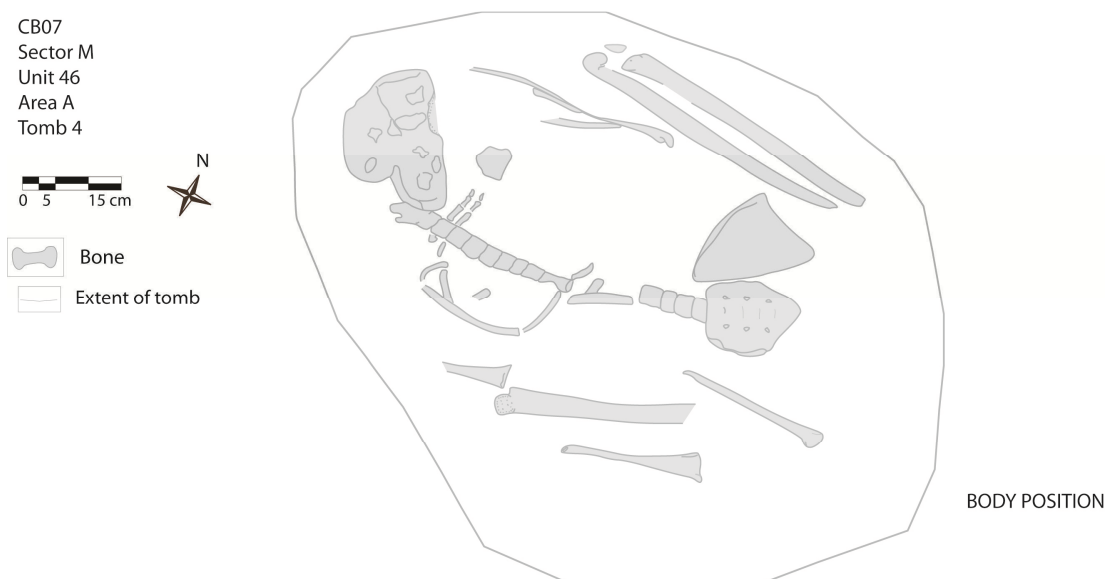


Figure 271. Unit 46, Area A, Tomb 4.

46-4 contained the skeleton of a male, in his late 20s at time of death. Cranial modification style could not be determined. Possible trauma was evident in an indentation on the ectocranial surface of the occipital bone. There was a resorptive lesion on a parietal fragment, another on the clavicle. Pitting was present on thoracic and lumbar vertebral bodies. The individual had some occlusal wear on the teeth. There were very robust muscle attachments on the arm bones, and the individual was knock-kneed. There was also possible trauma on the occipital. The individual was flexed, but lying on his back with his knees pulled up toward the shoulders. The head was at the west end of the tomb, the feet at the west. The left arm was flexed towards the chest, the right arm was extended under the pelvis.

The tomb also contained the bones of four camelid feet. Dr Susan DeFrance identified them as from a sub-adult (older than juveniles but not yet full adults). Disturbance to the tomb made it difficult to identify the position of the feet, although it seems possible that they were arranged in a manner similar to that in 46-10. A small red stone was recovered. There were also

APPENDIX E (continued)

two red-slipped ceramic sherds; one the rim of a *tazon*³⁰⁶ and the other a body sherd with part of a geometric motif on it.

Tomb 46-5

Tomb 46-5 was located along the northwest edge of Area A. The tomb was an intact, stone lined cist. There were one to two stone courses with mortar in-between. There was no outer ring. The cap was present, and consisted of several thick stones piled onto of the tomb opening. Very little mortar used in capping the tomb. The mouth was circular, made of stone and had a diameter of 33cm. The floor was packed earth, circular and had a diameter of 30cm. However, there was a crevice at the bottom of the tomb on the northeast side, which extended another 11cm. The individual's foot was wedged into this crevice. The tomb was 36cm from mouth to floor.

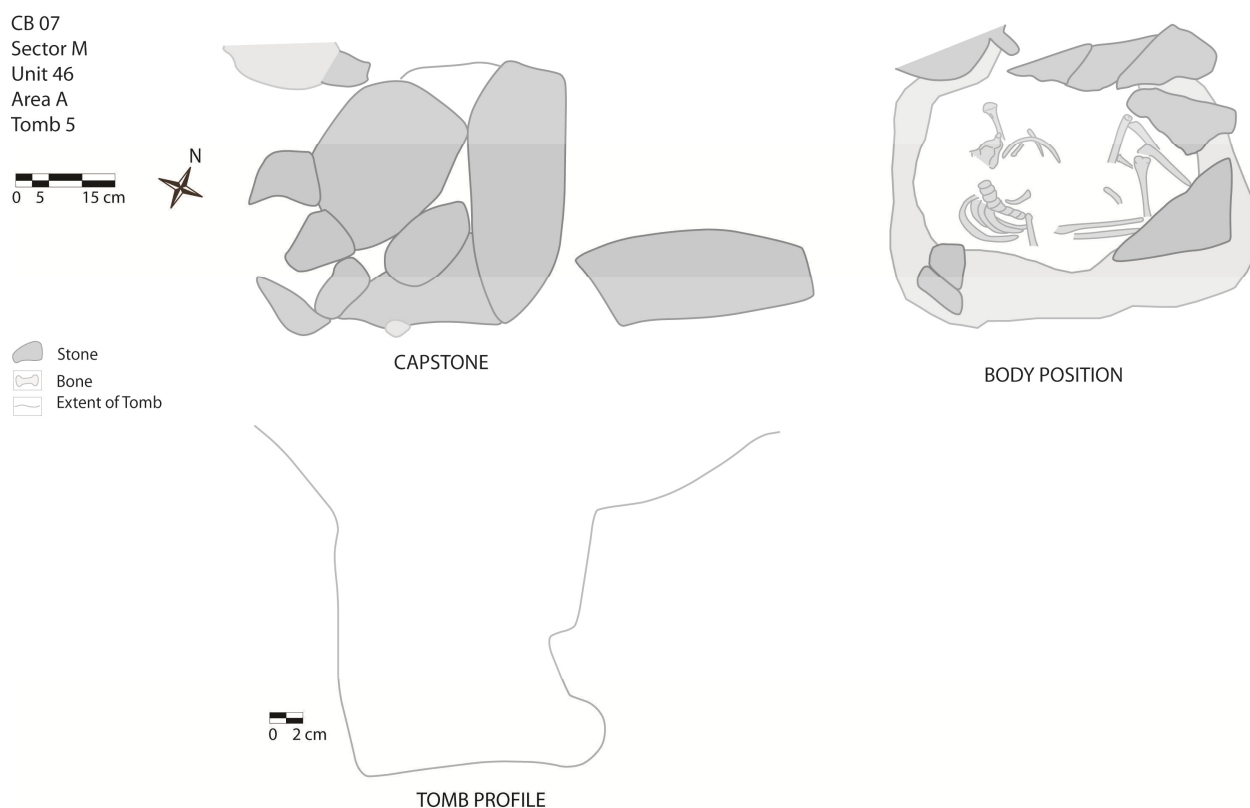


Figure 272. Unit 46, Area A, Tomb 5.

³⁰⁶ Rim Diameter 14cm.

APPENDIX E (continued)

The tomb contained the skeleton of a child, aged 4 years +/- 1 year, of indeterminate sex. It had probably tabular cranial modification. The child had minor occlusal wear on the deciduous dentition. The child was in-situ, facing east, flexed with its back leaning against the west wall.

The tomb contained fiber rope. They were too fragmentary to determine braiding or twist. There was also a fragment of brown, woolen textile, woven in an interlocking pattern, with the threads spun ZS. Thread counts could not be determined, preventing identification of the fragment as a *manta* (shawl) or *frazada* (blanket). A small fragment of wood was recovered as well as unidentified faunal remains.

Area B

Area B was located on the southwest side of Unit 46, 30 meters south of Area A. Layer S/A was between 12 and 33cm deep. As with other S/A layers, Layer S/A was a loose, rocky soil mixed with cultural and skeletal material. Considerably more ceramic material was recovered, over 200 sherds. This may be attributed to the position of Area B at the base of the slope. Included in the ceramic material, were undecorated bases and handles, and decorated rims and body sherds, with geometric and anthropomorphic designs. This material, as with other surface ceramics is Tumilaca in form, style and motif. 220g of fragmentary human bone was recovered from the surface, and considerable quantities of lithic materials.

Six tombs were excavated in Layer B. Five of these were intact, and one was looted. In addition, an apparent burial context was excavated, that later was identified as rock fall from one of the tombs.

Tomb 46-6

Tomb 46-6 was located in the west corner of Area B. It was a looted, unlined pit. The tomb had been looted through the south wall of the tomb. There was no outer ring. The capstone was in-situ, comprised of stone, with very little mortar and instead smaller stones holding it in place. The mouth was untreated, was circular in shape, and had a diameter of 80cm. The floor was composed of gravelly soil, was circular in shape and had a diameter of 50cm. The tomb was 30cm deep from mouth to floor.

APPENDIX E (continued)



Figure 273. Unit 46, Area B, Tomb 6.

The tomb contained the skeletal remains of a juvenile, 9 years \pm 3 years, of indeterminate sex. It had possible tabular cranial modification. There was evidence for cribra orbitalia in the left orbit, pitting on the endocranial surface of a vault fragment, and a significant porosity on the body of the sphenoid. The individual also had shovel shaped incisors. The human remains were disturbed and not in anatomical position. Most of the cranial fragments were in the west side of the tomb, and the leg and feet bones were in the east. There were no cultural materials associated with either the surface or the interior of the tomb.

‘Tomb’ 46-7

46-7 was initially interpreted as a looted tomb. It was located in the center of Area B. A small unlined pit, with stones sitting flush into the ground around the opening of the pit, gave the

APPENDIX E (continued)

impression of a looted, unlined pit tomb, probably of an infant, based on dimensions. The opening of the pit was roughly circular, with a diameter of 45cm, the base was also roughly circular with a diameter of 40cm. The pit was 38cm deep. A few bone fragments were found in the upper fill of the tomb. Two ceramic sherds, one a rim decorated with a geometric design, were also recovered. Three lithic flakes were also in the fill.

Later excavation in Area B altered the interpretation of 46-7. Instead of a looted tomb, it appeared that the stones were originally a part of the low stone ring surrounding 46-10. These had fallen to the southeast of 46-10, creating the impression of a tomb mouth. The small pit may well have been created by looters, similarly confused by the rough stone circle.

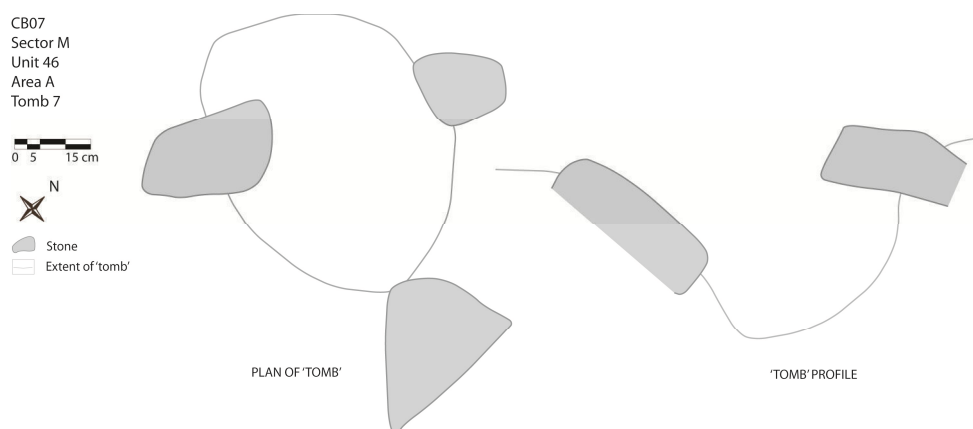


Figure 274. Unit 46, Area B, 'Tomb' 7.



Figure 275. Rim sherd, 'Tomb' 46-7.

Tomb 46-8

46-8 was located along the southeast limit of Area B. It was an intact tomb. The tomb was an unlined pit, with no outer ring. The walls were very poorly constructed. The capstone was constructed of several flat stones placed on top of each other. Although surrounding the opening of the tomb, these stones did not constitute a mouth. The mouth was untreated, was roughly

APPENDIX E (continued)

circular/oval in shape, and had a diameter of 70cm. The floor was untreated and was also circular/oval. The tomb walls sloped inward sharply, and the floor had a diameter of only 39cm. The tomb was 79cm deep from mouth to floor.

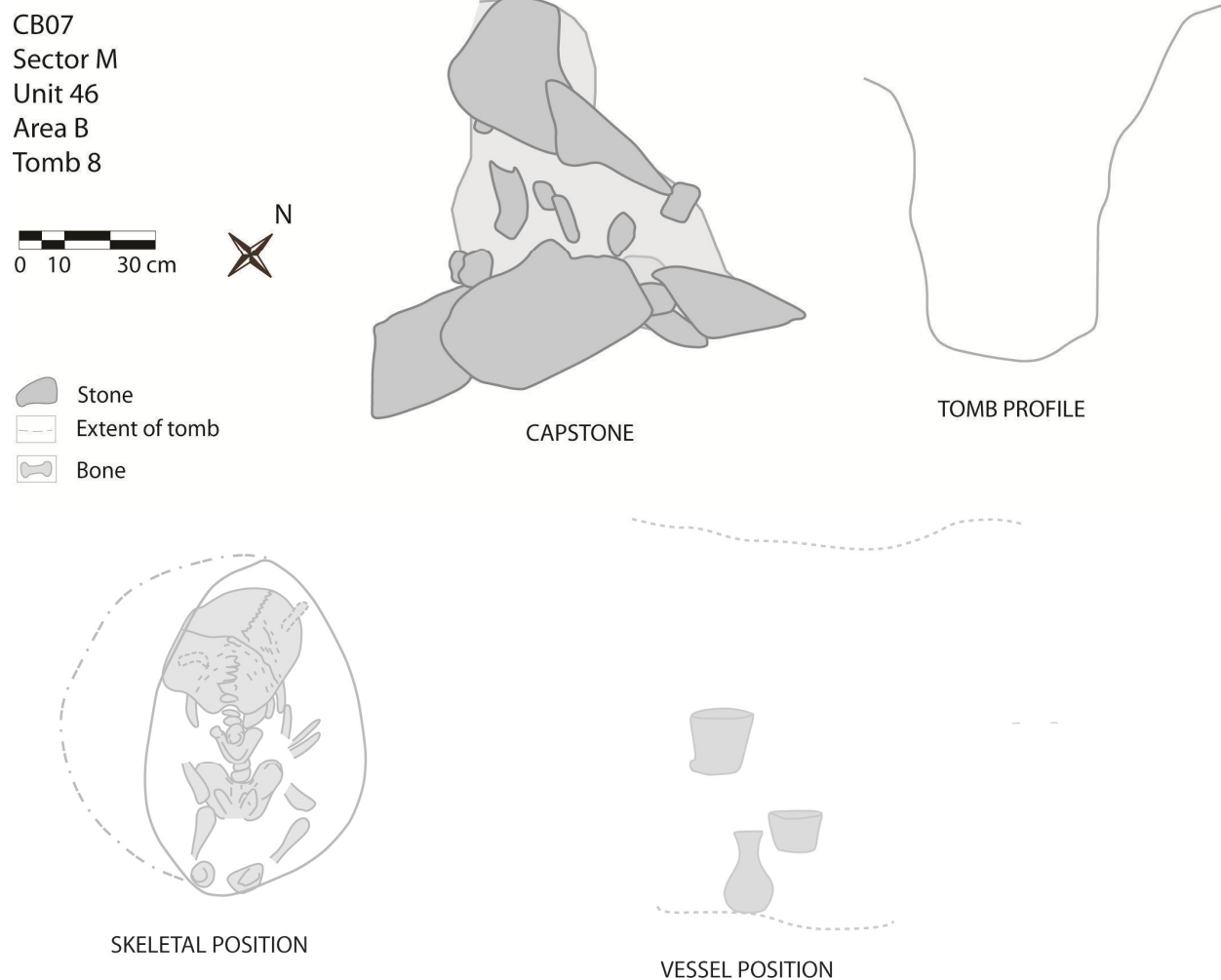


Figure 276. Unit 46, Area B, Tomb 8.

The tomb contained the skeleton of an adolescent, aged 12 years \pm 2.5 years, of indeterminate sex. Cranial modification was probably tabular. There was evidence for cribra orbitalia in the left orbit, a small resorptive lesion on the endocranial surface of a parietal fragment, and pitting on thoracic and lumbar vertebrae. The individual was also noteworthy for

APPENDIX E (continued)

its barrel shaped second maxillary incisors, and a septal aperture in each distal humerus. Probably trauma was evident in fused 2nd and 3rd cervical vertebrae. The individual was sat flexed, facing east.

Funerary behavior at the tomb was noteworthy. Lithic flakes and several ceramic sherds, including decorated buff ware, were associated with the surface of the tomb. One of the outer stones in the cap was a grinding stone. When the highest of the flat stones comprising the capstone was removed, two broken *sahumadors* were found sitting on the fill of the soil. One was a red-slipped, non decorated upper portion of a *sahumador*, with one handle and a vertical protruding rectangle rising from the rim. The other was the base of a red-slipped *sahumador*, decorated with geometric motifs. It had at least one handle. A carbon deposit was associated with these vessels. There was also a human mandible. All teeth were missing, and at least the molars were lost pre-mortem. The mandible was that of an adult, and was not part of the juvenile individual buried in the tomb.

In addition to ceramic fragments, including a black on buff *kero* base, three ceramic vessels had been buried with the juvenile. They were wedged into the wall of the tomb, at different elevations. The highest of these was a bright red-slipped *tazon*.³⁰⁷ A large fragment was missing from the rim and body. The next vessel was a dark red-slipped *tazon*,³⁰⁸ decorated with horizontal 'S' and wiggly lines. Underneath the second *tazon* was a one-handled *jarra*³⁰⁹ (pitcher). It had a reddish brown slip, and was decorated with step-stair motifs and crosses. There were also two llama feet from a sub-adult animal. Lithic flakes were also recovered. A guayaba seed, *Psidium*, was also recovered from 46-8. Macro-botanical analysis also indicated the presence of a bird's feather in the tomb.

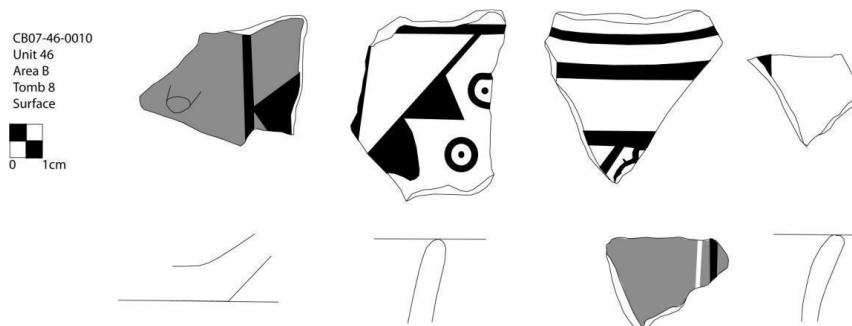


Figure 277. Ceramic sherds recovered from the surface of Tomb 46-8.

³⁰⁷ Height 8.5cm, Rim Diameter 15cm, Base Diameter 10cm.

³⁰⁸ Height 7.5cm, Rim Diameter 12cm, Base Diameter 7cm.

³⁰⁹ Height 15cm, Rim Diameter 10cm, Base Diameter 6cm.

APPENDIX E (continued)

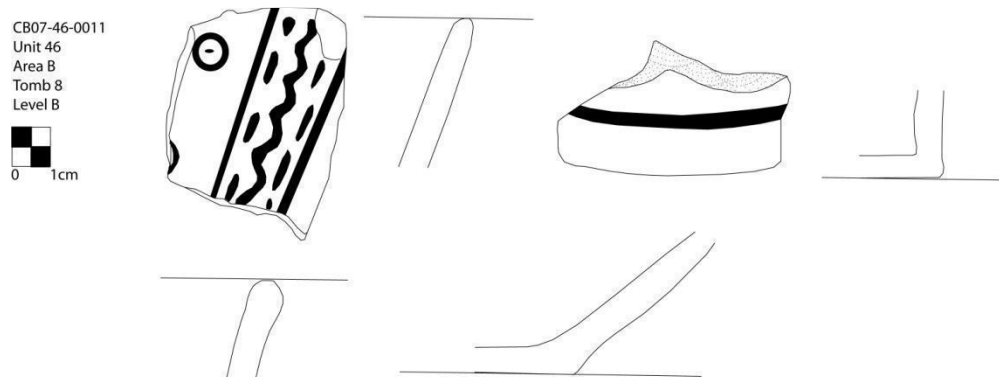
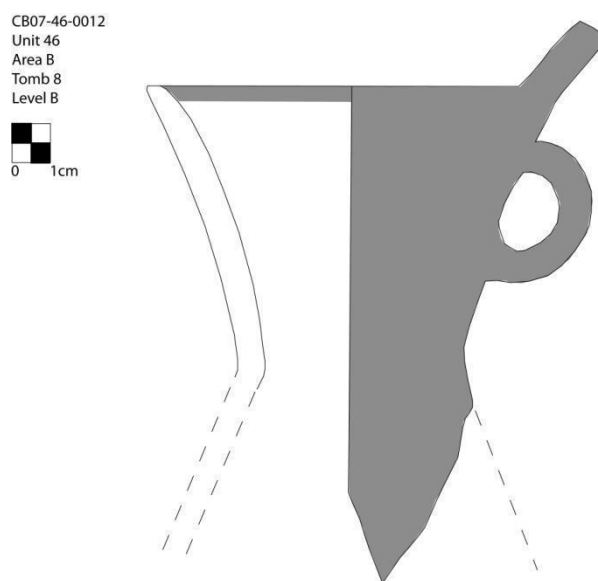


Figure 278. Ceramic sherds, Tomb 46-8.

Figure 279. *Sahumador* recovered from the capstone of Tomb 46-8.

APPENDIX E (continued)

CB07-46-0013
Unit 46
Area B
Tomb 8
Level B

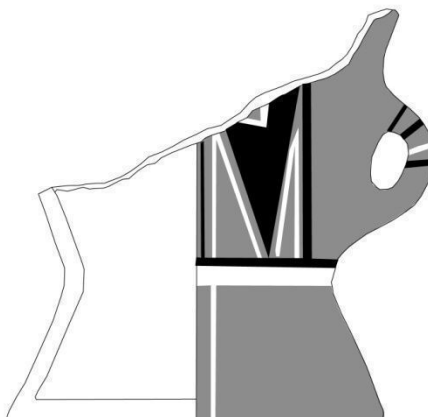
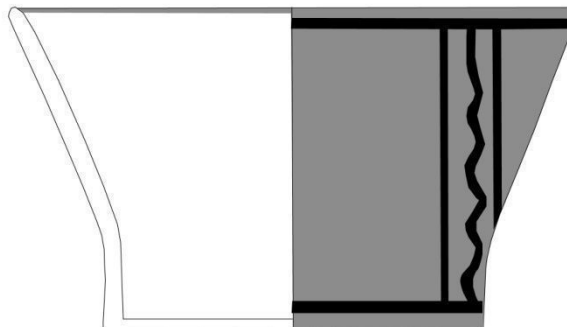


Figure 280. *Sahumador* recovered from the capstone of Tomb 46-8.

CB07-46-0014
Unit 46
Area B
Tomb 8
Level B



CB07-46-0014
Unit 46
Area B
Tomb 8
Level B

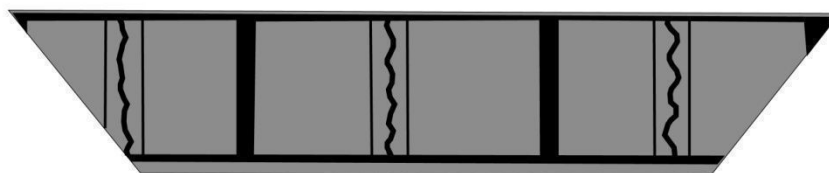


Figure 281. Red-slipped *tazon*, Tomb 46-8.

APPENDIX E (continued)

CB07-46-0015
Unit 46
Area B
Tomb 8
Level B

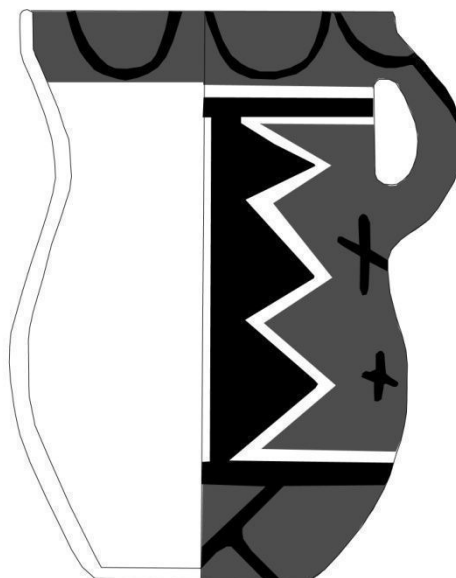
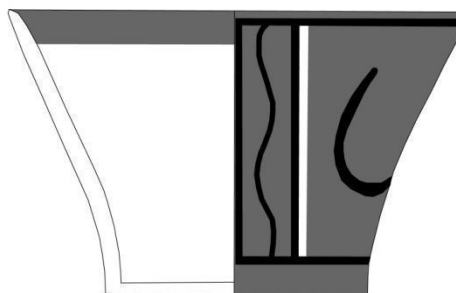


Figure 282. One-handed pitcher, Tomb 46-8.

CB07-46-0016
Unit 46
Area B
Tomb 8
Level B



CB07-46-0016
Unit 46
Area B
Tomb 8
Level B

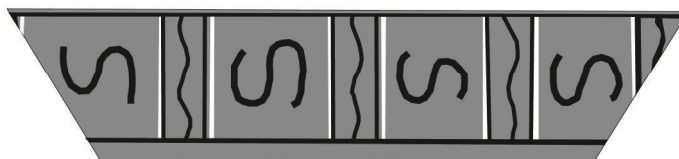


Figure 283. Red-slipped *tazon*, Tomb 46-8.

APPENDIX E (continued)

Tomb 46-9

Tomb 46-9 was located to the northeast of 46-8. It was an intact, unlined pit tomb. There was no outer ring. The cap was constructed from one large, flat stone, surrounded by smaller stones mortared into place. The mouth was untreated, circular and with a diameter of 55cm. The floor had several stones lying on it. It was circular with a diameter of 36cm. The tomb was 61cm deep from mouth to floor.

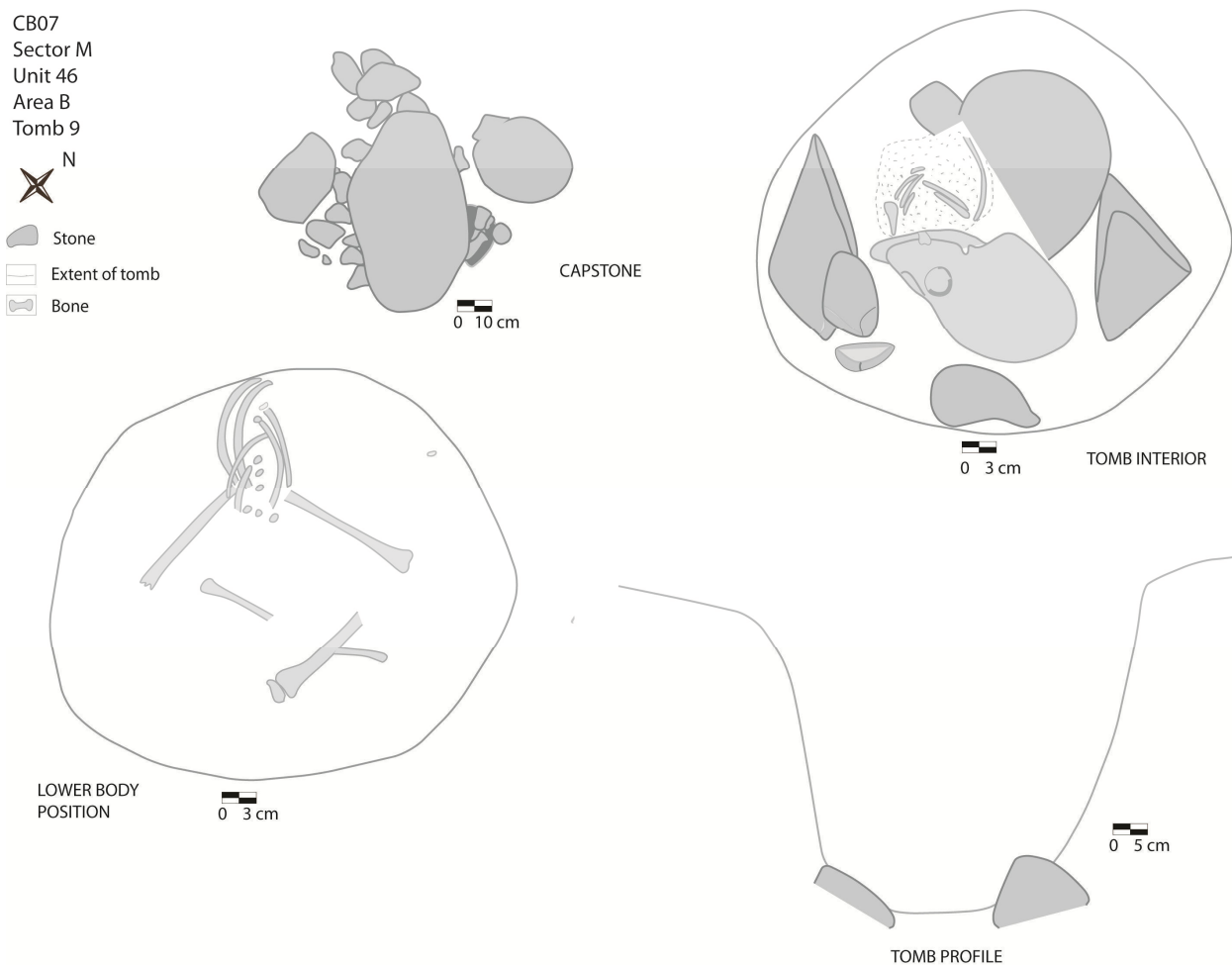


Figure 284. Unit 46, Area B, Tomb 9.

It contained the skeleton of an infant, aged 18 months +/- 6 months, of indeterminate sex. Cranial modification style was undetermined, due to fragmentary nature of the cranium. No

APPENDIX E (continued)

pathologies were evident. The child was flexed, with feet on the east side of the tomb. The cranium was not in-situ, and had fallen onto the lap. The position of the vertebrae, ribs and lower leg bones support the interpretation of the individual facing east in the tomb.

One un-slipped, ceramic handle with burning marks on it was found associated with the upper fill of the tomb.





Tomb 46-10

Tomb 46-10 was located to the east of 46-8 and west of 46-9. It was an intact tomb, although there was no capstone. The tomb had an outer ring, although the northwestern side of the outer ring had fallen into the tomb. Several of these stones had fallen to the southeast of the tomb, creating the circle initially interpreted as tomb 46-7. The mouth was constructed of stones and mortar. It was distinctly oval in shape, and measured 107 by 56cm. The floor was un-treated, oval shaped, and measured 80 by 45cm. The tomb was 39cm deep from mouth to floor.

CB07
Sector M
Unit 46
Area B
Tomb 10

0 10 30 cm



-  Stone
-  Mortar & small stones
-  Extent of tomb
-  Bone
- A Kero
- B Tazon
- C Camelid foot

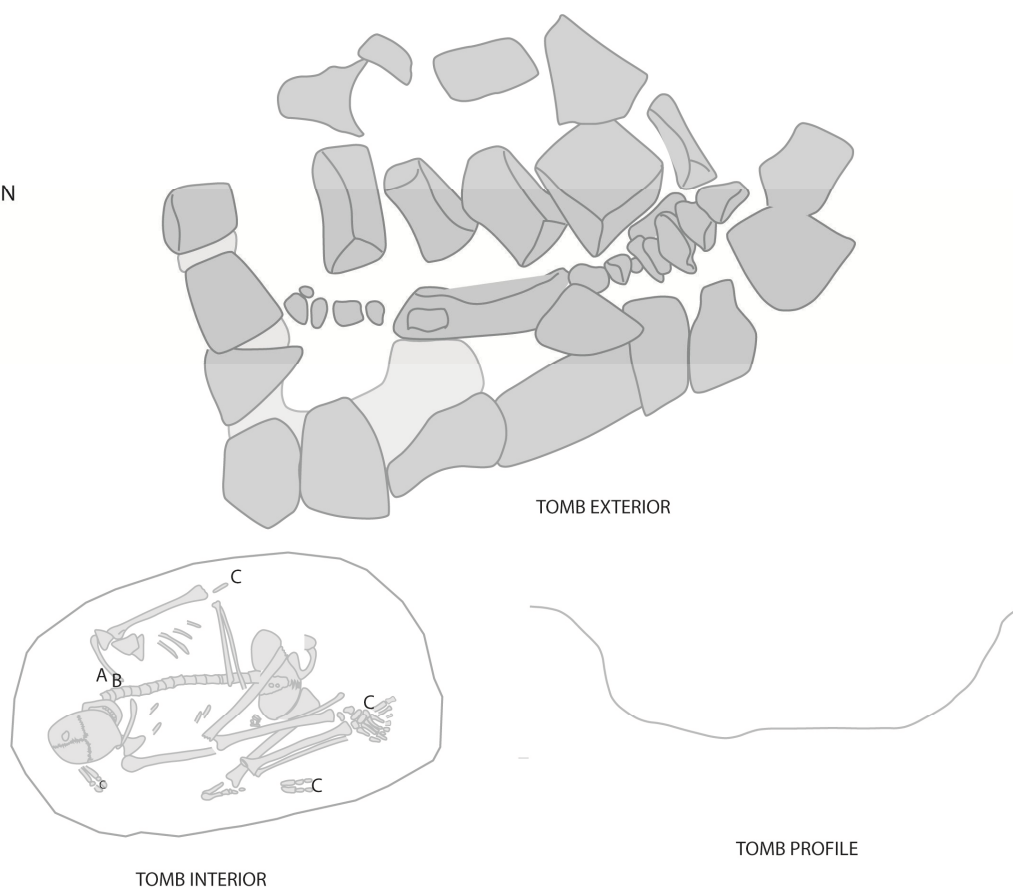


Figure 285. Unit 46, Area B, Tomb 10.

APPENDIX E (continued)

The tomb contained the skeleton of an adult male, at least 50 years at time of death. There was circumferential cranial modification. The individual had resorptive lesions on the parietal and occipital bones, proliferative and resorptive lesions on the maxilla associated with pre-mortem tooth loss. There was possible evidence for trauma on the occipital near the lambda, in the form of rectangular hole. The individual had suffered considerable pre-mortem tooth loss. There was severe lipping on thoracic and lumbar vertebrae and the patellae, suggesting degenerative joint disease. The individual also had very robust muscle attachments on the leg bones. There was a possible healed trauma on the occipital. The femora were enlarged at the mid-shaft and bowed out. The individual was placed in the tomb in a flexed position, lying on his back, with legs leaning to the left side of the body. The head was at the west end of the tomb, the feet at the east.

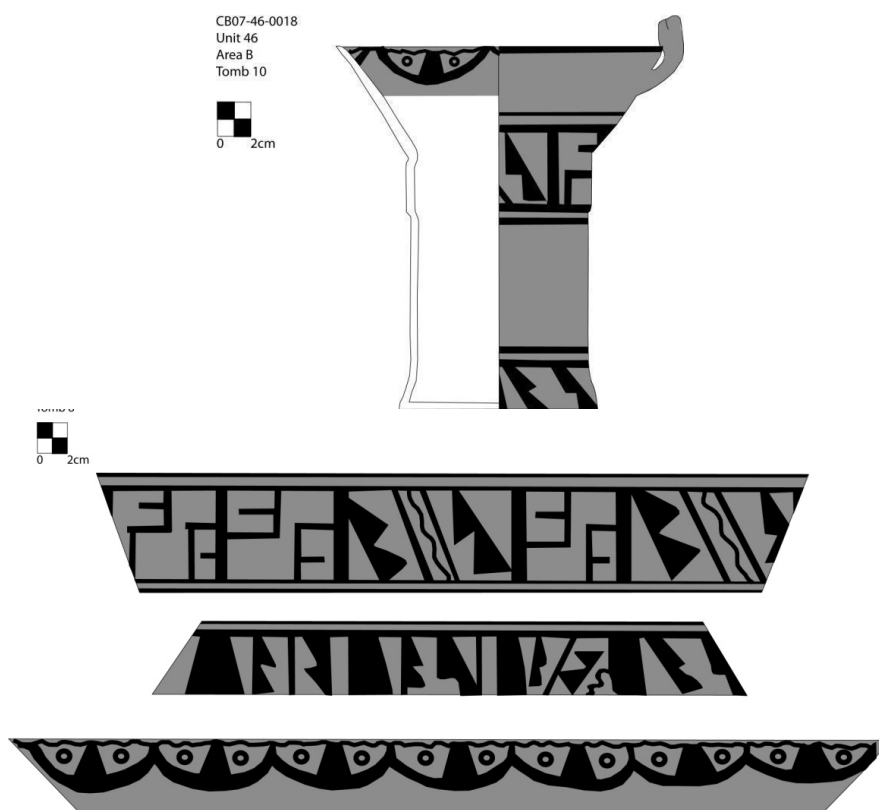
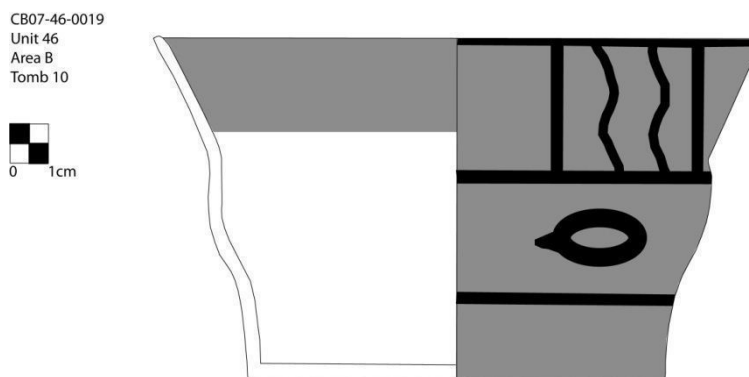
Interred with the individual were two ceramic vessels. They were placed next to each close to the left side of the individual's head. One was a red-slipped *tazon*,³¹⁰ with a *torus* around the middle of the vessel. The geometric decoration was simple, consisting of panels created by thick black lines, pairs of wiggly lines in the narrower panels, and oval outlines. The other vessel was a large *kezo*³¹¹ with a *torus*. It was red-slipped with geometric patterns of step-stair motifs and wiggly lines around the *torus* and base. The interior of the rim was decorated with a pattern similar to that of a snakeskin, in particular a Boa constrictor. Protruding from the rim was a modeled snake head. The tomb also contained 4 sub-adult camelid feet. A foot was placed on or next to the body in each of the four cardinal directions.³¹² Lithic flakes were also recovered. Macro-botanical analysis identified the presence of a *Z. mays* cob. Although the only one recovered during macro-botanical analysis, another was recovered from 45-15, and submitted for radiocarbon dating.

³¹⁰ Height 9cm, Rim Diameter 16cm, Base Diameter 11cm.

³¹¹ Height 22.5cm, Rim Diameter 22cm, Base Diameter 12cm.

³¹² Although the position of the camelid feet in 46-4 could not be determined, the other similarities with 46-10 raises the possibility that they were also placed in the cardinal directions.

APPENDIX E (continued)

Figure 286. Red-slipped *kero*, Tomb 46-10.Figure 287. Red-slipped *tazon*, Tomb 46-10.

APPENDIX E (continued)

Tomb 46-11

Tomb 46-11 was located along the southwest limit of Area B, south of 46-6. It was an intact tomb. The tomb was an unlined pit, with a distinct outer ring, whose northwestern side was missing, possibly disturbed during the looting of 46-6. The cap was constructed of stones, heavily mortared into place. The mouth was untreated, irregularly circular with a diameter of 50cm. On the floor was a slab of white rock, on which the skeletal remains were sitting. The floor was circular with a diameter of 24cm. The tomb was 48cm deep from mouth to floor.

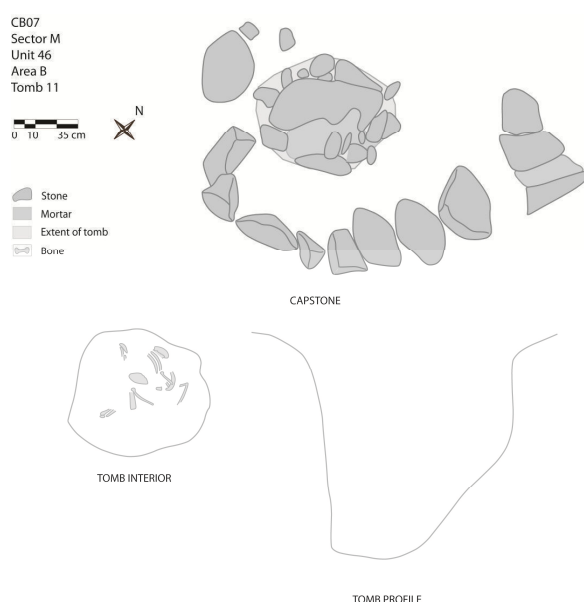


Figure 288. Unit 46, Area B, Tomb 11.

46-11 contained the skeleton of an infant, aged 6 months +/- 3 months, of indeterminate sex. Cranial modification could not be observed. The infant's bone was very porous and the cortical surface incomplete. It was in a semi-flexed position, on the stone slab, facing east. The knees were apart but the feet together. Several undecorated sherds were associated with the surface of the tomb. A lithic flake was found in the tomb.

Tomb 46-12

46-12 was to the west of 46-9. It was an intact tomb. The tomb was an unlined pit, with an incomplete outer ring. The outer ring was absent on the southeast side. The capstone was of stones, mortared into place and overlain by several smaller stones. On the southeast side the

APPENDIX E (continued)

mortar included tiny blue stone inclusions. The mouth was untreated, circular in shape with a diameter of 40cm. The floor consisted of a thick, hard, clay-like substance. It was circular with a diameter of 20cm. The tomb was 24cm deep from mouth to floor.

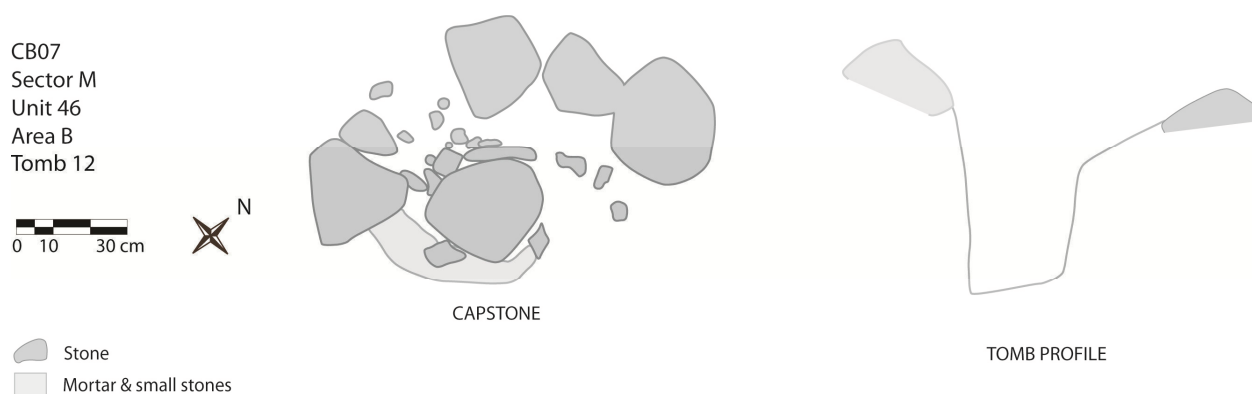


Figure 289. Unit 46, Area B, Tomb 12.

The tomb contained tiny human bones. They represented the skeleton of a fetal individual, aged 5-8 fetal months. No pathologies were evident. The fragility of the bones meant that they had completely collapsed on top of each other. The infant appears to have been flexed.

A burnt, non-diagnostic, un-slipped ceramic sherd was associated with the surface of the tomb. Placed above the infant, and wedged into the northern side of the tomb was a faunal bone, identified as the atlas of a camelid.

Area C

Area C was located to the northeast of Area B, so that its southwest limit abutted the northwest limit of Area B.

Layer S/A was between 3 and 11cm deep. It contained 155 ceramic sherds, most of which were undecorated, non-diagnostic pieces. There were also several handles, and rims, as well as body sherds with geometric motifs. There were 242g of human bone fragments, and lithic materials. Three tombs were located in Layer B. All three were intact.

Tomb 46-13

Located on the northeast side of Area C, Tomb 46-13 was an intact tomb. It was an unlined pit. There was no outer ring. The cap comprised three stones with mortar, which had collapsed into the tomb. The mouth was un-treated, it was roughly circular with a diameter of 62.5cm. The floor was untreated, roughly circular. The walls of the tomb steeped inward, and the diameter of the floor was only 30cm. The tomb was 57cm deep.

APPENDIX E (continued)

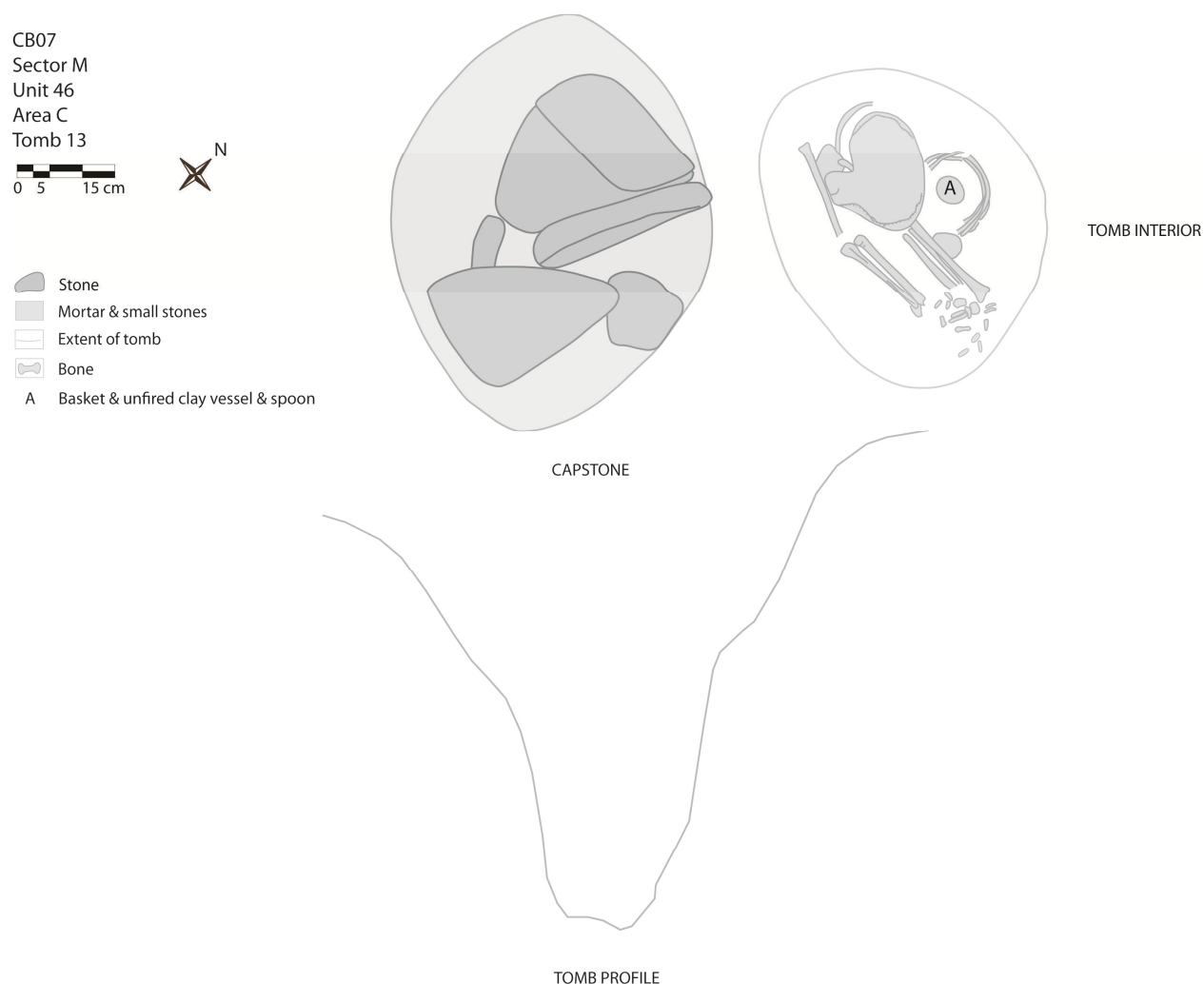


Figure 290. Unit 46, Area C, Tomb 13.

It contained the skeleton of a child, aged 4 years \pm 1 year, of indeterminate sex. The child had tabular cranial modification. There were minor porosities in the orbit roofs and the parietals, suggesting possible cribra orbitalia and porotic hyperostosis. The individual was sat flexed, the head had fallen and was facing south. The position of the vertebrae, ribs and pelvis indicated the child was placed facing east.

Buried with the child was a basket which was placed to the left of the pelvis. Sitting in the basket was an unfired gray clay vessel. It was a shallow bowl. Also in the basket was a small

APPENDIX E (continued)

unfired clay object, possibly a spoon. The child had been wrapped in a rope made of twisted fiber strands. They were twisted in an S pattern. There was also a strand of loose dark brown hair. Three lithic flakes were recovered. Crayfish claws were identified during macro-botanical analysis (Appendix G).

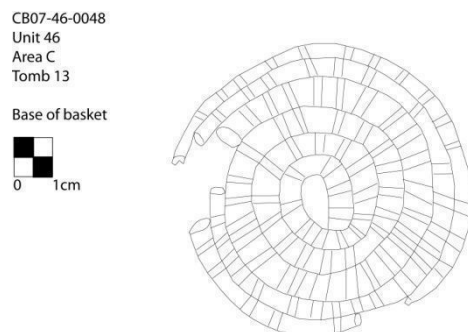


Figure 291. Basket fragment, Tomb 46-13.

Tomb 46-14

Located along the southwest edge of Area C, Tomb 46-14 was an intact tomb. It was a partially stone lined cist. There were two large rocks on the east wall of the tomb, each stretched from mouth to profile. There was no outer ring. The capstone had collapsed into the tomb. The mouth was untreated, circular in shape with a diameter of 60cm. The floor was untreated, oval in shape and measure 20cm across. The tomb was 86cm deep, and narrowed sharply toward the base.

46-14 contained the skeleton of a male, in his late teens or early twenties. The individual had circumferential cranial modification. There was pitting on the posterior of the manubrium, and minor porosity on the lumbar and thoracic vertebrae, and minor occlusal wear. The individual was sat flexed in the tomb. The tomb was sufficiently narrow toward the base that the left arm was wedged against the wall and the left leg leant against the wall. The head was facing southeast, and the feet south.

A decorated red-slipped body ceramic sherd was recovered from the surface of the tomb, but its association with the interment is questionable. There was fiber rope around the right humerus. It was twisted in a Z pattern, the longest piece was 1.3cm long, 0.4cm wide, 0.2cm thick. Lithic flakes were also recovered. There were also toad bones as well as bones from a large mammal.

APPENDIX E (continued)

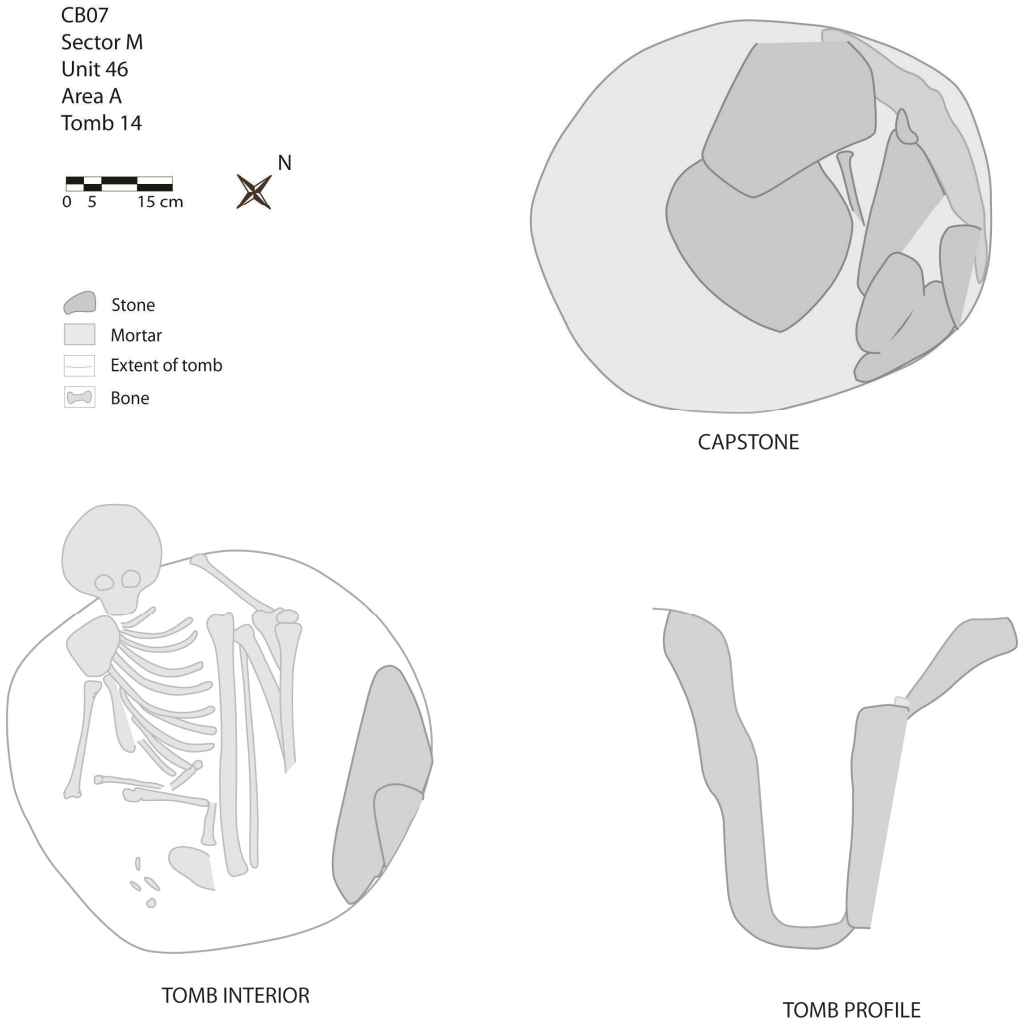


Figure 292. Unit 46, Area C, Tomb 14.

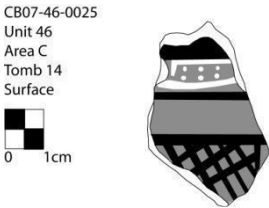


Figure 293. Red-slipped sherd recovered from the surface of 46-14.

APPENDIX E (continued)

Tomb 46-15

Tomb 46-15 was located to the east of 46-14. It was an intact partially stone lined cist. It was stone lined on the southwest and northeast sides, with large upright stones. There were two courses on the northeast side, and three on the southwest. The cap was stone, 13cm thick, and heavily mortared in place. The mouth was constructed from stones and mortar was circular with a diameter of 52cm. The floor was untreated, oval and 35cm long.

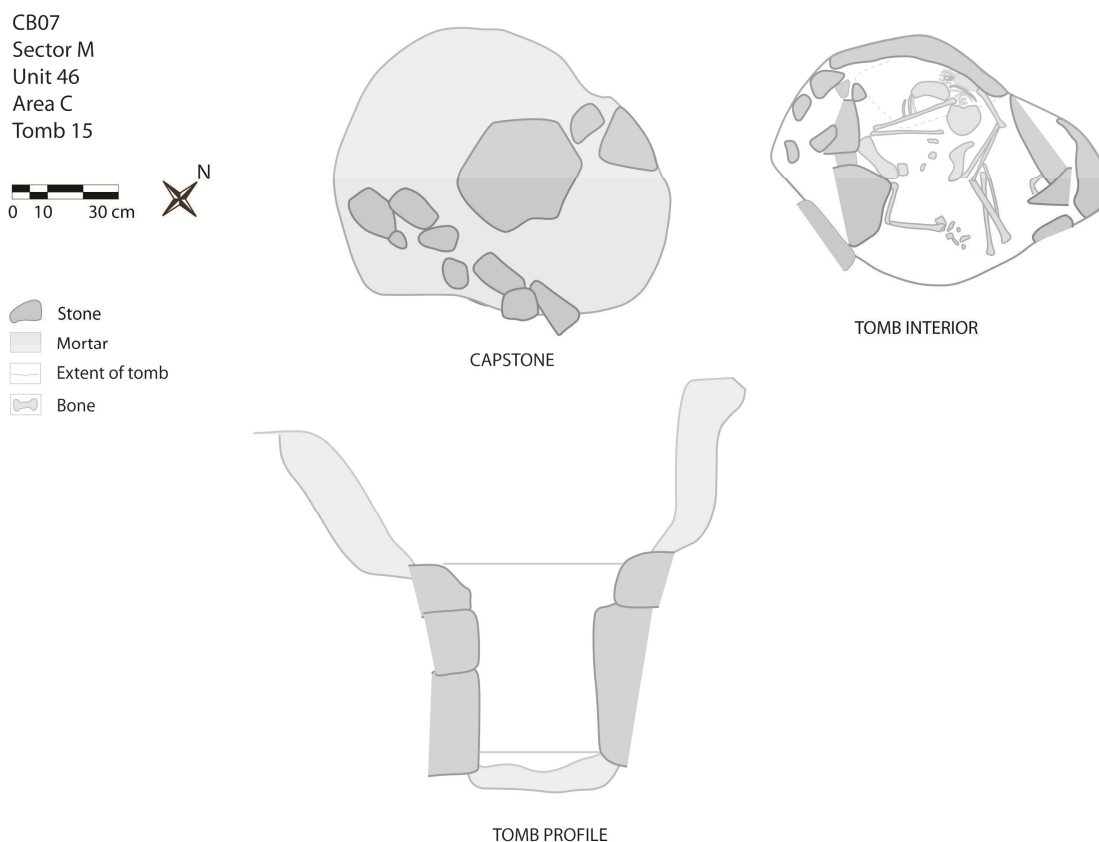


Figure 294. Unit 46, Area C, Tomb 15.

46-15 contained the skeleton of a female, in her late teens. She had tabular cranial modification. There was minor evidence for cribra orbitalia, a small resorptive lesion on the end of the right third metatarsal, dental caries and occlusal wear. The individual was flexed, seated, facing east. There were fragments of fiber rope, although whether it was twisted or braided could not be determined.

APPENDIX E (continued)

Area E

In 2006, before excavations at the site were begun, two small test pits (Areas E and E2) were dug Unit 46, upslope from the excavations discussed above. Each measured 1 by 1m. No burials were found in either. A single sherd of non-diagnostic, undecorated, un-slipped pottery was recovered from each, as well as fragments of human bone (a total of 13.3g from the two units), and a small metal bead.

Summary of Unit 46

A range of ages and both sexes were buried in Unit 46. Although similar funerary treatments to those seen in Units 44 and 45 are in evidence in Unit 46, particularly in terms of treatment of the body, there were some distinct behaviors in the burial of the dead in this cemetery. Shallow, unlined oval pits were used to bury three adult males. The inclusion of camelid remains in four of the tombs further marks out the cemetery, as does the evidence for a burning episode during internment. There was an absence of obsidian and chrysocolla, seen in Unit 45. Tumilaca style pottery was recovered. Macro-botanical analysis indicated the presence of guayaba, corn cobs, and cray fish claws within tombs in Unit 46, as well as an increased presence of *Paspalum*, a grass used for basketry.

Unit 47

Unit 47 is the only cemetery located on the west slope of the ridge. The cemetery covers 1130m², a considerably larger area than any of the others. Tombs in this cemetery were particularly affected by the creation of the agricultural canal in 2004. Consequently, Unit 46 was the focus excavations in 2006. Eleven areas (A through K), each 4m², were excavated. A total of 27 burial contexts were investigated.

APPENDIX E (continued)

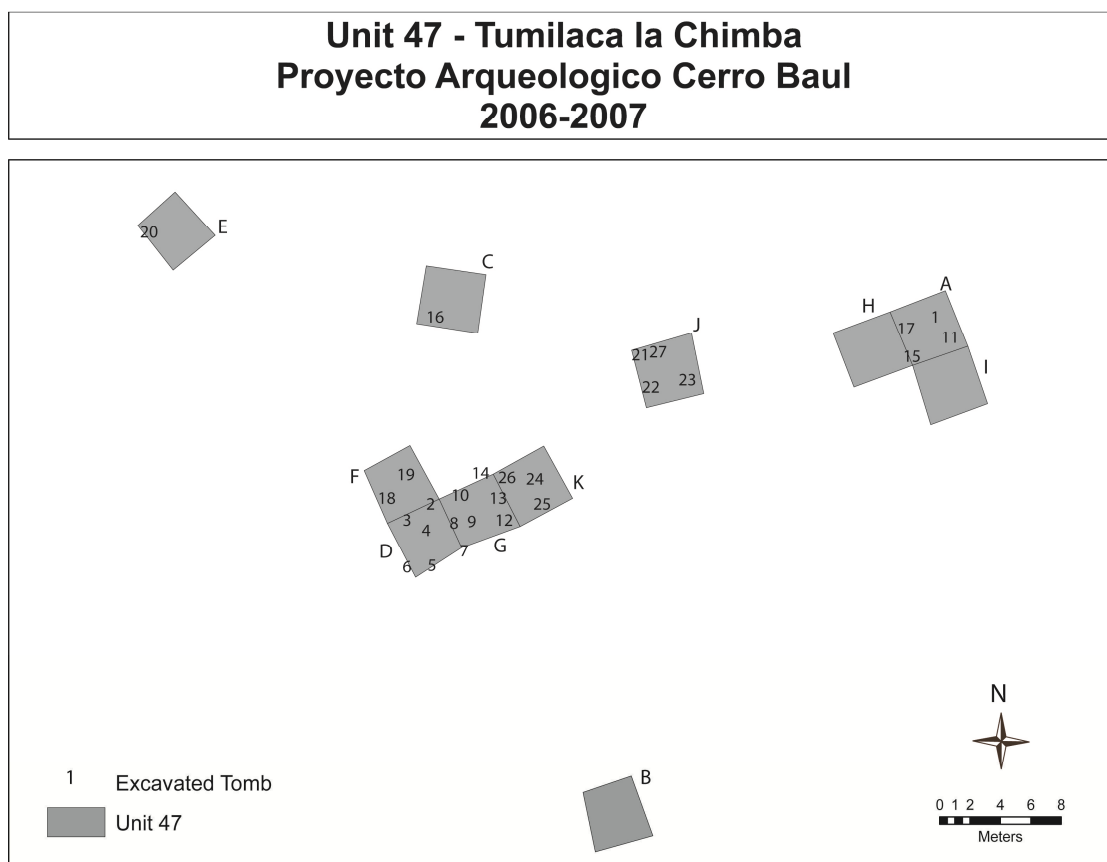


Figure 295. Unit 47.

Area A

Area A was located in the east of the Unit 46, toward the upper limit of the cemetery. There was a low wall in the southern part of the area, possibly a retaining wall to secure the steep slope.

Layer S/A was between 7 and 23cm deep, due to the steep slope of the hill. The consistency of the layer was very similar to that on the east slope; loose and rocky with cultural materials. Only 13 ceramic sherds were recovered (possibly due to the position of the Area toward the top of the slope). Ten of these were from a light-red slipped vessel with burning stains. The others were from a red-slipped vessel. No human bone was recovered, although a tiny fragment of faunal remains were. Four tombs were located in Area A. Three of these were intact.

APPENDIX E (continued)

Tomb 47-1

Located along the northeast side of Area A, Tomb 47-1 was an intact tomb. It was a partially stone lined pit. Stone lining was very minimal, consisting only of large stones on the east and west side. These large, irregular stones also formed part of the mouth of the tomb. There was no capstone. The mouth was of poor construction, mostly small, irregular stones filled in with mortar. It was circular with a diameter of 30cm. The floor was untreated, circular, with a diameter of 17cm. The tomb was 17cm deep from mouth to floor. A clay-like deposit behind the skeleton's head suggested there had been ground water in the tomb.



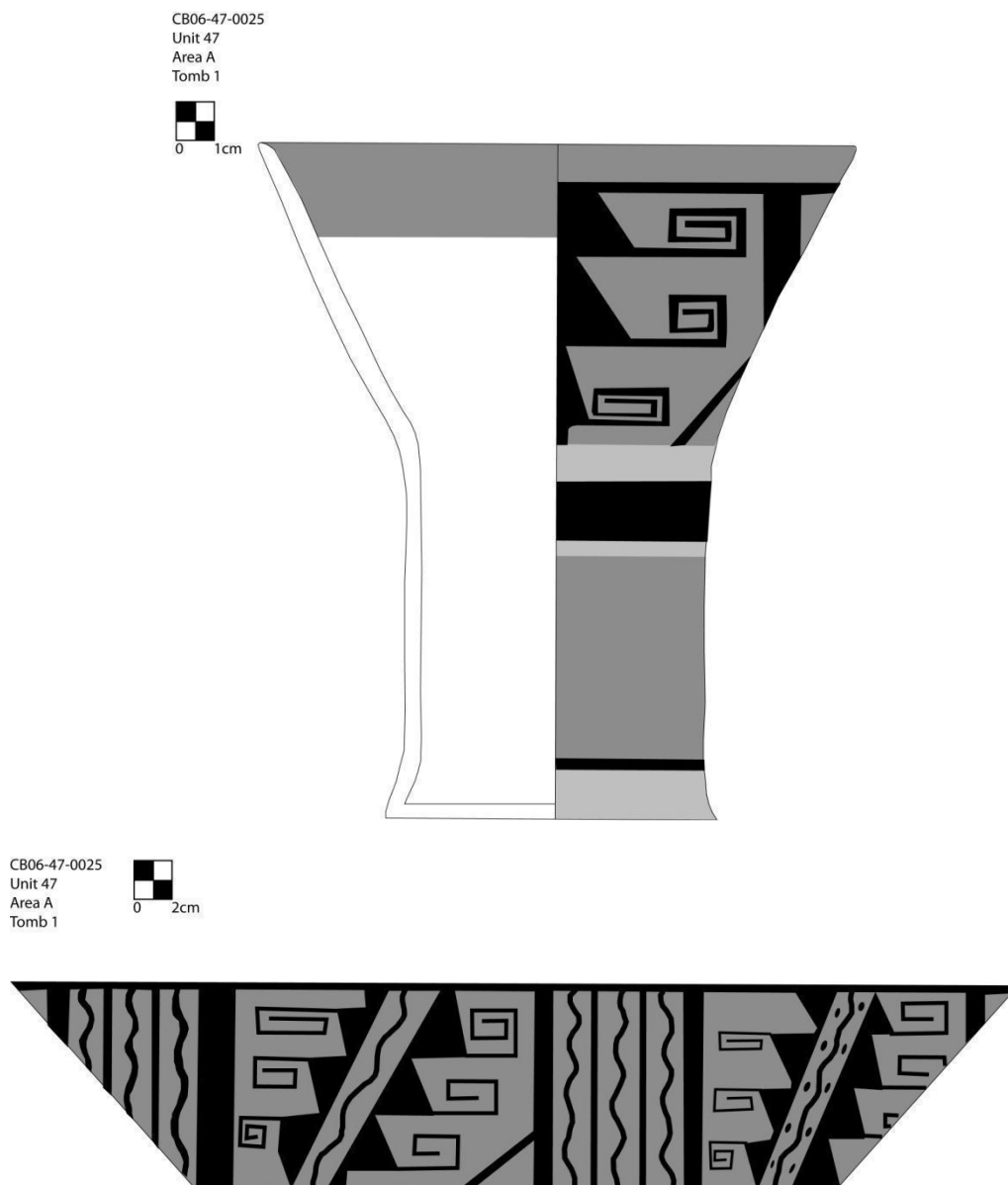
Figure 296. Unit 47, Area A, Tomb 1.

Tomb 47-1 contained the skeleton of a young child, aged 2 years +/- 8 months, of indeterminate sex. It had possible tabular cranial modification, but this was difficult to observe. The child had enamel defects but no other pathologies were observed. The child was sat flexed, with the head facing east and the feet pointing south. The arms were crossed in the lap, with the left arm above the right.

Buried with the child was a *kero*.³¹³ It was placed in front of the individual, with the rim above the level the cranium. The vessel was made of a fine paste, was red-slipped with a geometric design. The upper, flaring portion of the *kero* was decorated with embellished upside down stair step motifs and wiggly lines. There were also black and orange bands around the middle of the vessel and a black band around the base. No other cultural inclusions were preserved in the tomb. Nine pieces of possible marine shell were recovered from the grave.

³¹³ Height 18cm, Rim Diameter 16cm, Base Diameter 9cm.

APPENDIX E (continued)

Figure 297. Red-slipped *kero*, Tomb 47-1.**Tomb 47-11**

Tomb 47-11 was an intact tomb located in the eastern corner of Area A. It was an unlined pit. There was no capstone. The mouth was similar to that in 47-1, poorly constructed with

APPENDIX E (continued)

several larger stones filled in by small stones and mortar. It was roughly circular in shape, with a diameter of 52cm. The floor was also circular, untreated with a diameter of 18cm. The tomb was 24cm deep from mouth to floor.

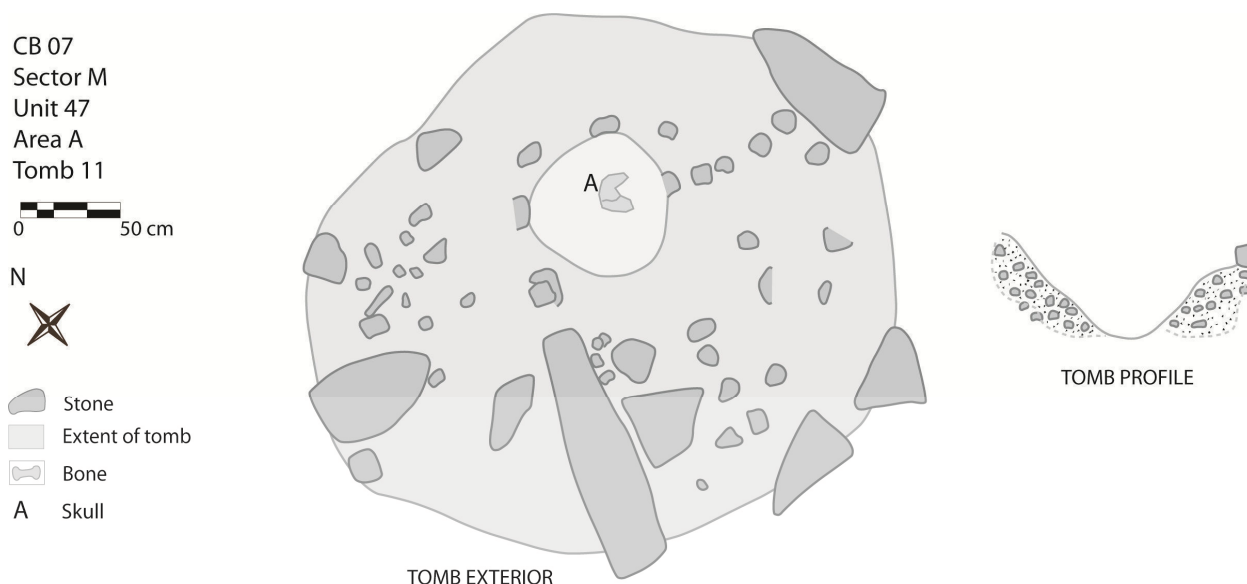


Figure 298. Unit 47, Area A, Tomb 11.

The tomb contained the skeleton of a child, aged 3 years +/- 1 year, of indeterminate sex. It had possible tabular cranial modification. No pathologies were noted. The individual was flexed and seated. The head faced south and the feet north. However the body was facing towards the east and the head had fallen onto its left side and was probably originally facing east. The arms were crossed in the child's lap. There were no cultural inclusions.

Tomb 47-15

Tomb 47-15 was located in the southern corner of Area A. It was an intact, stone lined cist. The tomb was very small, and consisted of 3 courses of stones on the south side and one 2 on the north side, and only minimal mortar. There was no capstone. The mouth was well and neatly constructed in comparison with 47-1 and 47-11. It consisted of small stones flush against the ground. It was circular with a diameter of 20cm. The floor was of packed earth, circular in shape, with a diameter of 11cm. The tomb was 23cm deep from mouth to floor.

APPENDIX E (continued)

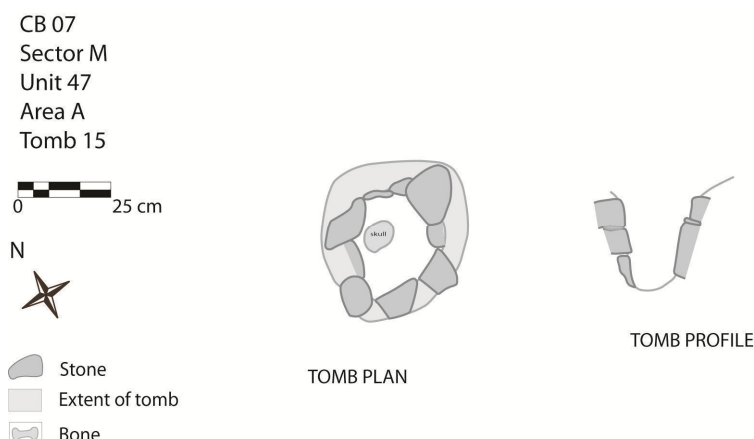


Figure 299. Unit 47, Area A, Tomb 15.

The tomb contained the skeleton of a fetal individual, in the second trimester. The remains were slightly larger than those in 46-12. The individual was flexed, with the head facing east, and the feet turned to the west. The arms were bent, but not crossed. Instead, they extended in front of the body as if they were resting on the individual's knees. The legs were bent under themselves as though the individual was kneeling.

Buried with the individual was a *kero*.³¹⁴ Red-slipped and made of a fine paste, the vessel was in poorer condition than other complete vessels recovered from the cemeteries. The rim was eroded, with a portion completely missing. The slip on one side of the vessel had eroded away destroying the painted decoration on that side. The motif was visible on the other side, and was of a stylized trophy head.³¹⁵ The vessel was larger than the infant, and took up almost the entire tomb. It was placed with the rim leaning toward the west and had effectively wedged the skeleton in place, contributing to the preserved position of the corpse.

Unidentified faunal remains (2g) were recovered from the tomb, as were some tiny fragments of sticks. It is possible that these sticks were originally inserted into the mummy bundle, perhaps with feathers attached, as is known for other Tiwanaku sites in the valley. There is no way of confirming this, and the absence of organic materials was repeated throughout Unit

³¹⁴ Height 15cm, Rim Diameter 15cm, Base Diameter 7cm.

³¹⁵ Paul Goldstein confirmed the similarity of the iconography to other Tiwanaku images designated trophy heads (Goldstein, personal communication 2006). It is distinct from those in the Chen Chen assemblage and resembles a snail.

APPENDIX E (continued)

47. Echinocactus (cactus) and Chenopodium (quinoa) was identified during analysis of the macro-botanical remains from this grave.

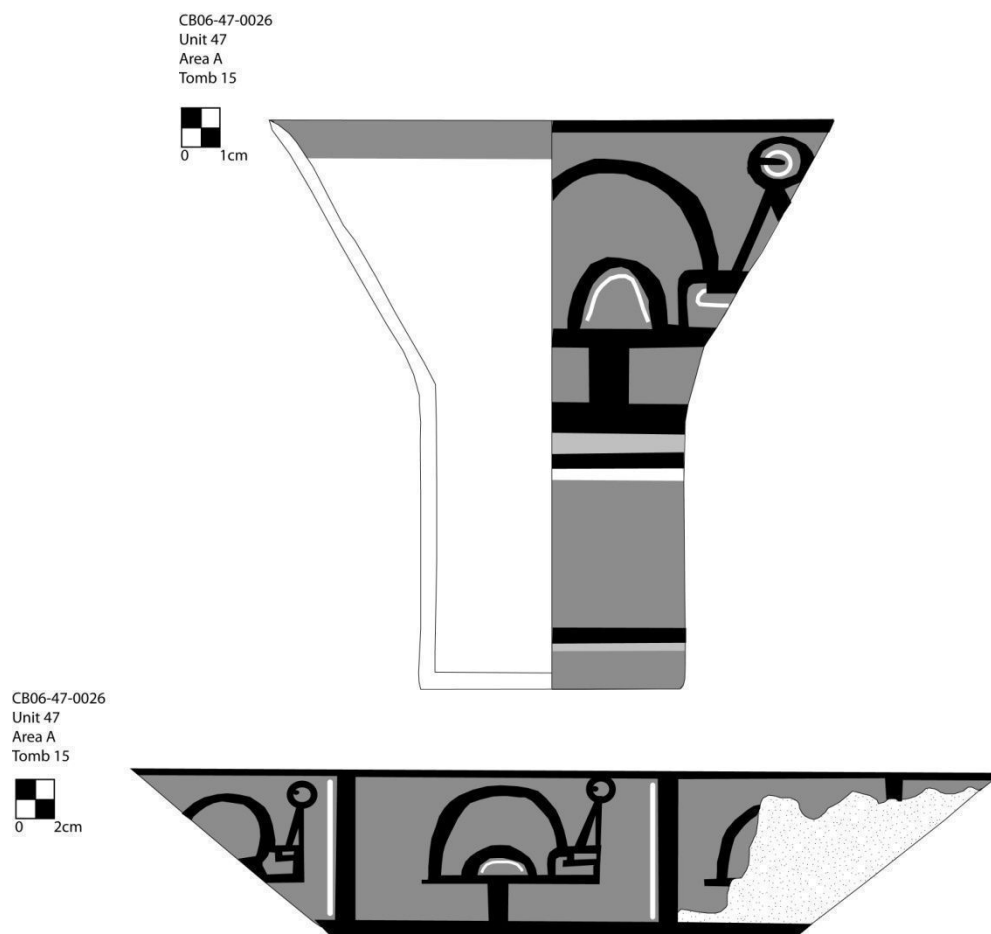


Figure 300. Red-slipped *kero*, Tomb 47-15.

Tomb 47-17

Tomb 47-17 was located to the west of 47-1 and north of 47-15. It was a looted, partially stone lined pit. Three courses of stones lined the eastern wall of the tomb. There was no cap. The mouth consisted of stones and mortar, although these were absent from the southwestern area of the mouth. It was circular with a diameter of 27cm. The floor was untreated, circular with a diameter of 18cm. The tomb was 28cm deep from mouth to floor.

APPENDIX E (continued)

The tomb only contained fragments of human bone. The small size of the tomb suggests that it was created for a small child or infant, common with the other tombs in Area A.

The tomb appears to have been looted before AD 1600. Although not filled with volcanic ash, as 45-2 was, there was a thin layer of ash at the bottom of the tomb. The tomb had been completely filled in with the rocky matrix that constituted Layer S/A.

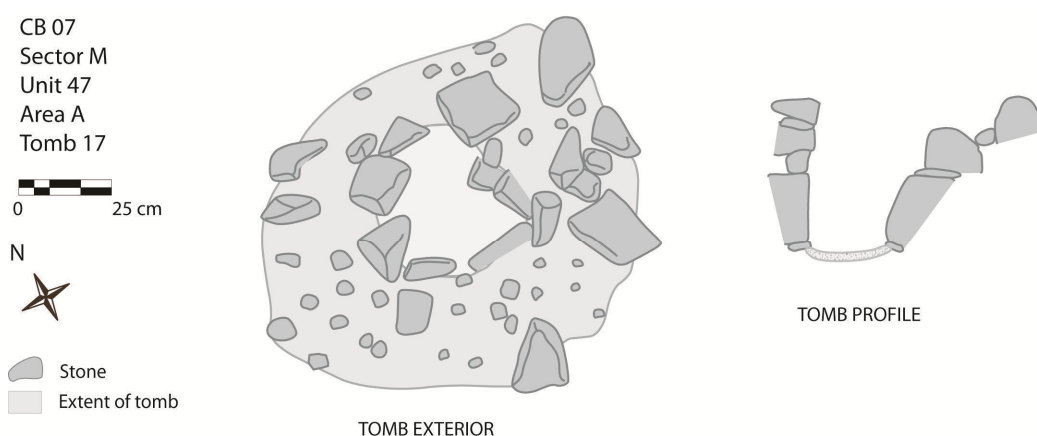


Figure 301. Unit 47, Area A, Tomb 17.

Area B

Area B was located in the southeastern limit of Unit 47. It was separated from the main area of the cemetery by a shallow *quebrada*.

Layer S/A was between 1 and 35.5cm deep, varying with the slope of the hill. No cultural or skeletal materials were recovered, and sterile was reached. The absence of burials in this area confirmed the impression from the surface that to the south of the slight ravine was beyond the limit of the cemetery.

Area C

Area C was located in the northern area of Unit 47. The slope turns slightly here, as a distinct ridge juts out, and thus Area C partially fronted the main section of the cemetery. The slope is especially steep in this part of the hill. Layer S/A was between 14 and 20cm deep. It comprised a loose fill with stone inclusions. No cultural or skeletal material was found in the layer. There was one tomb in Layer B.

APPENDIX E (continued)

Tomb 47-16

Tomb 47-16 was located in the southwestern corner of Area C. It was a looted, partially stone lined pit. Stone lining, consisting of 6 courses, was limited to the south side. There was mortar in-between the stones. Looting had occurred from the southwest, and the stone cap was still in place. It comprised one large stone, with 3 smaller stones and mortar filling the gaps between it and the mouth. The mouth was circular, constructed of irregularly shaped stones with mortar, and had a dimension of 67cm. The floor was untreated, was circular in shape and had a diameter of 54cm. The tomb was 189cm deep from mouth to floor.

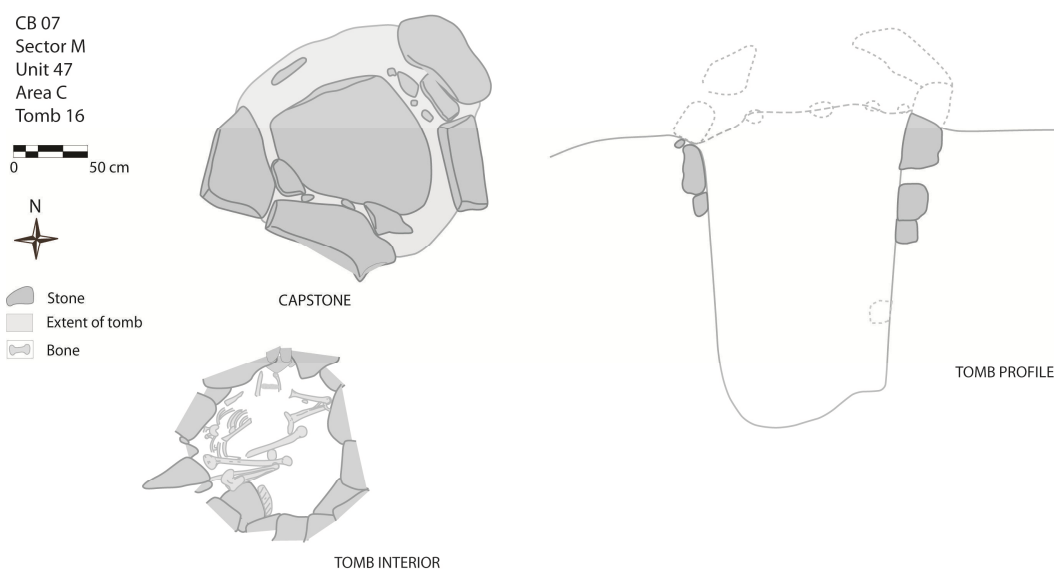


Figure 302. Unit 47, Area C, Tomb 16.

The tomb contained the skeleton of a male, aged at least 50 years. The cranium was missing so cranial modification could not be observed. The individual had suffered considerable pre-mortem tooth loss, significant dental wear, a carious lesion, degenerative joint disease (minor lipping on the ulna, irregularities on the acetabulum, and lesions on one cervical and one lumbar vertebrae). There was a possible healed fracture on a rib. The individual also had robust muscle attachments on the sternal clavicles, ossified costal cartilage on the ribs and sternum, and the tibiae were flattened medio-laterally. He had been buried in a flexed, seated position. The feet were facing east. The position of the vertebral column suggests the head was also facing east.

Also recovered from the tomb were a lithic flake, and some tiny green and red stones. Small, unidentified faunal bones were mixed in with fragments of botanic material, perhaps a spoon or basket. Fragments of a brown textile were recovered. The wool had been very tightly spun (24 spins per cm in the warp) in a ZS pattern, and the textile woven in a warp faced pattern.

APPENDIX E (continued)

The tightness of the spin and the weave suggests the fragments came from a *manta* (shawl). Braided fiber rope, the longest fragment 3.8cm long, 0.7cm wide and 0.3cm thick, was found wrapped around the left arm. There was a small deposit of carbon in the tomb.

Area D

Area D was located in the west area of Unit 47, approximately 10 meters up-slope from the agricultural canal. The area was situated in the main section of the cemetery, where tombs were most densely visible and extensive looting activity appeared to have taken place.

Layer S/A measured between 30 and 68cm deep. 48 ceramic sherds were recovered from the layer. They included un-slipped, roughly finished, non-diagnostic sherds, red-slipped body sherds decorated with Tiwanaku geometric motifs, and decorated rims and bases. No human bone was recovered from the layer. Five looted tombs were located in Layer B.

Tomb 47-2

Located in the northern corner of Area D, Tomb 47-2 was a looted tomb. It was an unlined stone pit. It had a well defined stone outer ring, which was partially missing on the northern side. The cap was absent. The mouth was constructed of stones flush against the ground with only minimal mortar in-between them. It was circular, with a diameter of 29cm. The floor was packed earth with a flat stone placed on the base. The floor was circular with a diameter of 18cm. The tomb was 47cm deep from mouth to floor.

The tomb contained the remains of an infant, aged 9 months +/- 3 months, of indeterminate sex. Cranial modification could not be observed. There was possible evidence for cribra orbitalia with minor porosity in the right orbit, porosity on the zygomatics and the humeri were thickened at the proximal end. The infant's postcranial skeleton was in-situ. The individual was flexed, with both the head and feet facing slightly to the south of east. It was placed on the flat stone at the base of the tomb, and was in a slight reclining position.

Bone fragments were also found within the outer ring. Inside the tomb were fragments of wood, perhaps a spoon but too poorly preserved to determine. Fragments, including the base, of a broken *kero*³¹⁶ were recovered. Made of a fine paste, the *kero* was red-slipped, with a black band at the base. It was in very poor condition, and was positioned to the north of the infant. The tomb also contained fragments from two different textiles. One was a brown, woolen, interlocking-weave manta, with a ZS spin. The other was brown cotton, but neither the spin nor weave could be determined. A lithic flake was also recovered.

³¹⁶ Base Diameter 5cm.

APPENDIX E (continued)

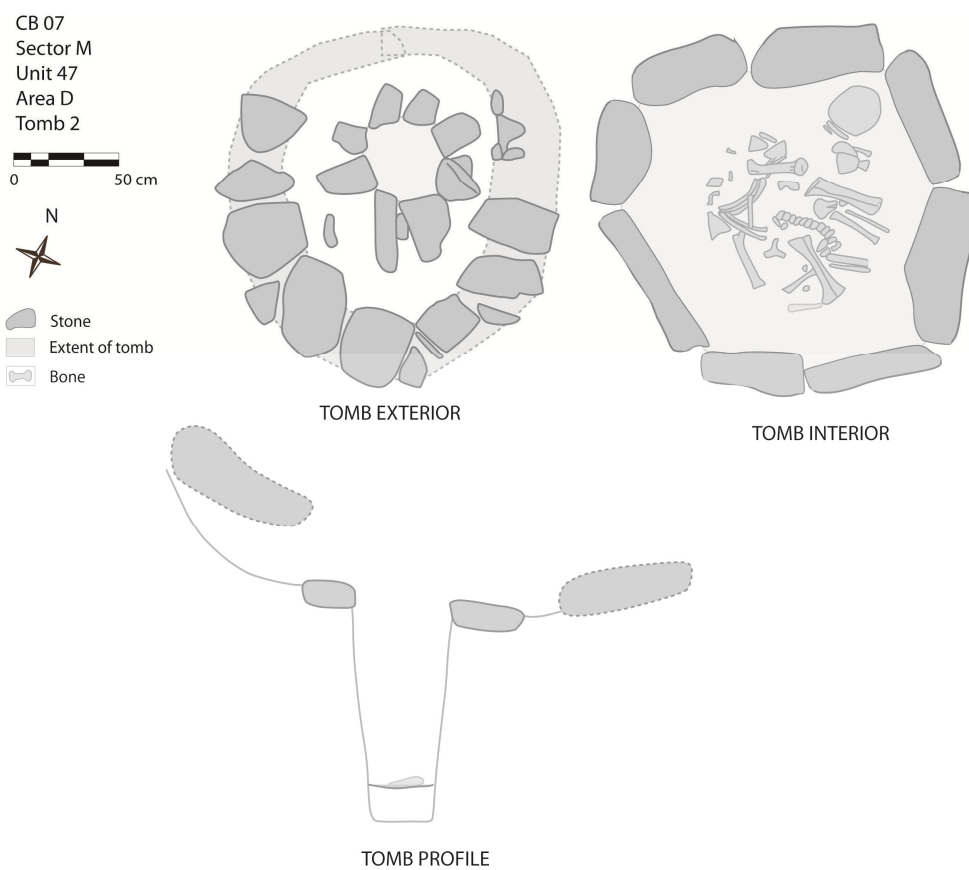
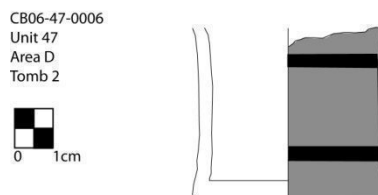


Figure 303. Unit 47, Area D, Tomb 2.

Figure 304. Base of red-slipped *kero*, Tomb 47-2.

APPENDIX E (continued)

Tomb 47-3

47-3 was located west, or down-slope of 47-2. It was a looted tomb. The tomb was an unlined pit. It had a poorly preserved outer ring, constructed of stone and mortar and rising between 15 and 27cm above the mouth of the tomb. Part of the ring was missing on the southern side of the tomb. The cap was absent. The mouth was constructed of stone and mortar, was circular and had a diameter of 31cm. There was a single course of stone around most of the mouth, aside from the east where there were two courses of smaller stones. The floor was untreated, circular in shape with a diameter of 28cm. The tomb was 34cm deep from mouth to floor.

The human remains were very fragmentary, and were found both in the tomb and around and on-top of the mouth of the tomb. No age, sex, or pathology identifications could be made from these fragments.

Associated with the outer ring of the tomb was the base of a ceramic vessel.³¹⁷ It was unslipped, made from a paste of medium texture, and had burning stains on the interior. The base was very thick compared to Tiwanaku decorated vessels, and had a pedestal base unlike *keros* and *tazones*. Neither the paste nor the style was similar to other ceramic grave inclusions at the site, and I think its association with the outer ring was a result of taphonomy.

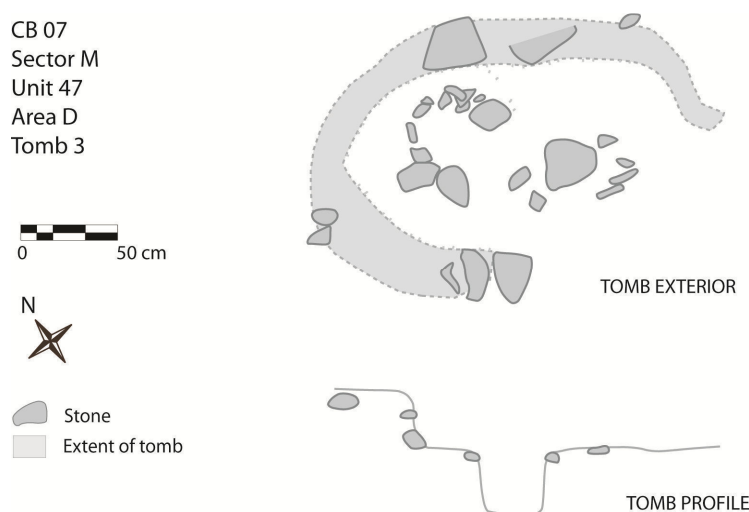


Figure 305. Unit 47, Area D, Tomb 3.

³¹⁷ Base Diameter 11cm.

APPENDIX E (continued)

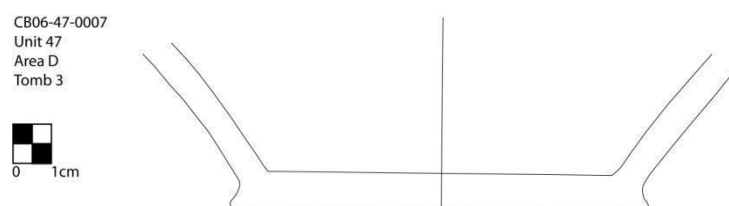


Figure 306. Ceramic base, associated with the exterior of Tomb 47-3.

Tomb 47-4

Tomb 47-4 was located in the center of Area D. It was a looted partially stone lined cist. Stone lining, comprising 9 courses, was on the down-slope side of the tomb only. It had a distinct outer stone ring, comprised of four stone courses mortared in place. It partially overlay the outer ring of 47-5, abutted that of 47-2 and cut that of 47-3. The construction of at least the outer ring of 47-4 appears to have been later than other tombs in the area. The cap was present and consisted of a large flat stone mortared in place. The tomb had been looted through its west wall. The mouth was constructed of stones and mortar, was circular in shape and had a diameter of 70cm. The floor was untreated, circular and had a diameter of 36cm. The tomb was 99cm deep from mouth to floor.

47-4 contained the skeleton of an individual in their early teens, of indeterminate sex. There was evidence for cranial modification, but it could have been either tabular or circumferential. There was porosity on the axis centrum and a resorptive lesion on the proximal surface of one foot phalange. The skeleton was also noteworthy for a hole in the sternum near the xyphoid process. The skeletal elements were disturbed by looting, but the position of the vertebral column and the fallen cranium suggest that it was originally in a seated, flexed position facing east.

Also recovered from the interior of the tomb were seven ceramic sherds, including rim and body sherds from a vessel with a bright-red slip and geometric decoration. There was also a base from a thick, undecorated vessel, of similar paste type and texture as that recovered from the outer ring of 47-3. In addition, there was a seed – possibly of molle, 0.1g of unidentified faunal remains, and a retouched lithic flake. Finally, fiber rope, twisted in an S pattern was recovered. The longest length measures 3.2 by 1.1 by 0.5cm. There was also a small mineral deposit, possibly of ochre.

APPENDIX E (continued)

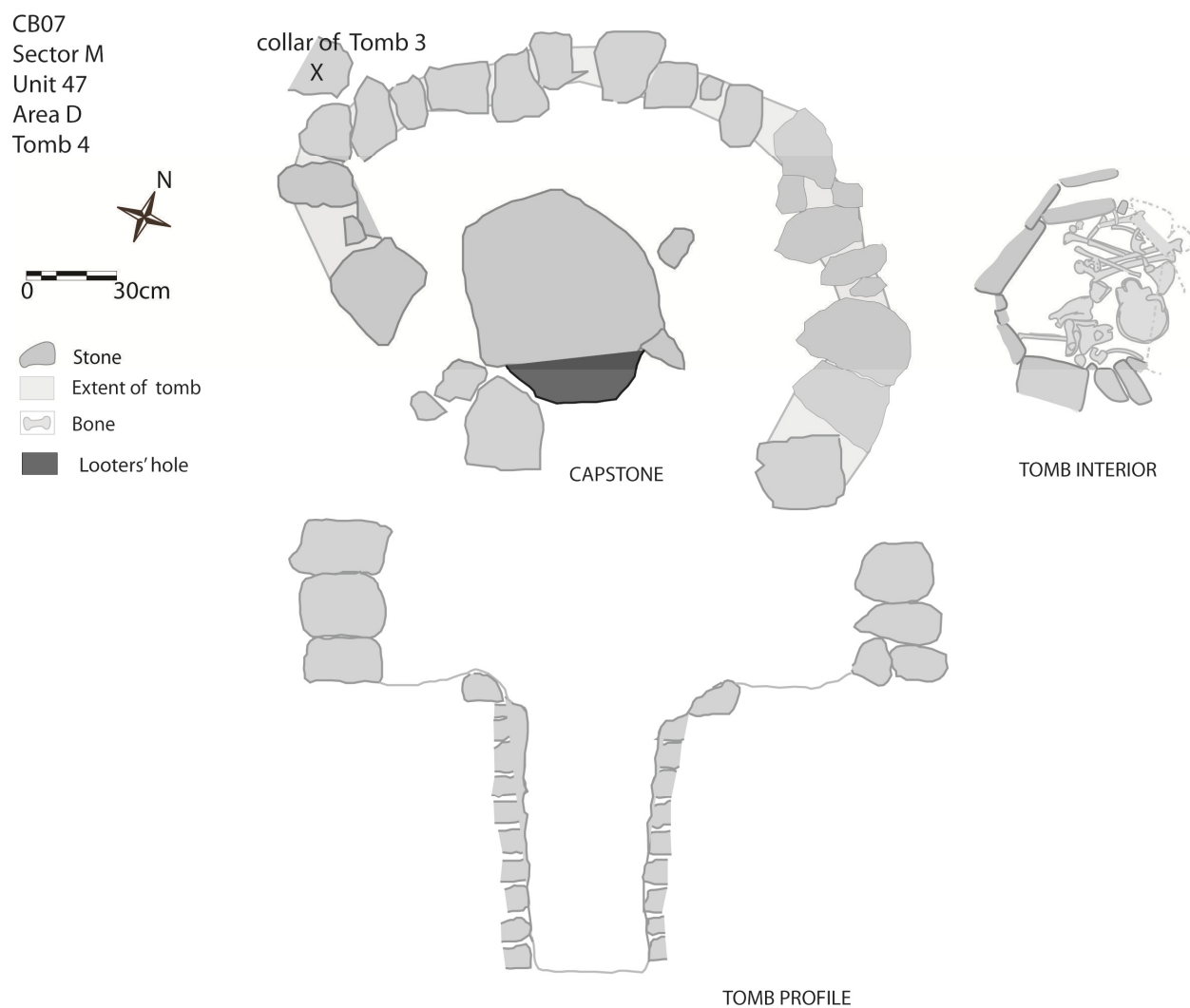


Figure 307. Unit 47, Area D, Tomb 4.

APPENDIX E (continued)

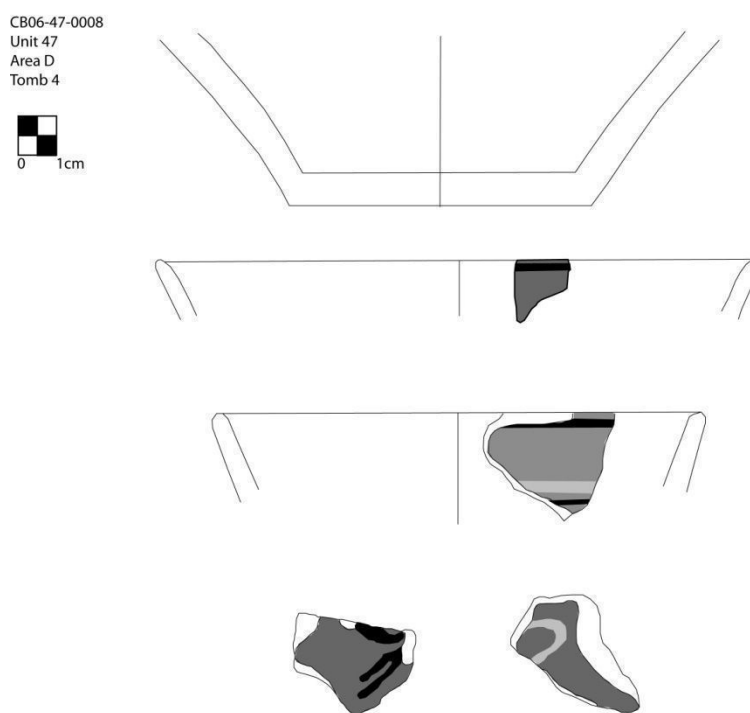


Figure 308. Diagnostic and decorated ceramic sherds, Tomb 47-4.

Tomb 47-5

Tomb 46-5 was located along the southeastern limit of Area D. It was a looted unlined pit. Remnants of the stone capstone were mixed in with soil matrix that had covered the opening of the tomb after looting. The mouth was untreated, circular with a diameter of 101cm. The floor was untreated, circular with a diameter of 58cm. The tomb was 112cm deep from mouth to floor.

Only 37.3g of fragmentary human bone was found in 46-5. No age, sex, or pathology determinations could be made.

Several slipped ceramic sherds were recovered from the tomb. In addition, a large section of a decorated *tazon*³¹⁸ was found. It was red-slipped, and decorated with black outlined stair step motifs and orange Z shapes.

³¹⁸ Height 9cm, Rim Diameter 14cm, Base Diameter 10cm.

APPENDIX E (continued)

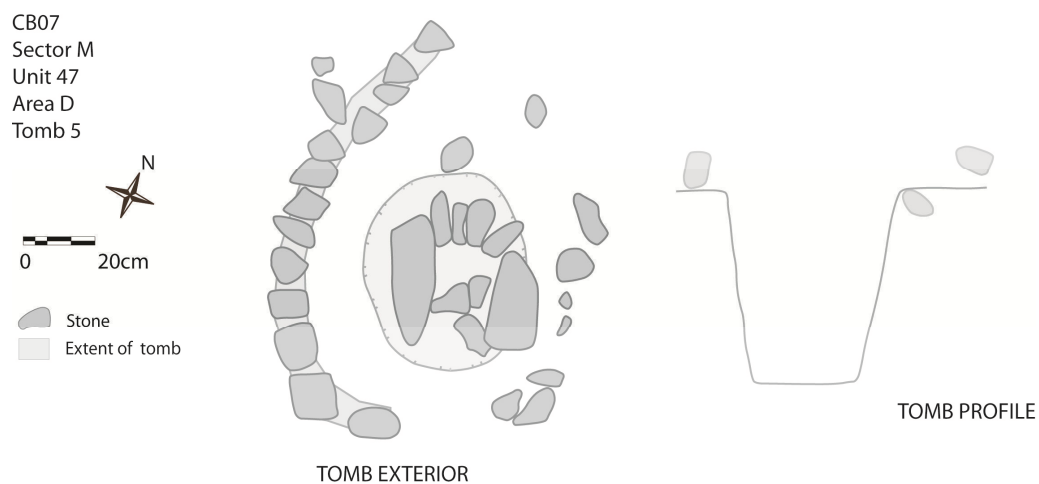


Figure 309. Unit 47, Area D, Tomb 5.

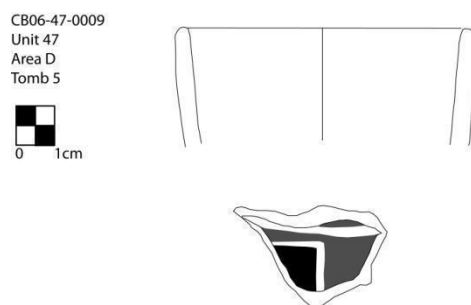


Figure 310. Ceramic sherds, Tomb 47-5.

APPENDIX E (continued)

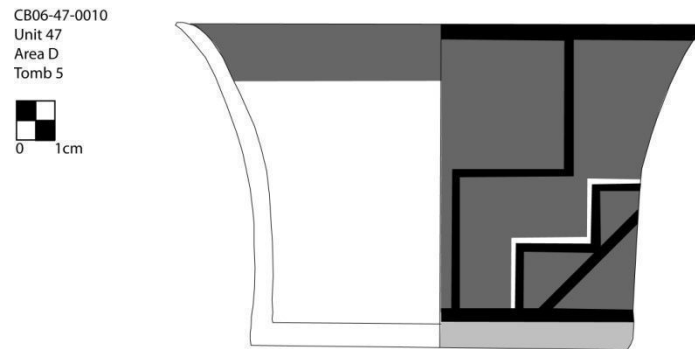


Figure 311. Red-slipped *tazon*, fragments of which were recovered from Tomb 47-5.

Tomb 47-6

Located in the southern corner of Area D, Tomb 47-6 was looted, unlined pit. On the southeast and northeast of the tomb, small pieces of an outer stone ring were preserved. The cap of the tomb was absent. The mouth was circular, constructed of stones with minimal mortar, and had a diameter of 58cm. The floor was untreated, circular, with a diameter of 30cm. The tomb was 81cm deep from mouth to floor.

The tomb contained the skeleton of a female, aged 17 to 22 years. Cranial modification style could not be determined due to the fragmentary condition of the cranium. The individual had pitting on the lumbar and thoracic vertebrae and the sternum. The individual was also 'knock-kneed.' The skeleton was in-situ, aside from the cranium which had fallen face down. The position of the vertebral column and the pelvis indicated that although flexed, the individual was not seated, but was lying on its side. The feet were facing southeast, and the head was also likely facing southeast or east when in-situ. Ceramic sherds, including a red-slipped rim with traces of black paint, and a red-slipped *kero* base were recovered from the tomb.

APPENDIX E (continued)

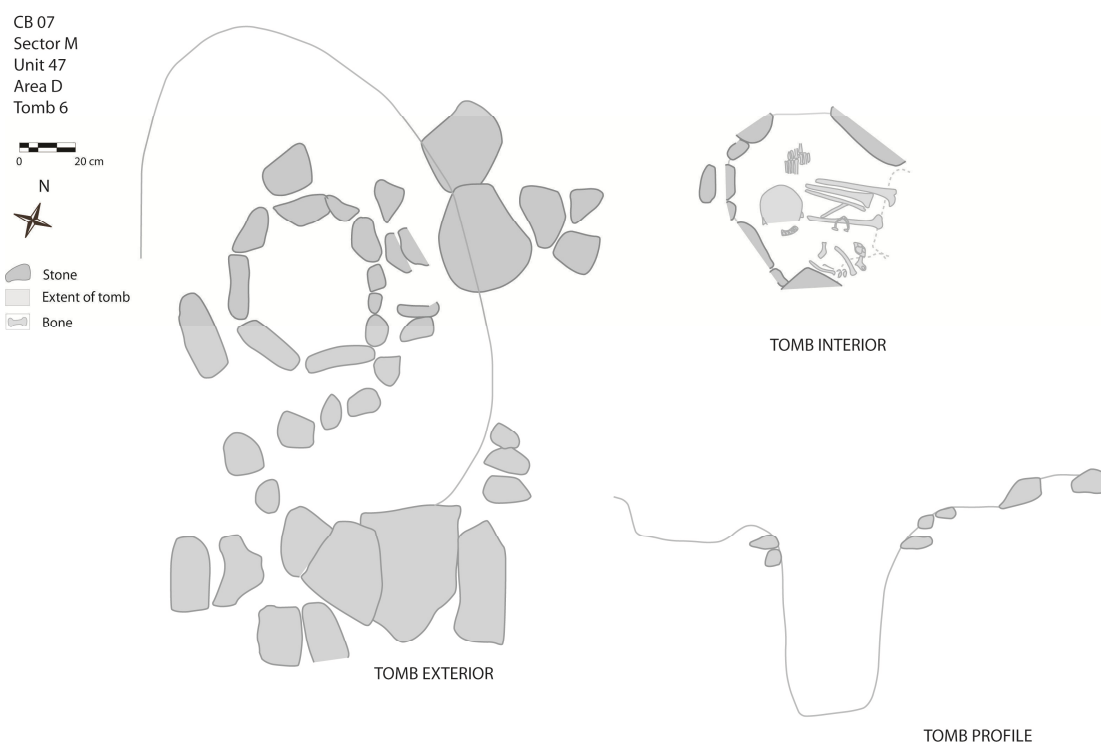


Figure 312. Unit 47, Area D, Tomb 6.

Area E

Area E was located in the northern most part of Unit 47, on a ridge separated from the main section of the cemetery. The slope of this ridge is less steep than that on which most of the cemetery was constructed. This was the only area excavated in this part of the cemetery. Layer S/A was between 16 and 32cm deep. No cultural or skeletal materials were found in the layer. One looted tomb was excavated in Layer B.

Tomb 47-20

47-20 was a looted tomb, located in the western corner of Area E. It was visible before excavation of Layer S/A. The tomb was an unlined pit. There was no outer ring. Approximately half of the stone cap was still in-situ. That half was comprised of one large, flat stone with smaller stones and mortar filling in the gaps. The mouth was partially constructed from irregularly shaped stones. The pit was roughly oval in shape, and measured 101cm by 61cm. The floor was untreated, oval in shape and measured 41 by 61cm. The tomb was 57cm deep from mouth to floor.

APPENDIX E (continued)

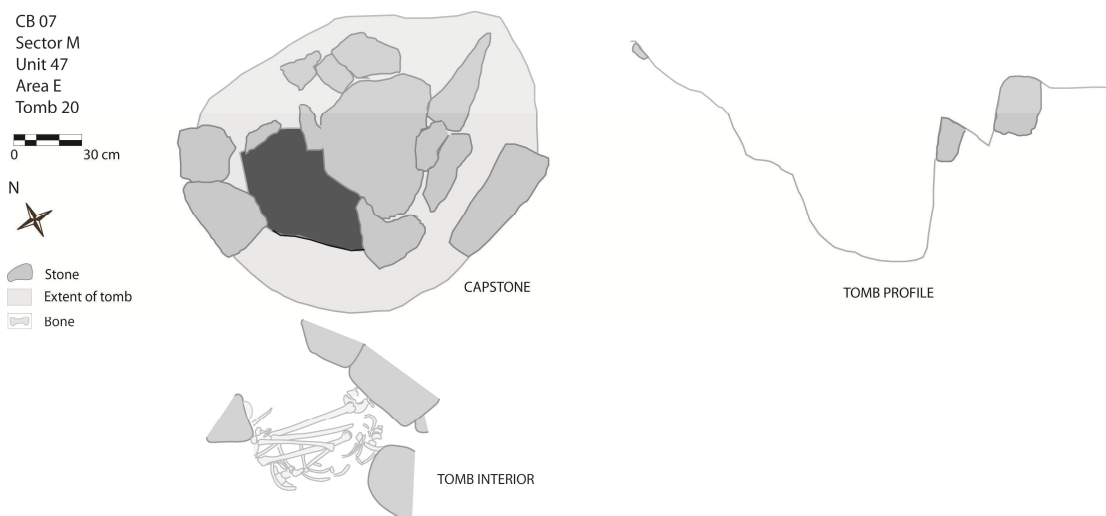


Figure 313. Unit 47, Area E, Tomb 20.

It contained the skeleton of a male, aged 25 to 30 years. The individual had tabular cranial modification. There was minor evidence for cribra orbitalia, and a lesion on the left ilium. The individual also had robust muscle attachment sites on the arm bones and was slightly 'knock-kneed.' The individual was lying on his right side, in a tightly flexed position. The head was facing southeast and the feet northeast. The dimensions of the tomb, and the distribution of maggot casing suggest that this individual was placed in the tomb on his side, and that the unusual positioning was not an artifact of disturbance. However, the skull had been partially disturbed. The occipital and parietals as well as half of the mandible had been removed from their original position and were found embedded in the north wall.

Four fragments of a reddish brown-slipped ceramic vessel were found in the tomb. They included rim sherds, and the vessel was likely a *tazon*.³¹⁹ It was decorated with black bands and cream circles. There was also a fragment of wood, fragments of fiber rope (whether braided or twisted was undetermined), and fragments of brown, woolen textile. The wool had been tightly spun ZS and woven in a warp faced pattern. The weave was tight enough to identify the fragment as a manta.

³¹⁹ Rim Diameter 12cm.

APPENDIX E (continued)

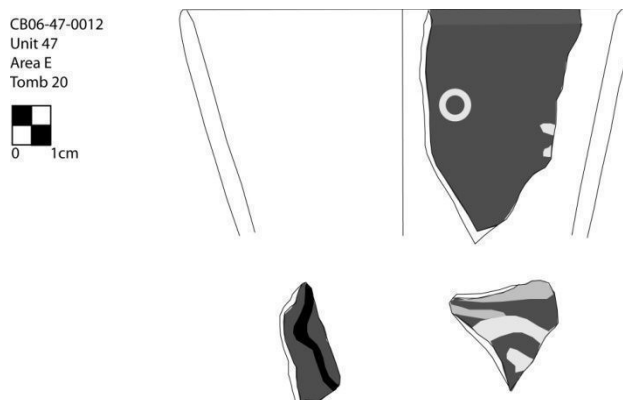


Figure 314. Ceramic sherds, Tomb 47-20.

Area F

Area F was located to the northwest of Area D, so that it shared its southeast limit with the northeast limit of Area D. Layer S/A was between 4 and 18cm deep. 13 ceramic fragments were recovered from the layer, including a red-slipped decorated base, and a decorated body sherd, both suggestive of Tiwanaku style vessels. No human bone was found in the layer. Two intact tombs were located in Layer B.

Tomb 47-18

Tomb 47-18 was located in the southwest section of Area F. The tomb was an intact, stone lined cist. There were eight stone courses, with mortar in-between. There was evidence for an outer ring, although it was only preserved on the west side. It was at the same terrace level as 47-3, and below 47-19. The cap was constructed of one large, thick stone surrounded by smaller stones held in place by mortar. The mouth was made of stones and mortar, was circular and had a diameter of 29cm. The floor was untreated, circular, with a diameter of 14cm. The tomb was 67cm deep.

47-18 contained the skeleton of a juvenile, aged 8 years +/- 2 years. The child had tabular cranial modification. No pathologies or stress markers were identified. The child was in a flexed position with the head facing east and the feet towards the northeast. The skeleton was not well articulated. The position of the cranium could be explained by collapse of the juvenile remains. However, the long bones were placed parallel to one another and in the interior of the mandible. The tomb possibly represents a rare example of secondary burial or mortuary treatment at Tumilaca la Chimba, with the individual positioned in this tomb where the torso was still intact, but the long-bones and mandible disarticulated. No cultural inclusions were recovered from the tomb.

APPENDIX E (continued)

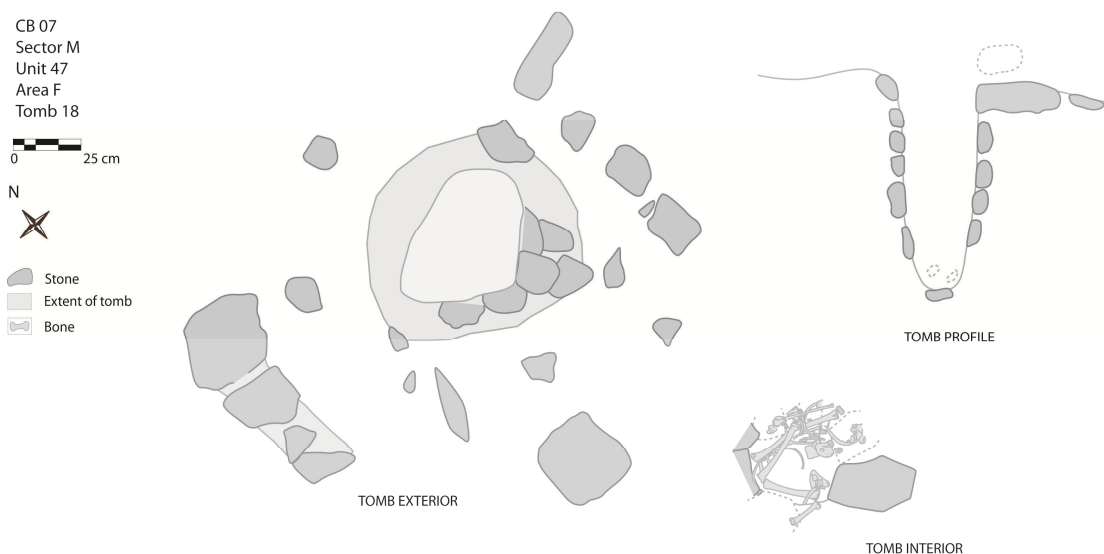


Figure 315. Unit 47, Area F, Tomb 18.

Tomb 47-19

Tomb 47-19 was located up-slope from 47-18, almost in the center of Area F. It was an intact, partially stone lined tomb. There was no outer stone ring. The cap was constructed of two large stones, heavily mortared into position. The mouth was untreated, circular, with a diameter of 56cm. The floor was untreated, circular, and had a diameter of 35cm. The tomb was 63cm deep from mouth to floor.

The tomb contained the skeleton of a child, aged 3 years, +/- 1 year, of indeterminate sex. The child had tabular cranial modification. There was minor evidence for cribra orbitalia and some porosity in the lumbar centra. The child was seated, in a flexed position, with the head and torso oriented toward the northeast, and the feet toward the south east.

Also recovered from the tomb was a fragment of wood, possibly from a spoon or other object. There was also a tiny (0.2g) fragment of fiber rope, and fragments of woolen textile. One textile was made of brown wool, loosely spun in a ZS pattern, and loosely woven in an interlocking weave. The thickness of the spin and weave suggest that this was a fragment of a *frazada* (blanket). There were also fragments of a brown, cotton *manta* (shawl), spun ZS and woven in an interlocking pattern.

APPENDIX E (continued)



Figure 316. Unit 47, Area F, Tomb 19.

Area G

Area G was located up-slope from Area D, so that its southwest side abutted the northeast side of Area D. Layer S/A was between 47 and 53cm deep. 116 ceramic sherds were recovered. The majority of these were from an un-slipped, vessel with handles, perhaps a olla, with extensive burning stains on the exterior. In addition, red-slipped bases and body sherds with distinctive Tumilaca design motifs, including birds, were recovered. A fragment of an *incensario* was also recovered. The fragment was red-slipped and included a modeled condor head, painted with yellow, black and a blue grey. 22.5g of human skeletal fragments were found in the layer. Seven looted tombs were located in Layer B.

Tomb 47-7

Tomb 47-7 was located in the southern corner of Area G. The tomb was looted, and was an unlined pit. There was an outer stone ring. The tomb had been looted from the southwest side, and the cap was intact. It consisted of at least four stones, held together by considerable mortar. The mouth was untreated, circular, with a diameter of 30cm. The floor was untreated, circular, with a diameter of 13cm. The tomb was 56cm deep from mouth to floor.

The tomb contained the skeleton of a child, aged 3 years, +/- 1 year, of indeterminate sex. The child had slight tabular cranial modification. There was evidence for cribra orbitalia in the left orbit and 2 resorptive lesions on the right humerus. The cranium of the individual was disturbed, likely during looting. The child was in a seated, semi-flexed position. The head would have faced east, based on the position of the post-cranial skeleton, and the feet were pointing north.

APPENDIX E (continued)

Six ceramic sherds were associated with the surface of the burial. They included fragments from a light brown slipped, flaring bowl, a small sherd from a red-slipped *kero* base, and the thick base of a large utilitarian vessel. Although found near the surface of 47-7, I question their direct association with the interment, due to the heavy disturbance that Area G had suffered. No cultural materials were recovered from inside the tomb.

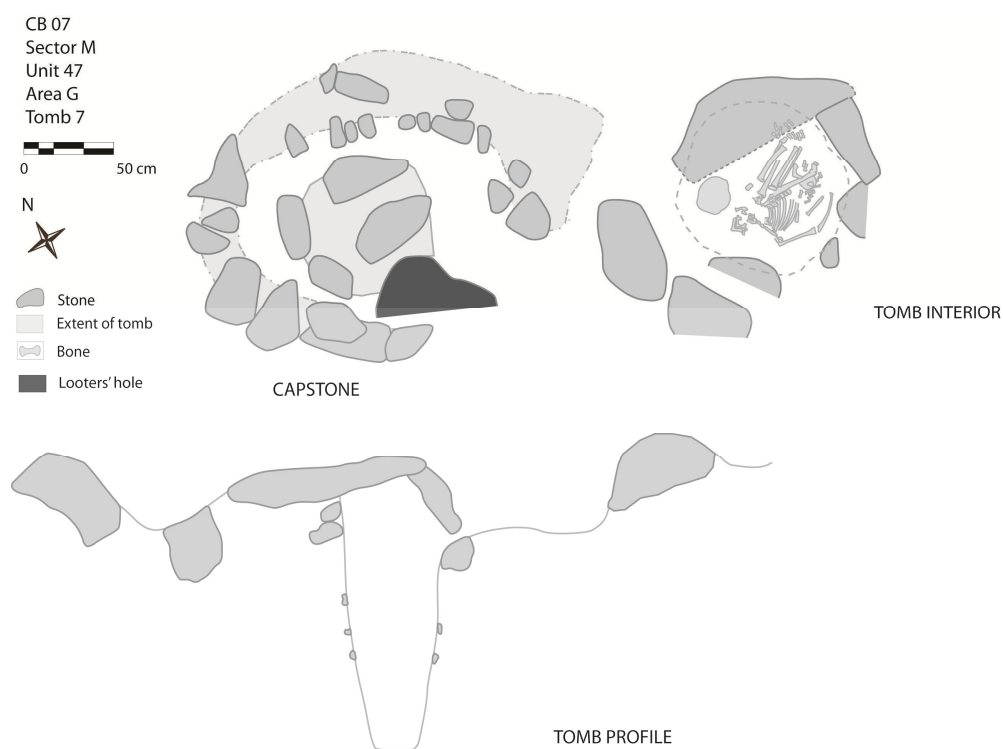


Figure 317. Unit 47, Area G, Tomb 7.

APPENDIX E (continued)

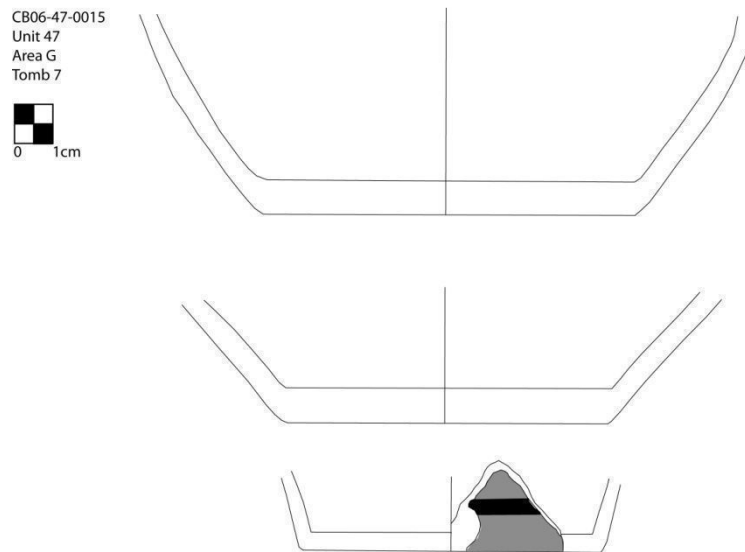


Figure 318. Ceramic sherds, Tomb 47-7.

Tomb 47-8

Tomb 47-8 was located to the west of 47-7, along the southwestern limit of Area G. It was a looted, unlined pit. Part of an outer stone ring remained, although the stones on the northern side were missing. The cap was constructed from one large, flat stone. The tomb had been looted from the northern corner. The mouth was constructed from mortar and small stones. It was circular, with a diameter of 48cm. The floor was untreated, was roughly circular, and had a diameter of 13cm. The tomb was 81cm deep from mouth to floor.

The tomb contained the skeleton of an infant, aged 18 months, +/- 6 months, of indeterminate sex. The individual had possible tabular cranial modification. There were endocranial lesions on the occipital bone. Although the cranium had fallen on its side, the torso position indicated that the child had been interred in a seated, flexed position facing east. The lower limbs were not in situ, but had been placed towards the northeast of the tomb. This is reminiscent of 47-18, and may be evidence for secondary funerary treatment. It seems unlikely that looters would have taken pains to arrange these bones as neatly as they were, given the otherwise cavalier and destructive attitude shown towards skeletons by *huaqueros* at the site.

Two ceramic sherds were recovered, one an un-slipped body sherd with burning stains covering the exterior, the other a red-slipped body sherd from a vessel decorated with thick black crosses, and white outlines, indicative of Tiwanaku motifs. The only other cultural inclusion recovered was a textile fragment. Made from brown wool, spun ZS, the textile was woven in a warp faced pattern. The weave was tight enough (10 threads per cm in the warp) to be from a *manta* (shawl).

APPENDIX E (continued)

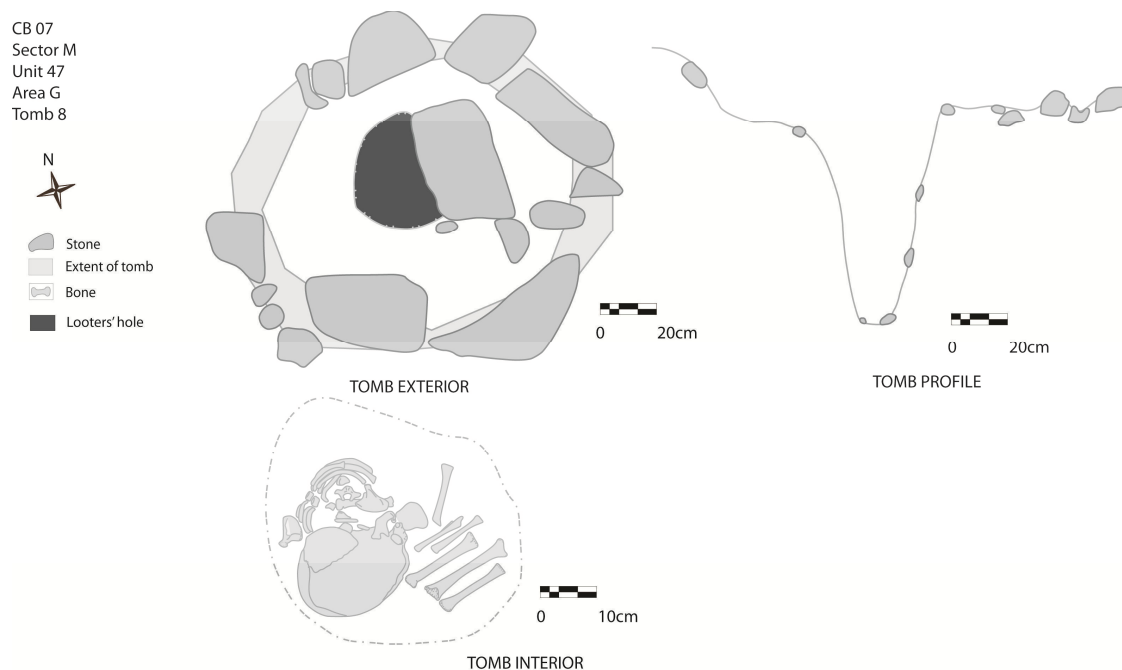


Figure 319. Unit 47, Area G, Tomb 8.

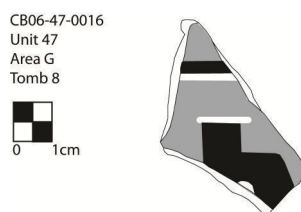


Figure 320. Decorated ceramic sherd, Tomb 47-8.

Tomb 47-9

Tomb 47-9 was located on the southeast side of Area G. It was a looted, stone lined cist, consisting of 7 stone courses, with mortar in-between. A well constructed outer ring was evident on the down-slope side of the tomb, and several stones from the ring remained on the up-slope side. The cap was missing. The mouth was constructed of stones, with minimal mortar. It was

APPENDIX E (continued)

circular in shape, with a diameter of 48cm. The floor was untreated, circular, with a diameter of 21cm. The tomb was 37cm deep from mouth to floor.

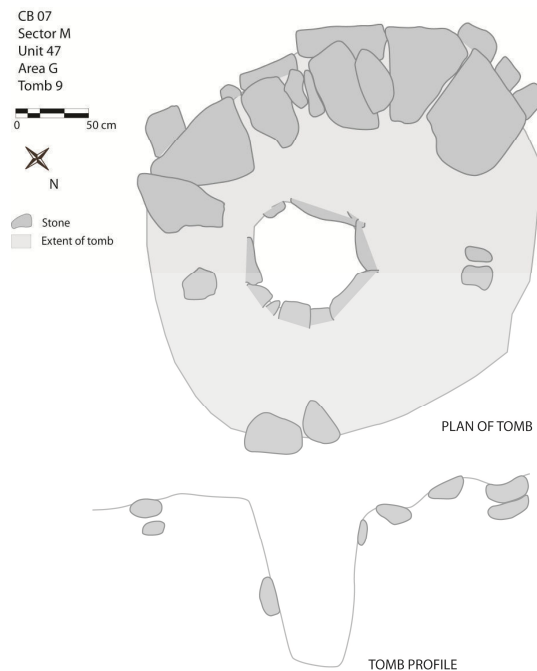


Figure 321. Unit 47, Area G, Tomb 9.

The tomb contained the skeleton of an infant, aged up to 2 months, of indeterminate sex. Cranial modification was not observable, and no pathologies were evident. The tomb had been badly disturbed and the position of the infant could not be determined. A small amount of carbon was recovered from the tomb.

Tomb 47-10

Tomb 47-10 was located on the northwest side of Area G. It was a looted, unlined pit. There was a well defined stone ring, although it was largely absent on the east side. The ring was at the same level as that of 47-9, and abuts that of 47-14 which likely post-dated the ring of 47-10. The cap was partially present, and had been constructed from several medium sized stones, and minimal mortar. The mouth was made of stone, was circular and had a diameter of 89cm. The floor was untreated, circular, and had a diameter of 37cm. The tomb was 73cm deep from mouth to floor.

APPENDIX E (continued)

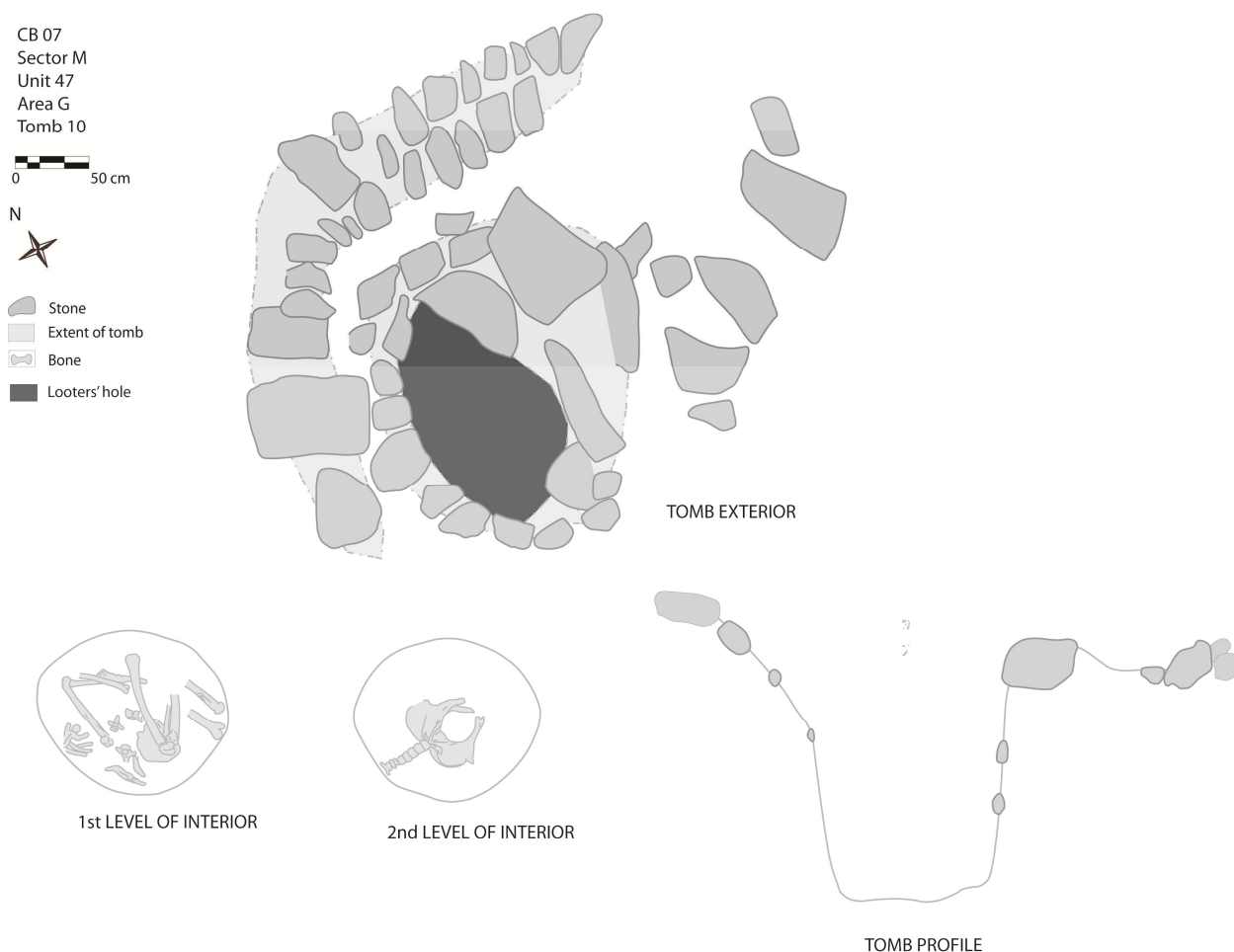


Figure 322, Unit 47, Area G, Tomb 10.

The tomb contained the skeleton of a possible female, aged 18 to 25 years. The individual had tabular cranial modification. There was evidence for probably tuberculosis (significant resorptive lesions on the lumbar and lower thoracic vertebrae, pitting on the manubrium), and for healed trauma on two thoracic vertebrae and the right 1st metatarsal and cuneiform. The individual was interred in a seated, flexed position facing east.

Part of a base of a ceramic vessel was recovered. It was from a red-slipped *tazon*, with a base diameter of 10cm. The fragment had black and orange painted lines on the exterior. A

APPENDIX E (continued)

complete cactus spine needle, 9cm long, was recovered. Small, unidentified faunal remains were located in the tomb, and one lithic flake.



Figure 323. Sherd of *tazon* base, Tomb 47-10.

Tomb 47-12

Tomb 47-12 was located in the southern corner of Area G. It was a looted, unlined pit. There was no outer stone ring. The cap was absent. The mouth was constructed of very irregularly shaped and sized stones, with gravel and mortar in-between. The mouth was circular with a diameter of 33cm. The floor was untreated, circular, with a diameter of 26cm. The tomb was 28cm deep from mouth to floor.

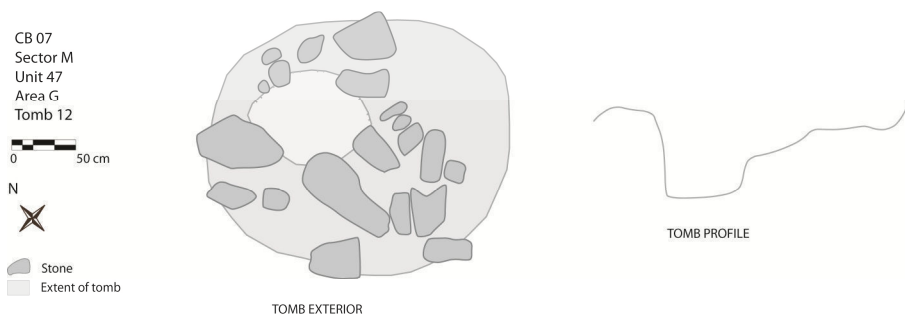


Figure 324. Unit 47, Area G, Tomb 12.

Only 13.3g of human bone fragments were recovered. No age, sex or pathology identifications could be made, although the small dimensions of the tomb suggest that it was for

APPENDIX E (continued)

a child. Two fragments of red-slipped, ceramic were recovered. They had traces of black paint on them. The paste was fine, and contained red stone inclusions, distinctive at Tumilaca la Chimba, and noted for other Tumilaca sites in the upper valley (Sims, personal communication, 2006).



Figure 325. Ceramic sherd, Tomb 47-12.

Tomb 47-13

Located to the north of 47-12, tomb 47-13 was a looted, un-lined pit. There was no outer stone ring. The cap was absent. The mouth was constructed from stones with mortar in-between. It was roughly oval and measured 40cm across. The floor was untreated, was circular and had a diameter of 19cm. The tomb was 46cm deep, from mouth to floor.

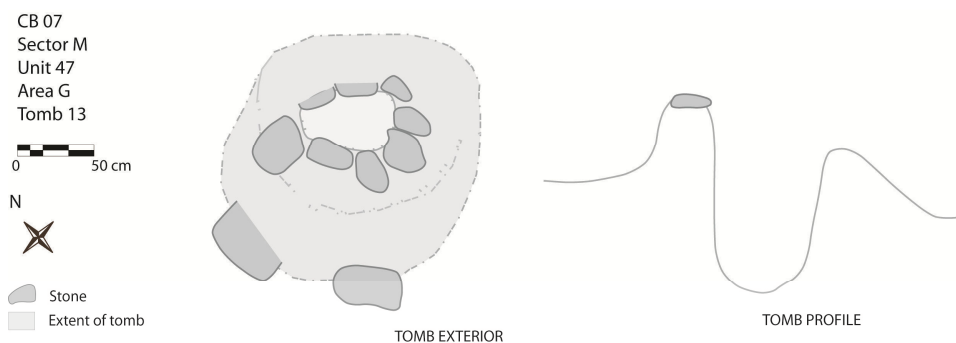


Figure 326. Unit 47, Area G, Tomb 13.

APPENDIX E (continued)

The tomb contained the incomplete skeletal remains of an infant or young child, of indeterminate sex. Cranial modification could not be observed. There was possible cribra orbitalia in the right orbit. The skeleton had been heavily disturbed, and position could not be determined. Two eroded fragments from a red-slipped rim with black paint were recovered. The diameter of the vessel was 11cm.

Tomb 47-14

Tomb 47-14 was located in the northern corner of Area G. It was a looted, un-lined pit. A stone collar was intact on the west side of the tomb. It had been looted from the west side. The cap was partially in-situ, and consisted of a thick stone, heavily mortared into place. The mouth was constructed of stones and mortar. It was circular, with a diameter of 57cm. The floor was untreated, circular with a diameter of 34cm. The tomb was 82cm deep, from mouth to floor.

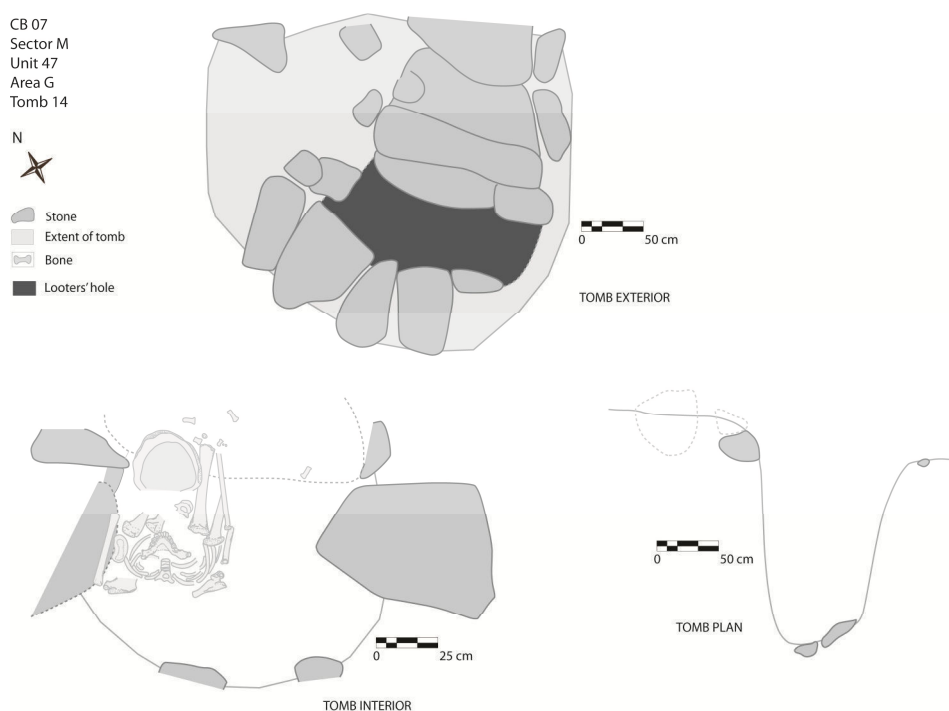


Figure 327. Unit 47, Area G, Tomb 14.

The tomb contained the skeleton of a juvenile, aged 8 years, +/- 2 years, of indeterminate sex. The child had possible tabular cranial modification. There were small resorptive lesions on the parietals, some porosity on thoracic and lumbar vertebrae, and on the sternum. The child was

APPENDIX E (continued)

‘knock-kneed.’ The child was sat, flexed, with head and feet facing east. No cultural materials were recovered from the tomb.

Area H

Area H was located down-slope from Area A, with its northeast side abutting the southwest side of Area A. Layer S/A was between 6 and 14cm deep. On the northern side of the northeast limit was a small retaining wall that connected to the low wall identified in Area A. A single ceramic sherd was recovered. It was a very thick fragment from a pedestal base, with a diameter of 8cm. The fragment was un-slipped, and the paste was very thick. A few unidentified animal bones were also recovered from Layer S/A. There was no indication of any tombs in the area.

Area I

Area I abutted Area A, with its northwest limit sharing the southeast limit of Area A. Layer S/A was between 20 and 44cm deep. Five possible heavily looted tombs were identified. The dimensions of them indicated that they were all constructed for infants or children. None of these was further investigated. A short length of a possible retaining wall was identified stretching up-slope from the southwest limit of the Area. A single, undecorated non-slipped rim sherd, probably from a *cantaro*, with a diameter of 24cm was recovered from the layer. 16.1g of human bone fragments were recovered.

Area J

Area J was located northeast of Areas D, F, and G, and west of Areas A, H, and I. It was situated approximately half-way down the slope. On the surface there was a possible retaining wall visible.

Layer S/A was between 7 and 77cm deep, varying with the slope of the hill. 11 ceramic sherds were recovered from the layer, including the base and rim from a reddish brown slipped *kero* with geometric motifs executed in black and orange paint. 14.9g of human bone fragments were recovered. There were four tombs in Layer B. Three were looted, one was intact.

Tomb 47-21

Tomb 47-21 was located in the west section of Area J. It was a looted stone lined cist. There were four courses of stones, with mortar in-between. There was a distinct outer stone ring that also encompassed 47-27. The cap of the tomb was absent. The mouth was constructed of irregularly shaped stones with mortar in-between them. It was circular in shape with a diameter of 46cm. A small flat rock was placed on the floor of the tomb. The floor was circular with a diameter of 30cm. The tomb was 53cm deep from mouth to floor.

The tomb contained the skeleton of a child, aged 3 to 4 years, of indeterminate sex. The child had possible tabular cranial modification. There was minor evidence for cribra orbitalia in the right orbit, possible enamel defect on the occlusal surface of the left molar, and some pitting in the lumbar and thoracic vertebrae. The child was in a seated flexed position, on tomb of the small flat stone at the base of the tomb. The head was facing east and the feet were pointing to the northeast.

APPENDIX E (continued)

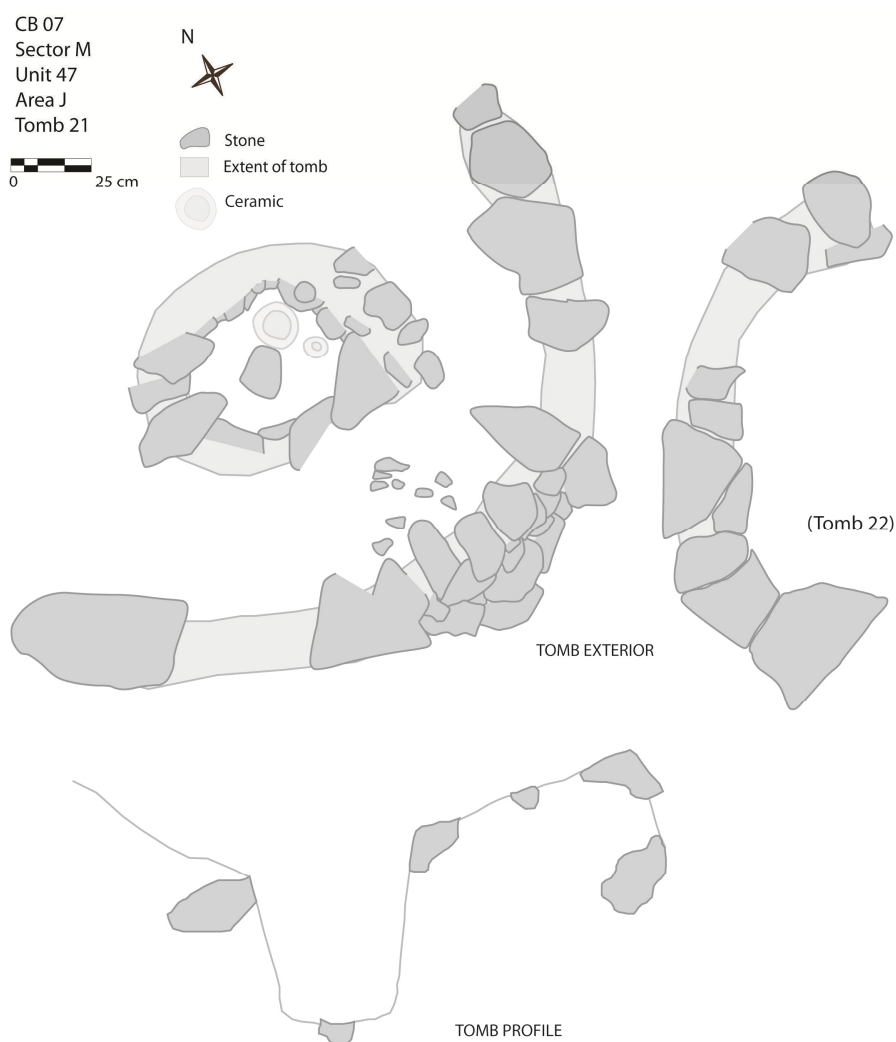


Figure 328. Unit 47, Area J, Tomb 21.

Although apparently disturbed, the grave's cultural as well as skeletal inclusions were in-situ. Placed inside the tomb, at the level of the cranium were two ceramic vessels. On the northeast side of the tomb was a reddish brown slipped *tazon*.³²⁰ It had black painted geometric

³²⁰ Height 7cm, Rim Diameter 13cm, Base Diameter 9cm.

APPENDIX E (continued)

decoration, in the form of thick lines, and narrower wiggly lines in a repeated pattern. There were burning stains on the exterior and the interior of the vessel. On the east side of the tomb was an undecorated, un-slipped jar.³²¹ The surface was very badly eroded, and the rim was completely missing. There were extensive burning stains towards the base on the exterior. Although undecorated, the vessel was made of a fine paste. Also recovered from the tomb were wooden fragments. These were recovered from the *tazon*, and were probably the remains of a wooden spoon. There was also a lithic *mano*. Macro-botanical analysis identified the presence of *Arracacia* (Andean parsnip) seeds.

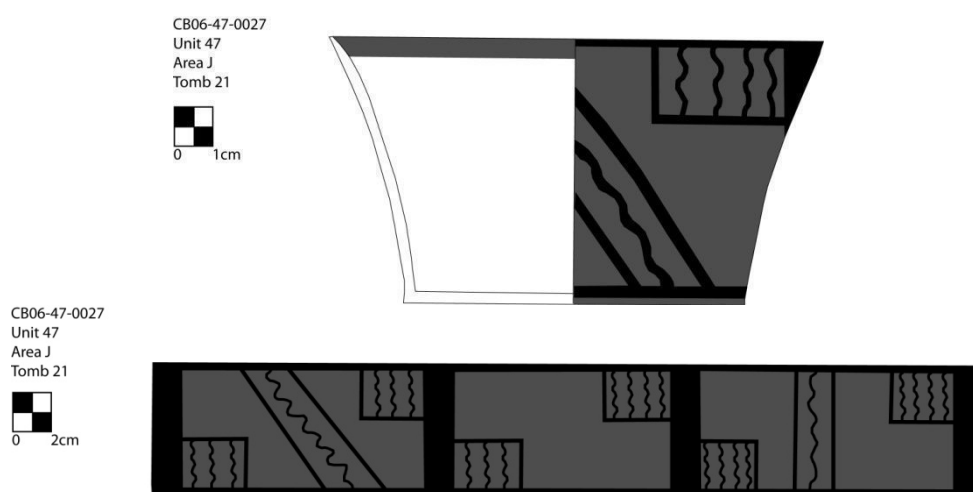


Figure 329. Dark red-slipped *tazon*, Tomb 47-21.

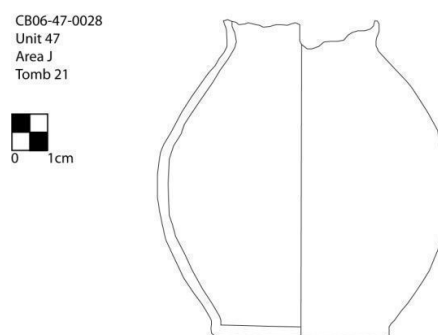


Figure 330. Ceramic jar, Tomb 47-21.

³²¹ Incomplete height 9cm (probably an additional 2cm if the rim was present), Base Diameter 5cm.

APPENDIX E (continued)

Tomb 47-22

Tomb 47-22 was located in the southern corner of Area J. It was a looted unlined pit. There was a well defined outer stone ring, although it had been destroyed on the southern side of the tomb. The cap was still partially present, as the tomb had been looted from the southern-most corner. The cap consisted of one large, flat stone mortared into place. The mouth was of stones and mortar. It was circular with a diameter of 74cm. The floor was untreated, circular, with a diameter of 41cm. The tomb was 79cm deep from mouth to floor.



Figure 331. Unit 47, Area J, Tomb 22.

APPENDIX E (continued)

The tomb contained the skeleton of a female, aged 20 to 25 years. The individual had probably tabular cranial modification. There were resorptive lesions on the endocranial surface, significant evidence for cribra orbitalia, and schmorls nodes on three thoracic vertebrae. The female had carious lesions. There was a septal aperture in the distal humerus and the individual was slightly 'knock-kneed.' The female was in a seated, flexed position. The head was facing east, and the feet were pointing to the north.

Also recovered from the tomb were a lithic *mano*, fragments of wood (perhaps a spoon) and some unidentified animal bones. There were fragments of a brown woolen (spun ZS) textile woven in an interlocking pattern. The spin and at least the warp weave were tight enough to identify the textile as a *manta* (shawl). There were also small clumps of un-spun, raw, camel colored wool. The wool was extremely soft and fine, and seems more likely to be alpaca than llama. There were fragments of fiber rope, twisted in an S pattern. There was a small chalky deposit at the base of the tomb.

Tomb 47-23

Tomb 47-23 was in the east section of Area J, up-slope from 47-22. It was an intact, partially stone lined cist. The stone coursing was limited to the west side of the tomb only, and there were three courses of stone with mortar in-between. There was no outer stone ring. The cap was present, and consisted of one stone. The mouth was made of stone with minimal mortar. It was circular with a diameter of 45cm. There was a small flat stone on the base of the tomb. The base was circular with a diameter of 13cm. The tomb was 55cm deep from mouth to floor.

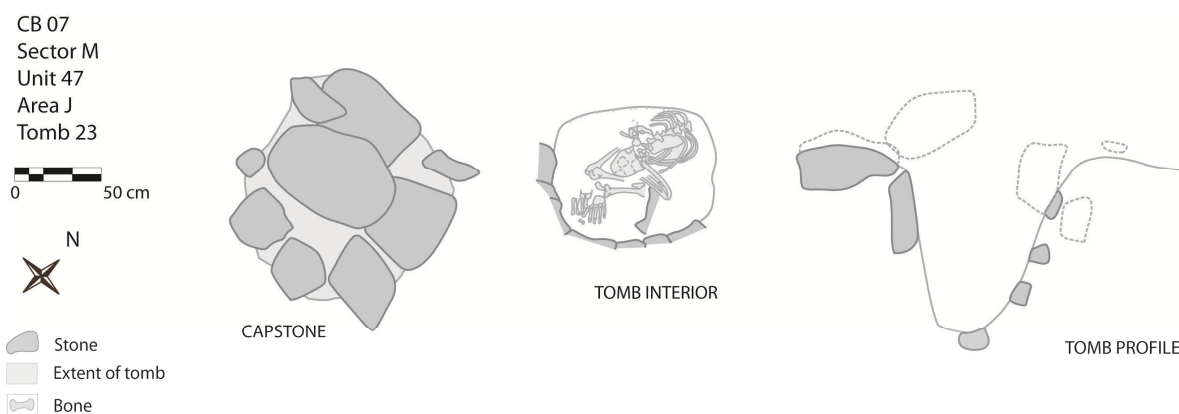


Figure 332. Unit 47, Area J, Tomb 23.

The tomb contained the skeleton of an infant, aged 1 year, +/- 4 months, of indeterminate sex. There was possible cranial modification, but the vault was too fragmentary to be certain.

APPENDIX E (continued)

There was mild evidence for cribra orbitalia. The child was in a seated, flexed position with the head facing east and the feet northeast. The child was placed on a small, flat rock at the base of the tomb.

A very small red-slipped ceramic rim fragment, with traces of black paint was recovered from the tomb. There were also brown woolen threads which had been spun ZS. The spin was fine enough (16 spins per cm) that the threads probably came from a manta.

Tomb 47-27

Tomb 47-27 was located up-slope from 47-21, and shared an outer stone ring with 47-21. It was a looted, partially stone lined cist. The tomb was small and the walls were constructed of just one stone course on the east and west sides of the tomb. The mouth was constructed from very irregularly shaped stones with mortar. It was roughly oval in shape, and measured 40 by 30cm. The floor was untreated, was oval in shape, and was 23cm across the longer length. The tomb was 45cm deep from mouth to floor.

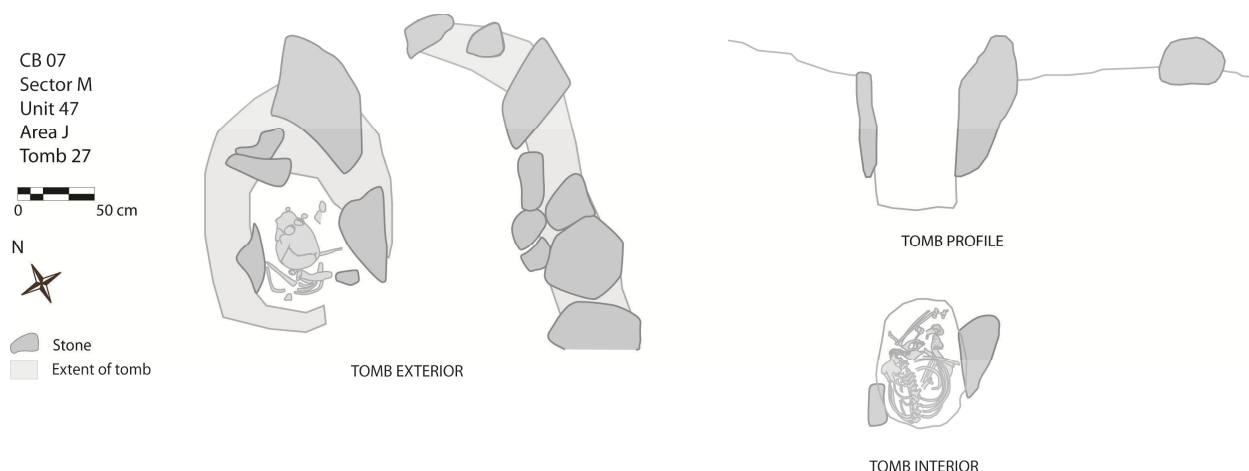


Figure 333. Unit 47, Area J, Tomb 27.

The tomb contained the skeleton of an adolescent, aged 12 years, +/- 2.5 years, of indeterminate sex. The child had possible tabular cranial modification. There was minor evidence for cribra orbitalia and significant signs of tuberculosis (resorptive lesions on all the thoracic and upper lumbar vertebrae, as well as pitting on the posterior aspect of the sternum), minor occlusal wear, and enamel defects. The juvenile was in a seated, flexed position with both the head and the feet facing east. No cultural inclusions were recovered from the tomb.

APPENDIX E (continued)

Area K

Area K was located up-slope from Area G. Its southwest limit was shared with the northeast limit of Area G. Layer S/A was between 11 and 20cm deep. Only four ceramic sherds were recovered. They included a handle from a thick utilitarian vessel, the rim of a plain-ware vessel, and a rim fragment from a red-slipped decorated *tazon*. Only 3.7g of human bone fragments were recovered, as well as some brown, un-spun wool. Three looted tombs were located in Layer B.

Tomb 47-24

Tomb 47-24 was located in the center of Area K. It was a looted partially stone lined cist, with four courses of stones on the east and west sides of the tomb. There was a well defined outer stone ring, although it had been partially destroyed on the east side. The cap originally consisted of at least two stones, one of which had fallen in during disturbance and crushed the cranium. The mouth was constructed from stones, was circular with a diameter of 48cm. The floor was untreated, circular with a diameter of 22cm. The tomb was 61cm deep from mouth to floor.

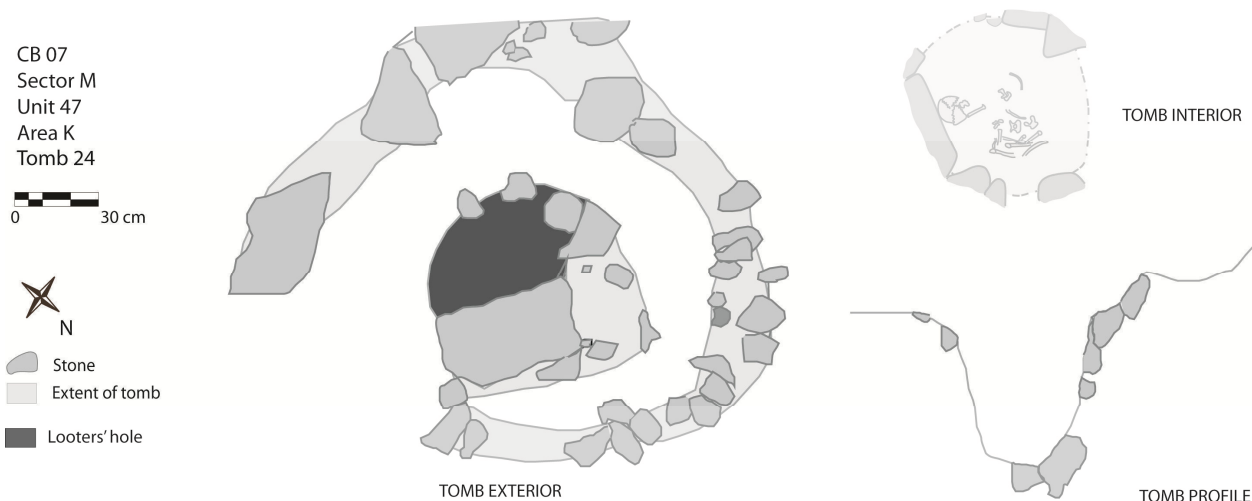


Figure 334. Unit 47, Area K, Tomb 24.

It contained the skeleton of a child, aged 4 years, +/- 1 year, of indeterminate sex. There was possible circumferential cranial modification. The child had possibly active cribra orbitalia, and some pitting in the lumbar and thoracic centra. The tomb had been badly disturbed when it was looted from the southwest side. Skeletal position had been heavily affected by this

APPENDIX E (continued)

disturbance. Based on the position of a small section of vertebral column, the individual was facing southeast, with the legs flexed.

The only non-skeletal inclusions were several small sticks (each approximately 4cm long). These were attached to feathers embedded into mantas in earlier Tiwanaku tombs (Goldstein, personal communication 2006) and perhaps served a similar decorative purpose at Tumulaca la Chimba.

Tomb 47-25

Tomb 47-25 was located along the southeast side of Area K. It was a looted, partially stone lined cist, with stone lining on the north and west sides. Even where present, stone lining was very poorly constructed. The tomb had a clearly defined outer stone ring. The cap was present. The mouth was constructed of stones with mortar, was circular, with a diameter of 59cm. The floor was untreated, circular with a diameter of 41cm. The tomb was 81cm deep, from mouth to floor.

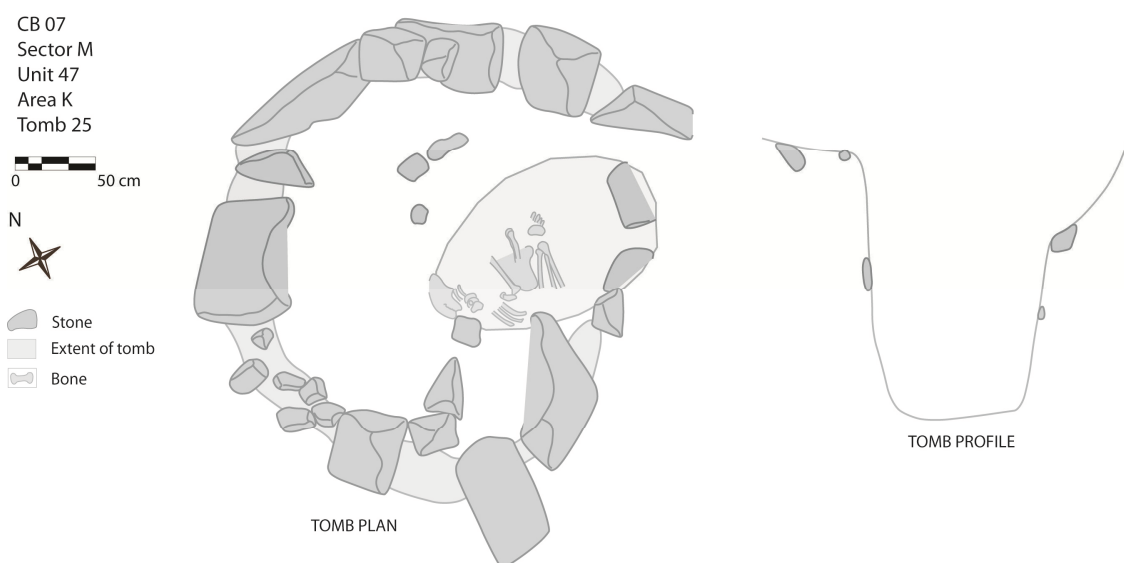


Figure 335. Unit 47, Area K, Tomb 25.

Tomb 47-25 contained the skeleton of an adult female, in her twenties. The individual had tabular cranial modification. The individual had suffered pre-mortem loss of right 3rd molar, had carious lesions on several molars, as well as moderate wear on nearly all teeth and enamel defects on the right 2nd molar. There were robust muscle attachment sites on the lower arm bones, and very robust muscle attachment sites on the metacarpals. There was a hole in the sternum near the xiphoid process. The skeletal elements had been badly disturbed, resulting in

APPENDIX E (continued)

disarticulation and even breakage of the long-bones. Position of the vertebral column and pelvis suggest that the individual was leaning against the west side facing east or south east. The tomb also contained fragments of burnt wood and small deposits of carbon. There were brown woolen threads, spun ZS.

Tomb 47-26

Located to the west and down-slope from 47-24, Tomb 47-26 was a looted, unlined pit. The cap was missing. The mouth was neatly constructed of stones, although they were missing on the southern side of the mouth. The mouth was circular with a diameter of 43cm. The floor was untreated, circular, with a diameter of 18cm. The tomb was 50cm deep from mouth to floor. Abutting the northern side of the mouth were three stones, similarly sized to those in the mouth. Their relationship with the tomb is unclear. The only material recovered from the tomb was 2.1g of wood.

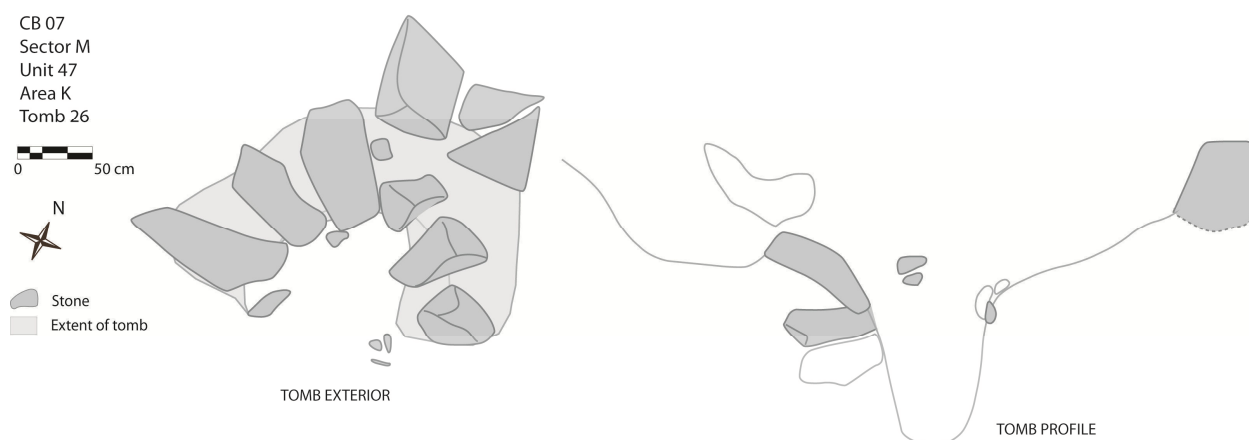


Figure 336. Unit 47, Area K, Tomb 26.

Summary of Unit 47

Both sexes and a range of ages were buried in Unit 47. Funerary practices were similar to those in the cemeteries on the eastern side of the slope. However, outer rings were both more defined and more numerous in Unit 47, while the internal construction of tombs was of a poorer quality, with a lower frequency of stone lined cists. Preservation of organic, botanic and textile materials was far less than in the cemeteries on the eastern slope. However, some there was some fragmentary evidence for similar textiles and wooden objects. The difference in preservation may be a consequence of differences in ground drainage on the two sides of the *cerro*. Decorated ceramics, both from the surface and those recovered from burials, were typically Tumilaca in

APPENDIX E (continued)

form and decoration. Macro-botanical data are limited, but indicated the presence of Andean parsnip and cactus seeds, and shell.

APPENDIX F

REPORT ON BIOLOGICAL REMAINS FROM THE TUMILACA LA CHIMBA SITE, 2006 AND 2007 FIELD SEASONS

Jennifer S. Starbird

The following is a brief report on the analysis of biological remains conducted during June and July of 2007. The remains were excavated during the 2006 and 2007 seasons at the site of Tumilaca la Chimba in the state of Moquegua, Peru. The analysis primarily focused on basic demographic data (age at death and sex) and an inventory of all biological remains. The following report includes only those remains that were complete enough to provide some form of demographic detail (remains are at least 30% complete). Surface collection and features with limited skeletal material have been excluded, since no pertinent demographic information could be recovered from this material. In addition to demographic data, this report includes descriptions and possible causes of any obvious pathological indicators found on the remains. Due to time constraints and the focus on inventory and demographic analysis, analysis of paleopathology was limited. Further study is required for a more detailed analysis of pathological indicators in this population.

Methods

An inventory of all human remains was undertaken using worksheets from Buikstra and Ubelaker's *Standards* (1994) as a template. Remains from each feature (tomb) were recorded on the Inventory Recording Form for Complete Skeletons (J. E. Buikstra and D. H. Ubelaker, 1994), using a simple numeric scale to denote completeness of each element (from 0-3, 0 being <25% complete, 3 being >75% complete). Most of the remains were fairly complete, particularly non-adults (comprising 72% of the mortuary population). A number of the larger adult tombs, however, had been previously targeted by looters. These features often consisted of incomplete human remains, particularly in the superior elements (skull, dentition, upper vertebrae). Dental inventory was recorded separately for each feature where teeth were present. For this, Buikstra and Ubelaker's Dental Inventory Visual Recording Forms were used for either deciduous, permanent, or both (for older children and adolescents). In addition to these forms, skeletal inventory was recorded in detail in a separate journal (a transcript is included with this report) and visually marked on an anterior view Visual Recording Form, also found in Buikstra and Ubelaker.

Taphonomic processes have also been noted for each set of individual remains. Details of taphonomic processes affecting each skeletal element were recorded in a running journal. Taphonomic processes may significantly alter biological remains and make interpretation difficult. For this and other reasons, age at death and sex of each set of remains was based on multiple indicators, detailed below. The included journal transcript makes note of any features where pre-mortem pathological modification and post-mortem taphonomic change cannot be distinguished. Most post-mortem changes in this population consist of dry bone fractures, bleaching and cortical/enamel erosion due to elemental exposure, and caked dirt obscuring features of skeletal elements.

APPENDIX F (continued)

As stated above, the primary aim of this analysis was to gather basic demographic data – i.e. age at death and sex – for each set of skeletal remains. Age at death was determined using multiple indicators whenever possible. Taphonomic damage, including ancient and modern looting of the site, meant that some age indicators (particularly the cranial sutures) were obscured or absent and could not be used in analysis. For non-adults to 12 years old, dental eruption and development was used as a primary indicator. Since dental development is less sensitive to environmental influence, this is a better indicator of biological age at death than osteological changes (Lewis, 2007). A dental development chart adapted from Ubelaker (1989) was used for the purpose of this analysis (Ubelaker, 1989). The data in this chart is based on Native American populations, and so could be expected to be similar to developmental stages found in the Tumilaca mortuary population. Formation of crowns and roots, resorption of roots in deciduous teeth, and eruption of both permanent and deciduous teeth were all considered when assigning age to non-adult remains. Epiphyseal closure and development of osteological elements were used as secondary indicators. Charts of epiphyseal closure found in Buikstra and Ubelaker (1994:43) were consulted after dental age had been determined as a means of verifying age estimates. All information on fetal and neonate development of osteological elements was taken from Baker, Dupras, and Tocheri's *The Osteology of Infants and Children* (Baker, et al., 2005). Osteological development was used as a primary indicator of pre-adolescent age (under 12 years) in only three cases. Two of these cases were fetal remains where death occurred before enamel had begun to form, and the third (47-13) was a partial skeleton with no dental remains.

Since most formative dental activity ends by around 12 years old, age estimates for adolescent remains were based on both dental and osteological changes. Adolescence is the most active period for epiphyseal closure, particularly in the long bones (Baker, et al., 2005; Lewis, 2007). Therefore, these changes provide a fairly reliable, though less specific, age range for older non-adult remains. Dental activity beyond 12 years consists primarily of degenerative changes and, for most individuals, the eruption of the third molar. Since degenerative changes are highly correlated to environmental factors, these are not considered reliable age indicators for this study. However, it may be noted that the most extensive occlusal surface wear and all pre-mortem (permanent) tooth loss seen in this study is found in individuals over the age of 50 years.

Age estimates for adult remains are based on a combination of indicators found on the pelvic girdle and cranium. Cranial suture closure is used as a secondary indicator, primarily because most adult remains in this study lack cranial material, or the skull has been exposed to weathering during looting activity, significantly altering the suture lines. Secondly, cranial suture closure is not considered as reliable as those age indicators found on the pelvis (J. E. Buikstra and D. H. Ubelaker, 1994). Age at death estimates for most adult remains were based solely on pelvic indicators, including the appearance of the pubic symphyseal face and the auricular surface. Both the Todd (Wingate, 1920) and Suchey-Brooks (Katz and Myers Suchey, 1986) scales were used in analysis of the pubic symphyseal face. Since the latter is largely based on a condensed version of the former, the appearance of the auricular surface, based on Lovejoy's (Lovejoy, et al., 1985) scale, was used as a third age indicator.

Sex was determined for all individuals with an estimated age at death over 15 years. Sexual characteristics such as cranial robusticity and pelvic flaring generally appear with the onset of puberty (between 10 and 12 years of age) and are typically not fully developed until

APPENDIX F (continued)

after puberty ends (around 14 to 16 year of age) (J. E. Buikstra and D. H. Ubelaker, 1994; Lewis, 2007). Though recent techniques allow for sex determination prior to puberty (see Lewis 2007), these are generally less accurate than those used for adult remains, and so have not been used in this particular study. Sex determination was based primarily on pelvic characteristics (i.e. greater sciatic notch width, presence or absence of preauricular sulcus, and features on the os pubis), while cranial morphology was considered secondarily. Illustrations found in White and Folkens (2005) and Buikstra and Ubelaker (1994) were consulted when determining sex for each set of remains. Sex could not be determined for 4 individuals over 15 due to lack of material or significant taphonomic changes.

During analysis, any obvious pathological processes were noted and photographed. These include carious lesions, pre-mortem tooth loss, non-diagnostic osteological lesions, activity-related changes, trauma, and lesions consistent with tuberculosis and iron-deficiency anemia. Additional information on pathological processes has been derived from other sources (Buikstra, 1981; Lewis, 2007; Ortner and Putschar, 1981; Steinbock, 1976).

Results

The Tumilaca la Chimba mortuary population included in this analysis consists of 54 sets of remains. Of these, 40 are at least 75% complete, 5 have complete post-cranial remains (over 75%) but are missing crania, and 7 are partial (less than 75% complete) (Table XVIII). These last two are most likely the result of looting activity. Those osteological elements that were missing were usually from the upper body, including the cranium, dentition (particularly maxillary teeth), and upper thorax (vertebrae and ribs). In some instances limb bones were also missing. The pelvic girdle was generally present, though bones were sometimes crushed, most likely by rocks and soil falling into open tombs or capstones collapsing on top of remains. Hand and foot bones in children were sometimes absent; the small size of these elements means they are much more likely to be damaged by taphonomic processes or overlooked during excavation.

For the purpose of analysis, age at death has been divided into 9 age groupings. All individuals under 20 years of age at death are categorized as non-adults. Biologically speaking, the end of puberty around 14 to 16 years of age generally marks the beginning of adulthood (Baker, et al., 2005; Lewis, 2007). However, unlike infants and older children, age estimates for adolescents over twelve years are much less precise, since they are based on osteological rather than dental changes, which are much more variable in the age of occurrence. Therefore, these older non-adults were generally given much wider age ranges, a difference in years rather than months, as seen in infants and younger children. The difficulty in distinguishing individuals in their early teens from those in their late teens has made it much more feasible to lump both of these categories together and exclude the lot from the adult category. Table XIX presents a list of age categories and the age ranges included therein. Only two adult skeletons could not be placed in any specific age category (44-3 and 44-4).

APPENDIX F (continued)

TABLE XVIII

LIST OF INCOMPLETE SKELETAL REMAINS (12 of 54)

Specimen Number (Unit and Rasgo)	C-S = complete except skull/cranium; P = partial (<75% complete overall)
44-3	P
44-4	P
44-5	C-S (mandible present)
45-1	P
45-4	C-S (mandible present)
45-6	P
45-12	C-S (mandible present)
45-13	C-S (mandible present)
45-16	P
46-1	P
46-3	P
46-4	P

TABLE XIX

AGE CATEGORIES USED IN TUMILACA ANALYSIS

Category Name	Age Ranges	Number (N=52)
Fetal	1 st through 3 rd trimester, prenatal	2
Neonate and Infant	Birth to 1 year	6
Child	1.5 to 5 years	18
Juvenile	6 to 12 years	5
Adolescent	12 to 20 years	8
Young Adult	20-30 years	5
Middle Adult 1	30 to 40 years	2
Middle Adult 2	40-50 years	3
Old Adult	50 + years	3

The small number of adults in this sample is most likely due to looting in the area, where adult tombs were generally targeted since they were larger, more visible, and likely perceived as containing more and higher quality grave goods. Adult age at death is fairly evenly spread out, except for a spike in the 20 to 30 age range, which may reflect a problem with the data (i.e. due

APPENDIX F (continued)

to looting) or differences in interment practices (i.e. adults may have been buried elsewhere)(see Figure 337). Without more data on adult skeletons, little can be said about age at death distribution in the adult years. The high number of children represented in this population does allow for some speculation about childhood mortality ratios. Typically, high mortality rates are expected in children under the age of 5 years. This does seem to be supported by the present data: two thirds of all non-adults died at or before the age of 5 years. Of these, 30% of the specimens were aged 1.5 to 2 years, and an additional 15% at 3 years. Since weaning at around 2 years of age is not uncommon in modern and ancient populations (Lewis, 2007), this spike in mortality may reflect weaning age. Weaning is a very stressful time for children, and that stress combined with often contaminated weaning foods can easily lead to diarrhea and early death. The high percentage of children in the 4-5 year age range (23% of all children under 5) may represent dangers introduced with increased activity and mobility in children of this age group. Relatively few fetal to infant remains were found in this mortuary population, which may once again reflect differential interment practices for the dead. The spike in mortality in the adolescent age range (21% of all non-adults) is unusual. This may be explained by the relatively large number of lesions on these skeletal remains, particularly in the vertebral column, and at least on case of tuberculosis with significant osteological alteration (47-27) (See Figure 338).

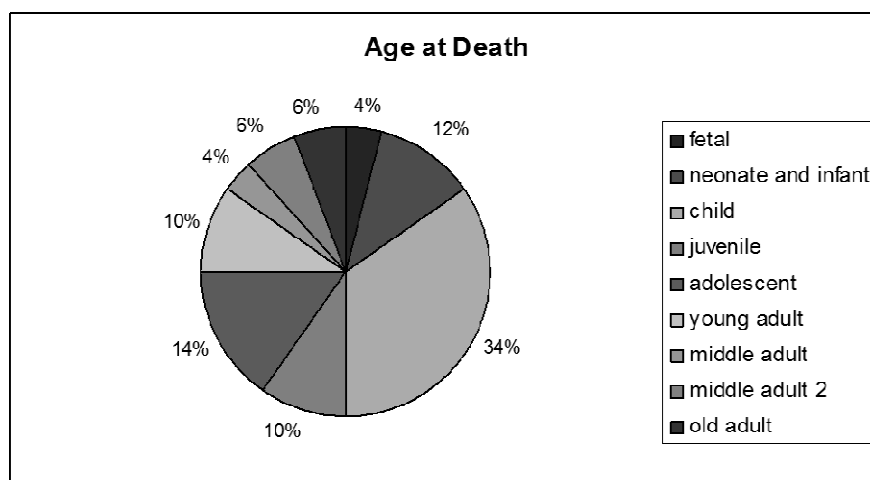


Figure 337. Age at Death for All Specimens from Tumilaca la Chimba.

APPENDIX F (continued)

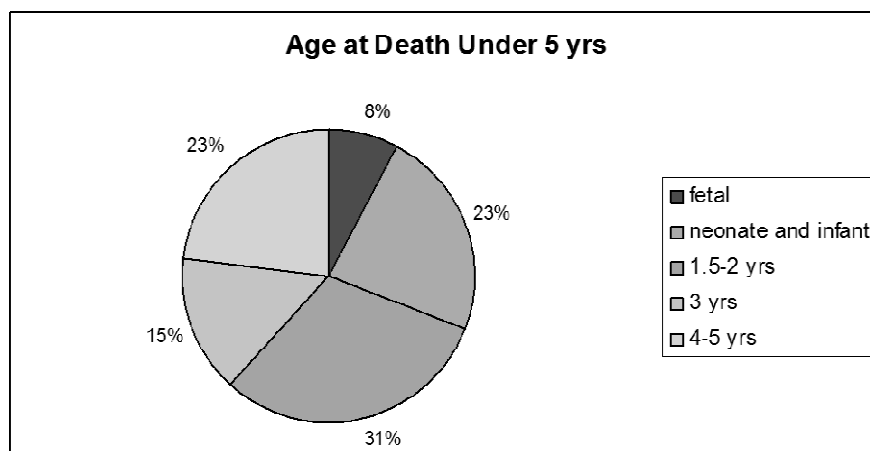


Figure 338. Age at Death Less than 5 years, Tumilaca la Chimba sample

Sex was determined for all but 4 of the adult specimens (N=15) and for 4 of the adolescent specimens (N=8). Of those specimens where sex could be determined, 9 were identified as male and 6 as female. All specimens identified as female were from the adolescent and young adult categories. All middle and old adult specimens where sex could be determined were identified as male. This may be an artifact of the process of analysis, since adolescent male specimens may appear more gracile and therefore be mistakenly identified as female. In a similar vein, older females tend to look more robust in terms of osteological morphology and are more often misidentified as male. However, this may be a reflection of mortality rate, since younger females are more likely to bear children than older females and therefore run the risk of dying in childbirth. This may also reflect differences in burial practices: the high number of young females found in this mortuary population, along with an extraordinary number of children, may reflect the use of this particular area as a burial ground for children and young women. If burial pattern is the cause, the groupings of graves within the site may provide further insight (i.e. female graves may be grouped with child graves, with adult male graves grouped together). Table XX lists all specimens where sex could be determined, along with the sex identification.

APPENDIX F (continued)

TABLE XX

SEX DETERMINATION BY SPECIMEN NUMBER.

Specimen Number	Sex Estimation	Age Category
45-1	Female	Adolescent
46-15	Female	Adolescent
46-14	Male	Adolescent
47-6	Female	Adolescent
47-10	Female	Young Adult
47-22	Female	Young Adult
47-25	Female	Young Adult
46-4	Male	Young Adult
47-20	Male	Young Adult
45-16	Male	Middle Adult 1
44-1	Male	Middle Adult 2
46-3	Male	Middle Adult 2
44-5	Male	Old Adult
46-10	Male	Old Adult
47-16	Male	Old Adult

The most common pathologies noted in this mortuary population were cranial lesions (N=24 individuals), vertebral lesions or pitting (N=13 individuals), degenerative joint disease (N=7 individuals), carious lesions in the dentition (N=9 individuals, 23 teeth affected), and premortem tooth loss (N=5 individuals, 30 teeth affected). Of the cranial lesions noted, 16 individuals had cribra orbitalia to some extent. This is generally accepted as an indicator of iron deficiency anemia in New World populations (El-Najjar, 1976; Clark Spencer Larsen, 1997; Wright and Chew, 1998), though some competing theories have been proposed (see Lewis 2007:112). All individuals with cribra orbitalia were between the ages of 1 and 30 years (except specimen 47-2, 9 months at death). Most of these cases are seen in children under 5 years, most likely reflecting weaning stress and the introduction of contaminated foods (Figure 339). Any signs of childhood anemia would likely have healed before death in older individuals. Fourteen individuals had non-diagnostic cranial lesions, 9 of which have small lesions on the inner surface of the cranial vault. Thirteen individuals had vertebral pitting, 9 of these non-adults. Most of this pitting occurred in the thoracic and lumbar centra, though in four individuals the cervical are also affected. This may be related to tuberculosis, which was identified in at least one and possibly two individuals in this population (47-27, 47-10), but the changes are not clearly indicative of tuberculous infection. Degenerative joint disease affected only middle and older adults, with all individuals with an estimated age at death of 50+ showing some signs of osteoarthritis or osteoarthrosis. The vertebral column was most commonly affected, with 6 of 7 individuals showing some lipping on vertebral centra, primarily lumbar and thoracic. Five

APPENDIX F (continued)

individuals had some degenerative changes at the elbow joint, specifically on the ulnae, three showed degenerative changes in the acetabulum (hip joint), and two in the patellae (knee). One individual (45-6) had extensive eburnation on the hand and foot phalanges, a sign of fairly advance arthritic changes. Dental disease was fairly common, particularly in older adults, where loss of multiple teeth prior to death was the norm (all 3 individuals over 50 had significant pre-mortem tooth loss). Of the nine individuals with carious lesions, 6 are under the age of 30 years, and 4 of these are adolescents and young adults.

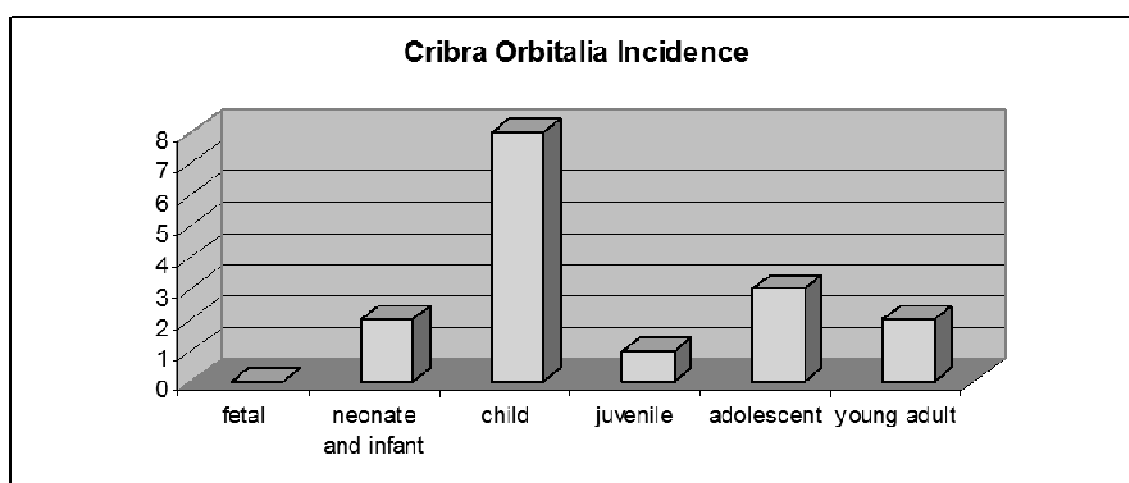


Figure 339. Incidence of Cribra Orbitalia by Age Group, Tumilaca la Chimba.

Conclusion

Overall, the mortuary population excavated thus far from the Tumilaca la Chimba site is in fairly good condition, with most skeletal specimens complete or missing only cranial elements. Incomplete specimens are most likely due to looting, either ancient or modern, and are not the result of secondary interment, excavation and storage techniques, or any other causes. The overwhelming number of non-adults in this population may also be a result of looting in the area, although differential interment should also be considered. Within the non-adult group, mortality ratios match the analyst's expectations, with the exception of a slight spike in adolescent mortality. Otherwise, young infants and children around weaning age represent most of the non-adult specimens. The unusual sex to age ratio (all females under 30 yrs, most males above 25 yrs) is most likely the result of problems in analysis, differential mortality rates (high mortality in young adult females as a result of childbearing), or interment practices (young women and children buried in close proximity or in a distinct cemetery area). Any confident analysis of pathology, other than those basic interpretations given in this report, would require further examination of the biological specimens and a more comprehensive research plan.

APPENDIX G

CERRO BAÚL ARCHAEOLOGICAL PROJECT: TUMILACA LA CHIMBA MACROBOTANICAL REPORT

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Introduction

The following analysis covers the macro-botanical remains, as well as mineral, faunal, and other attendant materials, recovered from the site of Tumilaca/La Chimba (TLC) in the Middle Moquegua or Osmore Drainage, Department of Moquegua, Perú. TLC is located in a transition zone between 1400 and 1700 m.a.s.l. (Rice, 1989). The area is largely desertified at present, with a small local settlement dependant on irrigated agriculture taking water from upper elevation canal systems. The sector of the remains here pertain to a largely looted and disturbed set of cemetery styled tomb internments dating from the last part of the Middle Horizon. The contexts are culturally significant as they relate to a period when cultural affinity between Wari and Tiwanaku presence in the valley was moving towards a more locally driven expression of Tiwanaku presence in the area. TLC site was excavated during two seasons as part of the continuing Cerro Baúl Archaeological Project associated with the University of Illinois at Chicago, The Field Museum of Natural History, and the Museo Contisuyo. The materials described in this report deal directly with a dataset developed for Nicola Sharratt as part of her obligations in fulfilling her doctoral degree at the University of Illinois, Chicago. The site itself was divided into several units where particular rooms or ‘recintos’ representing individual tomb sites were excavated individually. These areas were divided into either quadrants or individual feature areas during excavation, and this report will cover the analysis of some 73 soil samples using dry screening techniques recovered from the site.

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All samples were screened in the laboratory in the Museo Contisuyo, Moquegua, or on site in the field. They were screened according to a protocol used across the Cerro Baúl Archaeological Project, developed by Dr. Lee Ann Newsom of The Pennsylvania State University, as described by Hageman and Goldstein (2009). This process requires the screening of individual volumetric samples, min 1L/m², of soils associated with sealed archaeological contexts. A standard series of archaeological screens, 4.0mm, 2.0mm, 1.0mm, and 0.5mm hole size, were used to divide the samples into five fractions. The smallest of these fractions, x<0.5mm, being reserved in case of further microanalysis at a later date. The screened samples were then delivered to the University Cayetano Hereida of Peru (UPCH) Archaeobiology laboratory for scanning and post-screen processing. The samples were generally between 1.0 and 1.5L with a range between 10.0ml and 7.0L. The samples as received were logged and examined using incident light stereomicroscopy up to 45x magnification. All materials separated

³²² The tables referenced by Goldstein in this report are not included in this appendix but were made available to Sharratt.

APPENDIX G (continued)

and recovered were divided by determination and stored in archival grade polyethylene storage bags and polypropylene scintillation vials.

All processed samples were reviewed/scanned, under the stereoscope according to their four screen sizes (4.0, 2.0, 1.0, and 0.5 mm). In every instance 100% of the 4.0 and 2.0 mm samples were scanned for organic and other materials, where every non-sedimentary, cultural, or organic material was recovered from the sample (all reported in accompanying Excel file, tab label 'data'). In the instances of the 1.0 and 0.5 mm fractions, up to 100% of the sample was scanned, but in most cases 30% of these fractions were scanned, in these fractions only seeds were recovered. Given that a standard size was used for all flotation samples partial material counts can still be compared between contexts when scan percentages are taken into account. All scanned, unscanned, and recovered materials have now been returned to the Museo Contisuyo, the approved repository for all Cerro Baúl Archaeological Project materials. All recovered materials were compared with the UPCH Archaeobiology and Herbarium reference collection for ancient and modern plant materials. They were also compared with the regional ethnobotanical reference collection (Ihue Umire and Goldstein, 2007), a copy of which resides at the UPCH Herbarium. Determinations of the botanical and zoological materials reported here are the best level approximations that we can make for the organisms that correspond to the remains (Hather, 1994). When taken together, we have tried to interpret or reconstruct the potential ecological and cultural importance of these materials. The overall strategy is to gather some understanding of plant use at the site and understand the role of these remains played in the interment of human remains; the corresponding context for all of the recovered remains. The following analysis is an interpretation of the archaeobotanical data by Excavation Unit (*Unidad*) and Room (*Recinto*). Additionally, there is an overall discussion of the species composition and potential indicators of local ecology, as far as it is represented in the cultural assemblage, during this period.

Overall Observations

We reviewed a total of 73 soil samples from the Tumilaca/LaChimba project. From these we recovered a total of 10,252 individual determined items or datapoints. In most cases, save for abundant woody plant remains (see below), we report all incidents of recovery as count data, e.g., one item recovered=one data point; the entire dataset is available in the accompanying Excel spreadsheet under the tab 'Overall Data.' Of those 4,467 related to animal remains, of these 2,488 related to mammal bone fragments, probably the result of trampled or looted contexts containing human remains. 1,628 of these are pupa casings probably from detrital chain insects, flies or coleoptera. 281 of the animal remains correspond to insect exoskeletons representing three taxonomic Orders, Hymenoptera, Coleoptera and Formicidia. The remaining animal remains consist of a few coprolites and occasional freshwater or saltwater invertebrate remains.. We recovered a few artifact (n=11) remains, mostly ceramic sherd fragments and a single shell bead. Again given the contexts, funerary, and the potential for their being disturbed, we were not surprised at the presence of these items. We did recover 819 animal (n=31: human hair=1) and plant (n=788) fibers, largely cotton thread fibers and some grass basketry, throughout the samples. Again, given that these interments were probably accompanied with burial shrouds the recovery of these remains is not surprising.

APPENDIX G (continued)

We recovered 5,774 botanical remains representing 18 plant families all known to be present in the regional flora (Arakaki Makishi, 1999; Ihue Umire and Goldstein, 2007; Sagástegui Alva and Leiva González, 1993; Weberbauer, 1945). Of those, 27 non-wood items were classified as unknowns or unidentifiable, meaning seeds or plant parts that cannot be placed within either a family or generic category at present without further investigation and comparison. For the most part these materials, these 27 items represent 12 potentially distinct taxa. Given their limited presence in this assemblage, and their unknown capacity, they are reported here as a general 'indeterminado' category. The items are identified, however, in the accompanying Excel file in the main 'data' table.

Archaeologists often cite poor preservation as a reason against sampling organic remains in the Neotropics (Hageman and Goldstein, 2009). Parts of Perú, however, are home to some of the driest deserts in the world. In coastal areas, especially the dry western slopes of the Andes, preservation is hardly an issue. While preservation in the slightly elevated Moquegua Valley is not excellent as it is along the coast of Perú, it is still very good. We recovered large quantities, more than half of the overall botanical assemblage, of woody stem (n=4103 est.³²³) and root (n=399) remains, charcoal and desiccated wood, throughout the TLC samples (n=4502). In some cases, these data are numerous, and counting undetermined materials may not be particularly edifying. Wood and wood charcoal remains are reported here primarily as weights and not as count data (Smart and Hoffman, 1988). On the other side of the dataset we recovered 475 fruit and seed remains. The fact that plant remains, other than wood, were recovered at a rate of almost 10:1 (wood:seed/fruit/flower/leaf) could be interpreted as an indicator that macrobotanical remains recovery was somehow biased due either to taphonomic reasons, preservation, or a combination. For instance, for the entire Cerro Baúl Archaeological Project macrobotanical assemblage (n=227072), at more or less the same elevation, erosional, and water regime, that same ratio is 2:1 overall and 1:1 in the household contexts. Given the special nature of the TLC contexts, it seems that there is a significant increase at this type of site of desiccated (n=2196) and carbonized (n=1907) wood remains.

This ratio, for comparative purposes may serve as an important indicator for considering ways to distinguish between ritual/funerary contexts from other kinds of archaeological contexts based on this type of ratio, something that Smart and Hoffman (1988) posited some 23 years ago. In the case of this analysis, however, we did not perform a second level analysis of the wood remains to determine the species involved. That said, however, we did distinguish small purple roots that we recovered in several of the samples, IND #001 (n=399). They are similar to a small twig or root type seen in some of the Cerro Baúl summit contexts associated with Middle Horizon habitation. The distinction may be reevaluated at a later date in joint consideration with a survey of the wood taxa present. and will serve to indicate the local catchment for wood resources for construction, artifact manufacture, and fuel. Wood taxon identification also aids

³²³ These are estimates as in some cases we weighed the numerous charcoal or wood fragments instead of counting them individually. These cases the count numbers are seen in red in the 'Overall Data' table. Estimates were made using an assemblage wide approximation of count to weight ratio for *tallo* remains (sum of total weight of all counted and weighed *tallo* remains/ corresponding total count of all weighted and counted *tallo* remains).

APPENDIX G (continued)

significantly in locating forest cover stands, and the types of forest relied upon by actors at the site (Chabal et al. 1999).

Additionally, to aid in characterizing both the subsistence base and ecological impact of landscape modifications in the area, we were able to determine the presence of various taxa through looking at seed and other plant remain morphology. Please keep in mind that these are **determinations** reported here and not identifications (Hather, 1994). Identification requires knowledge of complete ecology in antiquity as well as the use of other conclusive biochemical means of identification. In general, the practice of paleo-ethnobotany is concerned with issuing determinations and not identifications.

Ecological Observations

The 18 families represented within the TLC assemblage demonstrate a disturbed landscape with a few cultivated tree species present (Table 1, includes common names of the plants and their life forms). Plants in the Asteraceae (*Bidens* sp., *Lagascea* sp., *Schkuria* sp., *Sonchus* sp.) Amaranthaceae (*Amaranthus* sp.), Chenopodiaceae (*Chenopodium* sp.), Malvaceae (*Gossypium* sp.), Poaceae (*Cenchrus* sp., *Chloris* sp., *Panicum* sp., *Paspalum* sp.), Solanaceae (*Nicotiana* sp.), Verbenaceae (*Verbena* sp., *Lippia* sp.), are all general disturbance taxa associated with field systems. Interesting are the lack of many of the companion weedy species common to Andean Valley agricultural systems (*Urocarpidium* sp., *Malva* sp., *Physalis* sp.) that are common at other sites in and around the Cerro Baúl habitation sites (Arakaki Makishi, 1999; Ihue Umire and Goldstein, 2007; Sagástegui Alva and Leiva González, 1993). At the same time, some, but very few cultivated/domesticated plant remains are present in the assemblage, e.g. *Arracacia* sp. (Arracacha, Andean parsnip), *Gossypium* sp. (Cotton) *Psidium* sp. (Guayaba), *Zea mays* (Maize) are noted. But they show up in isolated incidents, e.g., particular contexts, and in very low numbers ($x < 5$). The same assemblage, however, is notably missing *Oxalis* sp. (Oca), *Physalis* sp. (Aguaymanto) and *Persea* sp. (Palta), *Pouteria* sp. (Lucuma) that are all common to other sites in the area and know as important economic species in the ancient Andes, especially related to ritual, imperial, or habitation (Goldstein, et al., 2009; Ihue Umire and Goldstein, 2007; Ugent and Ochoa, 2006). So given this perspective and the remains present it would seem that two general patterns are present ecologically for the TLC dataset:

1. the plants present do not represent the crop/weed assemblages common to contemporary or chronologically adjacent periods at habitation sites, and
2. that some of the plants present are not accompanied by some of their companion weeds.

In both cases it may be that, even in the case of disturbed funerary contexts, the plant remains recovered indicate deliberate placement of those remains. Again, the P.I.'s will have to make more concrete assessments based on a context-by-context basis. Data for assessing the particular contexts in question will be discussed below and follows on separate Excel worksheets in the file accompanying this report.

Another way to assess the ecological fingerprint at TLC is to look at the incidence of all the remains and their abundance across the site (Table 2. All Ubiquity Table). Table 2

APPENDIX G (continued)

Demonstrates that bone fragments, the above mentioned root fragments, and the fly pupae are the most abundant and most ubiquitous remains at the site; where ubiquity is assessed by the presence of any taxon per sample (Popper, 1988). Table 3 presents only the plant remain data in terms of its quantity and ubiquity across the site. What we immediately see once we remove the animal and artifact remains recovered in the samples is that no single plant taxon occurs in any more than 25% (n=18) of the samples. Given that the site as a whole is spatially homogeneous, e.g., sharing the same ecology, elevation and location, the individualized presence of certain taxa may be of particular interest, especially when they show up singularly or in only a few specific contexts.

In general the most ubiquitous taxa (Table 3), *Sonchus* sp. (25% a dandelion type aster), *Echinocactus* sp. (25% a local edible cactus), *Cenchrus* sp. and *Paspalum* sp. (10% and 25% respectively, both local grasses), *Schkuria* sp. (23% a local shrubby aster), and *Fagonia* sp. (15% an indigenous plant in the Zygophyllaceae) demonstrate a mixed bag of plants that are all present in the immediate vicinity, but their specificity of deposition may mean that they are deliberately included in the funerary contexts. For instance, if we turn to look at the plants that can be there for no other reason than human means, *Z. mays* (1.4%), *Psidium* sp. (1.4%), or *Chenopodium nigrum* (1.4%), it seems that the deliberate placement of certain materials is common in these contexts, and so the potential for a few, more generalized plant deposits, e.g., *Sonchus* sp. (25%) is a potential possibility. Looking at the specific units, context by context, may provide some clearer understanding or resolution of detail.

Unit Based Botanical Data:

The following is an areal report of contexts within the TLC complex by Unit or Unidad, Table 4. In the case of all of the following tables and discussions, the incidents of plant remains recovered are reported as count data. In a forthcoming analysis, the *licenciatura* project of Rodrigo Castro Matallana, UPOCH, will attempt to model these data comparatively using count data that has been adjusted for the volume of each individual sample. In this report, however, we only report the data as counted. Both adjusted and actual counts are reported in the 'overall data' table in the Excel file associated with this report.

Unidad 44:

Table 4a. presents the data from Unit 44, by Recinto (room) and Rasgo (feature). All samples examined came from Capa B. Clearly, the most visible distinction between the two rooms is the fact that Recinto A has markedly higher amount of taxa diversity than Recinto C, the other in the unit examined here. Additionally, all of that diversity appears primarily in feature 1. Most importantly, the materials from A-1 are emblematic of the overall site diversity, ubiquity, and quantitative measures seen in Table 2, for all recovered materials, and Table 3 specifically related to plants. In terms of the botanical materials represented in A-1, the taxa in the Poaceae represented here, *Cenchrus* sp. and *Paspalum* sp., could both be present here representing the background ecological niche of the area. These species are complementary to other genera from the same niche, *Polygonum* sp. and *Portulaca* sp. The niche that they occupy is one of human disturbed areas with the presence of persistence water, either as a canal system or as a perennial drainage. *Cenchrus* sp. may be one exception to this observation as it is a material used for

APPENDIX G (continued)

basketweaving and the seeds of this grass could be left behind as a part of the material preparation and weaving process.

In terms of materials directly related to human activity, the presence of *Arracacia* sp. (andean parsnip) in seed form, clearly indicates the potential for the people interacting with A-1 to have access to or be engaged in some kind of agricultural activity. The presence of the seed is singular, and there are no other plants present indicating direct human action. That said, however, the seed from the *Echinocactus* sp. fruit may be an indicator of fruit consumption, however, as a singular incidence it is difficult to draw any clear conclusion. We do need to consider the presence of *Sonchus* sp. and *Schkurgia* sp., both in the family Asteraceae. The seeds from these plants are wind and animal distributed. That said, however, the plants themselves are important as the plants can go to seed even after they have been picked. Their presence in certain instances, where sealed contexts or features are known, and in abundance, could serve as indicators of the presence of floral offerings in prehistory. Given that this is the first set of soil samples examined with any detail for funerary contexts in the Moquegua Valley, I highlight here the potential for locating these kinds of ritual deposits within this assemblage or in future analyses.

On the other end of the spectrum, it would seem that the single sample examined from Unit 44, Recinto B, demonstrates one of the poorer or cleaner samples found in the TLC assemblage; it demonstrates the bare minimum of the most ubiquitous determinations at the site (compare with Table 2). In the case of Unit 44 it is important to note the relatively few pupae recovered in this context. The presence of beetle and ant exoskeletons may indicate that the period of burial or burial treatment did not coincide with a fly seasonality. Alternately, the absence or limited amount of fly pupae may demonstrate that the internments were pretreated, e.g., defleshed or dried, prior to internment. The presence and variety of the different types of detrital chain insects associated with this assemblage are well preserved, and future analysis by a paleoentomologist should be considered either at this site or within the region in the future.

Unidad 45:

This was the largest number of samples (n=28) that we reviewed from any single TLC Unit (Table 4b). The overall wood, charcoal, and fungi materials all represent similar patterns as observed sitewide (Table 2). Samples came from three Recintos A, B, and C. Recinto B was the most extensively examined with 7 analyzed features, followed by A with 5, and C with 3. Again, we only looked at material from Capa B in every instance.

In the case of this Unit, the disturbance taxa are slightly different from those seen in Unit 44. The absence of both *Polygonum* sp. and *Portulaca* sp. is noted, but in such small numbers in either case may not be significant. On the other hand in Unit 45 we see the presence of members of the Verbenaceae family that are not present in Unit 44, but are present, for the most part, in all of the other Units analyzed. Again, the complement of grasses, Poaceae, recovered from Unit 45 is similar to the complement found sitewide, at least in units where members of this family are ubiquitous. We have the only presence of cotton, *Gossypium* sp. (n=2) present in 45-A, elsewhere I have mentioned that the presence of cotton seed, like the small fruits of *E. coca*, may be related to 'waiting' activities where there are ethnographic examples of people cleaning cotton and chewing coca while they are tending to other things, it is possible that graveside visitation could be one of these moments (Goldstein and Hageman, 2010).

APPENDIX G (continued)

As mentioned above these data offer potential to interpret very specific depositional environments, like funerary ensembles, through a nuanced interpretation of sparse or fragmented data. The case of *Schkuria* sp., seeds from an Asteraceae flower, in the context of 45-B, across three features, may indicate the presence, at some point, of a flower in that grave context. Again, depending on the potential for surface-subsurface intrusions, we could interpret the presence of a number of these seeds, technically called achenes (think sunflower seed), as representing the deposition of flowers in a grave context. While this could be fanciful, we need to consider that these seeds, *Sonchus*, *Schkuria* are concentrated, ever so slightly, in very specific places. This is the same depositional pattern that we see for very specific domesticated plants, e.g., *Chenopodium* sp. and *Z. mays* (see below), and *Gossypium* sp. (Unit 45). There is something about selected presence, low incidence, and the all around decent recovery of small bone and wood fragments throughout the site that make one wonder what we are really looking at with the incidence of seeds like these in the assemblage.

Looking across the three rooms in Unit 45, in terms of the presence of certain materials, it seems that 45-C is unique in that it lacks pupae and a heavy presence of vegetable fibers, but has a much higher incidence of charcoal. This could point to a different burial treatment for the individual in Recinto C. Again, with the numbers that we are dealing with here, these are subtle, but potentially important distinctions. Likewise 45-B has the inclusion of the *Prunus* sp. pit, likely an apricot, locally *damasco*; a plant that was introduced shortly after colonization by the Spanish in the 16th century. The pit itself is an indicator of the highly disturbed nature of some of the excavated contexts by insects, rodents, and humans. The *Amaranthus* sp. seeds and fruit found in 45-A,B do not fall into the size grade of any domesticated amaranth, e.g. *kiwicha*, and likely come from a local weedy species whose greens are occasionally eaten as a source of leafy greens or a digestive tea or *maté*.

Unidad 46:

Table 4c presents the data from Unit 46. All of these materials come from samples from Capa B. Overall, the trends for bone fragments, charcoal, and wood remains seem similar across the three rooms. In the case of pupae, it seems that the interment in Recinto A does not have a large amount of pupae that may be indicative of burial treatment. This particular room also stands out as it is the only locus at the site where fish eye lenses were recovered. This may indicate a singular instance of fish deposition, or could have been the contexts of the individual's stomach at the time of burial. The presence of 17 seeds of *Sonchus* sp., a flowering aster may indicate the presence of a flower at the time of deposition as argued elsewhere, above. This room also provides what appears to be an increased presence of *Paspalum* sp. (n=22), a grass that is common to the area, and could be used for basketry. This is also the only locus in the assemblage at TLC that includes a camelid coprolite. For the most part throughout the assemblage, animal fiber is scarce within it, although it does appear that camelids themselves were present to some extent at the site.

It seems that the Recinto B contexts have an overall higher diversity of materials than the other two in this Unit. Within this assemblage we recovered a single seed from a guayaba, *Psidium* sp., again these particular incidents, one or two per room, may have more to do with the particularities of the individuals buried than the actual contents placed within the burial. This

APPENDIX G (continued)

same area logs the presence of a small peduncle, fruit stem that while undetermined in this data set, may represent a guava fruit. That needs to be confirmed. The Recinto B Rasgo 8 context, the area of highest diversity in the Recinto, is also the only representation of a *Z. mays* fruit (cob) in the entire TLC assemblage. In this case the cob is represented by the presence of a single cob cupule, the structure that holds the seed in the cob and is generally very small ($1\text{mm} > x > 0.5\text{mm}$). Odd is that there are no seeds or other cupules in the context. These could be remains of a long disintegrated cob, or an inadvertent inclusion in the interment. The Recinto C contexts have the presence of crayfish claws that may be vestiges of food consumption at the site. Unit 46, like Unit 45, provided one of the larger amount of samples analyzed at TLC ($n=20$), these same units provided the a high amount of diversity.

Unidad 47

Table 4d presents the data from Unit 47. As just discussed with Units 45 and 46, unit 47 from a diversity standpoint demonstrate what happens when only a few samples are reviewed from a given locus ($n=7$). In this case we recovered a total of five plant remain determinations, four of them seeds ($n=164$). Again, we are looking at three different rooms. Capa designations were not present for the loci analyzed in Recinto A and J, save for two in A that are labeled Capa 2 Rasgo 1. The one sample representing Recinto D is from Capa 2.

The highest amount of diversity is represented in Recinto J. Here we see the like deposition of a *Echinocactus* sp. fruit ($n=121$) seeds either as part of the individual interred or as an accompanying grave good. Additionally, we find four seeds of the *Arracacia* sp. (Andean parsnip). It is hard, again, to say what this means as the seeds are commonly not eaten. It is possible that the seeds were used as a spice of some kind in the past, as some seeds in this family are (think dill in contemporary cuisine). This same room has the highest presence of pupae and that may be indicative of burial treatment. Recinto D produced only two fragments of bone, likely human, and nothing else.

Recinto A includes the remains of 9 pieces of shell, these may be marine, and may have been associated with a grave good that is extant in other collections from the same locus. Again, with only a handful of samples analyzed from the contexts in Unit 47, we see that the overall data derived is limited.

Unidad 48:

Unidad 48 is the one unique context within the TLC assemblage. This Unit constitutes a habitation site; a context less disturbed than the burial contexts represented by the other units at TLC. Table 4e presents the data from the analysis of a single room, Recinto A in Unit 48. The materials as presented in Table 4e conflate three Capas, B, B2, and C. Table 4f shows the breakdown of these contexts by Capa. In this particular case, we analyzed samples from Rasgo 3, a potential hearth feature, and an unspecified excavation area around that feature, No-Rasgo as the floor of the room. This floor is considered to be an open area of the structure and consists of 12 individual excavation Cuadros and 2 samples that from the hearth feature Rasgo 3; a 1L sample was taken from each 1x1m square. Table 4g allows us to distinguish between each of these quadrants and see where plant materials, only the plant remains, are that fall within and without the feature by quadrant. From a plant remains perspective there are some distinctions evident within the analyzed areas.

APPENDIX G (continued)

The Rasgo 3-Cuadro 12 hearth materials include *Chenopodium nigrum* (n=10). This is a coeval plant that grows together with domesticated *Chenopodium quinoa*, and is generally harvested together, inadvertently, with *C. quinoa* (Bruno and Whitehead, 2003). Once the seed heads have been processed these seeds are removed and sorted from the quinoa that people are going to cook and consume. Recently, in the Corporaque settlements of the Colca Valley during the transitional Inka-colonial period, we found deposits or deposition of *C. nigrum* in specific contexts. An ethnographic study of traditions surrounding the cleaning of *C. nigrum* and then the potential conservation of these seeds for use in specific contexts is pending approval. For a discussion of *Chenopodium* in Andean archaeological contexts see Bruno and Whitehead (2003). These seeds occur together with *Lippia* (n=3), and unknown Verbeceae (n=5) and some *Paspalum* seeds (n=5), all of which, save for the unknown Verbenaceae, do not occur in any of the other contexts. As this context is interpreted as a hearth, it would appear that domesticated plant consumption and processing took place in association with this hearth. This situation is culturally significant as in the lower valley Tiwanaku settlement areas of Rio Muerto, we know that quinoa was a major staple, and the presence of *C. nigrum* is not odd, (see footnote here about *C. nigrum* at Cerro Baúl). Again, the incidence of these seeds together in the archaeological record at domestic residence contexts at TLC is likely significant. Their occurrence in small quantities highlight the potential import or activity related deposition of the other singular, or grouped, determinations in the TLC assemblage.

A similar point can be made for the four *Z. mays* embryos recovered from the No-Rasgo floor area, Cuadro 9 within the room. In this part of Recinto A, we find the higher amount of diversity, spread out over all of the other floor non-feature Cuadros (Table 4g). In this particular case the maize remains are present with 3 *Echinocactus* sp. seeds and 3 *Portulaca* sp. seeds, a plant that is concomitant canalized agriculture and wet areas, like the river floodplain. The *Z. mays* embryos, are not even the kernels, are the only the embryo part of the seed itself. These sometimes shatter and fracture, separating during either extreme desiccation or temperature. Again, it is odd that within the entire assemblage at TLC, *Z. mays*, apparently a major foodstuff in the drainage, especially for the Tiwanaku down river that this plant is represented in this dataset by these few structures. Overall, we see in this Recinto the presence of both carbonized wood remains, and the remains for the vegetable fiber, which could be cotton textile fibers. These remains, with the absence of the pupae, clearly point to a context distinguished from others within the TLC assemblage.

Table 5 shows the archaeobotanical data from the few habitation contexts that are comparable in age and, potentially, material culture to the TLC site. These are Units 38 and 39 from the Southwestern slopes of the Cerro Baúl complex. These were excavated by Kenny Sims during the 2002 Cerro Baúl season. We present these data for comparison purposes without the permission of the excavator or consulting the PI for comparative purposes only. These are 20 contexts whose soil samples were reviewed during the 2003 study season at the Museo Contisuyo, Moquegua. In these contexts we see a much wider array of plant domesticates associated with subsistence and provisioning than we do at the one TLC structure analyzed; *Lagenaria* sp. (gourd n=2), *Arachis* sp. (peanut n=1), *Z. mays* (as cupules n=6, cob fragments

APPENDIX G (continued)

n=2, embryos n= 1 and as seeds n=20), *Phaseolus* sp. (bean n=11), *Chenopodium* sp.³²⁴ (n=37), *Schinus molle* (n=300). These particular contexts were thought to be the remains of a high status domicile complex based on the presence of what looks like a *S. molle* fermented beverage production event and the presence of what may be a *Cavia porcellus* (bone and excrement present) enclosure within one of these structures (Unit 38) (Williams and Ruales, 2002). Again, none of these features, concentrations, or taxa were encountered in the same quantities within the TLC domestic structure as excavated.

Some of the similarities are some of the grass taxa recovered. With the exception of *Stipa* sp. (n=37 seeds; Unit 38), *Bromus* and *Panicum* were both present at TLC and at the 2002 Tumilaca period excavations. The presence of the *Stipa* sp. probable indicates the presence of an *ichu* thatched roof at one point during the occupation of Unit 38. The *Echinopsis* sp. seeds indicate the consumption of locally available cactus fruits, like the *Echinopsis* seen at the TLC site. Also, the presence of *Bidens* sp. and *Verbena* sp., demonstrates that some of the agricultural activities, through the presence of coeval weed complexes, were similar between TLC and Units 38, 39. On the other hand the presence of *Lepidium* sp. at Unit 39, a weed that does not occur in great number at Cerro Baúl (total n=26) nor at all at TLC, may somehow distinguish the agroecological practices that once drove quotidian subsistence practice.

Please keep in mind that the Cerro Baúl write up, lamentably, continues to be a work in progress, for that reason, some of the determinations may not conclusively match up in this particular case for all of the Asteraceae and Poaceae genera under consideration. It is still very important, however, that the above distinctions in terms of similarity of determined weeds and subsistence taxa between the TLC and Unit 38, 39 assemblages are likely salient based on a general knowledge of the entire Cerro Baúl assemblage.

Conclusion

There is no doubt that this is by far one of the most interesting assemblages of archaeobotanical remains yet to come out of the Cerro Baúl Archaeological Project. Yes, the contexts are disturbed, and to the extent that they are that must be evaluated clearly prior to thinking about the full impact of this report. They are interesting as they are the first look that we have at soils associated with interments from anywhere in the upper valley region. They contrast totally, preservation wise, with the remains that Lizette Muñoz has seen in the materials associated with her pending *licenciatura* project with PUCP. They also contrast with the remains recovered both from the domestic and the burial contexts seen in the high Tiwanaku contexts in and around the Rio Muerto assemblage. The comparison of these materials is pending with Rodrigo Castro Matallana's *licenciatura* project with UPCH.

The materials recovered are sparse, but they represent, I believe, punctuated incidents of deposition. While each data point may be obscure, e.g., *Z. mays* (n=5; 4=embryos, 1=cupule) or *C. nigrum* (n=10 seeds), we have been able to locate these remains in the contexts and we recognize them as being culturally significant. Against the backdrop of literally bone dust, dried bits of wood, and charcoal crumbs, we can see that intensive sampling and analysis of even the most disturbed contexts can yield significant information. In comparison, the various

³²⁴ At this juncture no assessment of the presence of *Chenopodium nigrum* or *C. quinoa* can be made as distinctions were not very refined in the earliest phase of the Cerro Baúl analysis.

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concentrations of Asteraceae seeds, *Sonchus* sp., *Schkugia* sp., and *Lagascea* sp., clearly all correspond to flower deposition of these particular genera. However, where and when these flowers entered the record is unclear and what their presence is related to is unknown. That is where other material evidence should shed some insight. They are all plants that are common to the local ecology, and as type genera used in the case of archaeological determinations, it is difficult to locate intention in their presence.

That said, however, I am interested in knowing where we can push these data. The incidence of items seem to show or tell us that humans are performing specific actions at the site, e.g., burning, spinning (?), eating, with certain plants of interest, e.g., the suite of grasses and asters (Poaceae and Asteraceae), at the site. It would be interesting to see how other fragmentary datasets at the site, given its disturbance, complement the similar spot incidence of certain taxa within the archaeobotanical assemblage. Overall there is still much to be learned about the traditions surrounding the late MH transition to the LIP, and funerary patterns are a beginning. I believe that these data taken with the rest of the material record of the site will allow us to see distinction between the Recintos and perhaps the individuals that were laid to rest in each one. The next step is to take some of the suites of patterns out to test against the materials at straight Tiwanaku burials and also potentially contemporary sites in the upper valley as discussed above.

APPENDIX H

EXCAVATIONS IN THE RESIDENTIAL SECTOR AT TUMILACA LA CHIMBA

Although the focus of this dissertation is mortuary data from the cemeteries at Tumilaca la Chimba, fieldwork in 2007 also included excavation in the Tumilaca residential sector at the site (Figure 340).

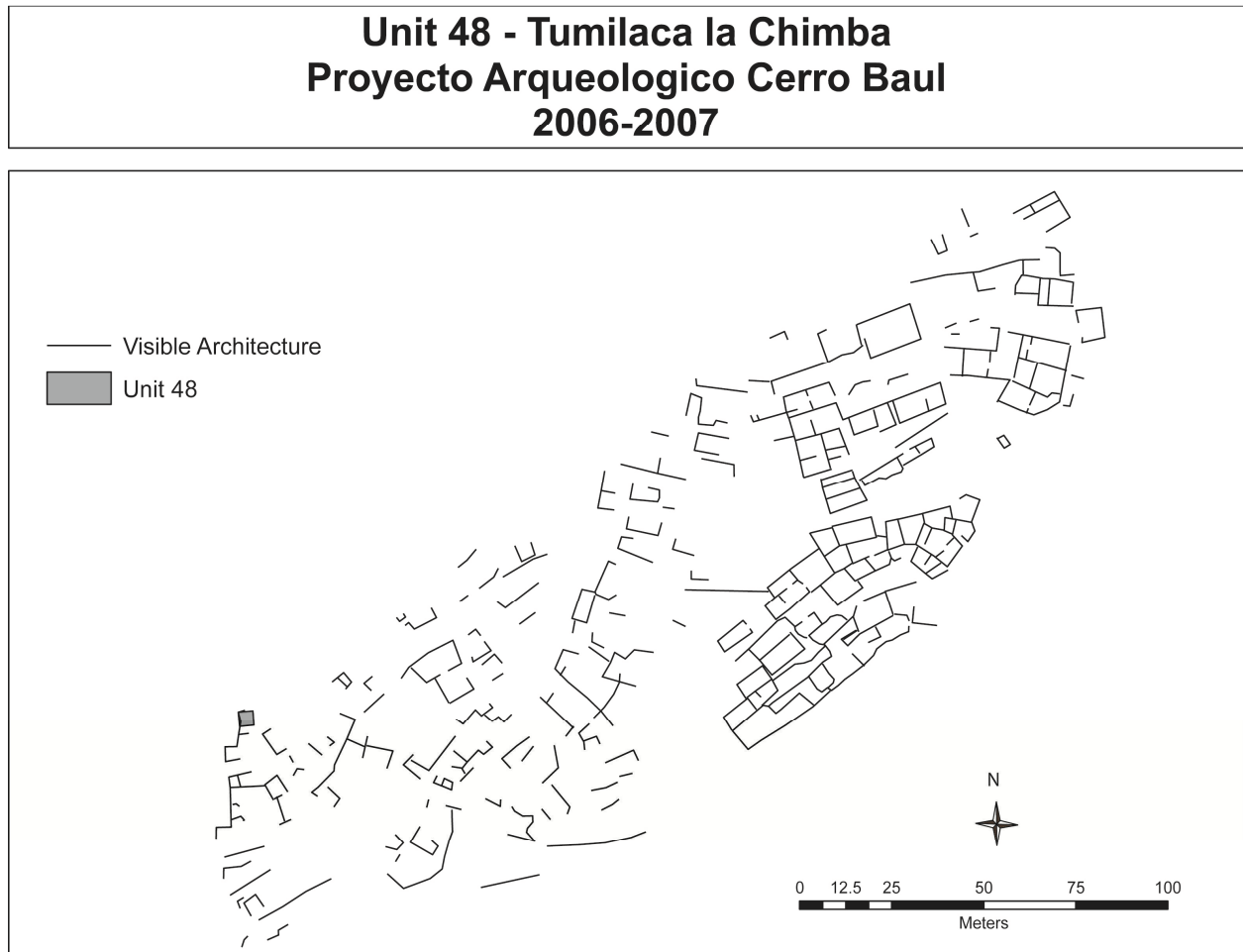


Figure 340. Location of Unit 48.

The residential sector is labeled Unit 48, under Proyecto Arqueológico Cerro Baúl's nomenclature. An area measuring 4m² was excavated (48-A). This encompassed a single room, part of a two roomed structure associated with a patio space. The room was defined by stone

APPENDIX H (continued)

walls, approximately 40cm high, which were likely the foundation for upper walls constructed of an organic material (Figure 341). The 'front' wall, along the north/south side of the structure was only half the length of the structure, with an opening approximately 1.5m across. Both of the walls perpendicular to this extended beyond the front wall, creating a porch space. In the northwest corner of this porch was a hearth which contained ceramic sherds, lithics and burnt faunal remains. In the northwest corner of the room were two rectangular stone lined bins, each measuring 50 by 30cm. The second of these contained faunal remains and botanics.

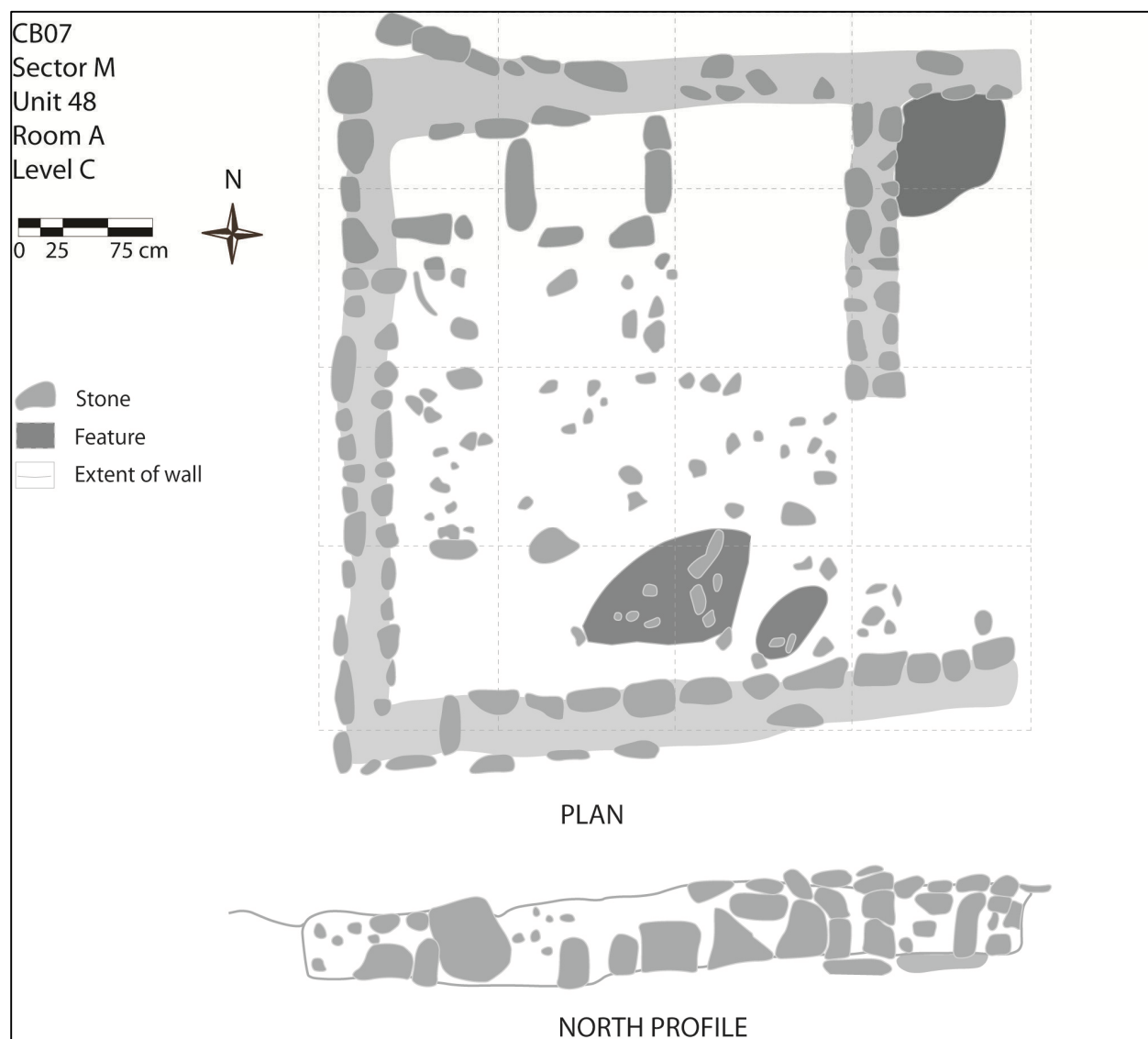


Figure 341. Unit 48.

APPENDIX H (continued)

On the floor of the structure were ceramic fragments. Un-slipped utilitarian vessels were represented, but there were also sherds from decorated *tazones* and *keros*. Flakes, blades and cores were recovered. Dr DeFrance's analysis of the faunal material revealed a few camelid remains, guinea pig and toad. Two shells from *Chorimytilus chorus*, a mussel with a characteristically purple shell, were found in the layer above the floor. One shell was burnt. Macrobotanical analysis of remains from the hearth indicate the presence of *Chenopodium nigrum*, which grows together with the domesticated *Chenopodium quinoa* and is often accidentally harvested with *C. quinoa* (Bruno and Whitehead 2003). Wild grasses were also recovered from the hearth (*Lippia* and *Paspalum*). Elsewhere in Unit 48, within the room, there were *Z. mays* embryos, *Echinocactus* seeds and seeds from the herb *Portulaca* which is associated with canalized agriculture and wet areas such as river flood plains (Goldstein in Appendix G).

The structure appears to have been used for daily activities, with evidence for food storage, production and cooking. The presence of decorated ceramics indicates that inhabitants had access to the finer ware, and that this ware was not restricted to mortuary contexts only. The architecture and activities in the structure are very similar to those in structures excavated at neighboring Tumulaca sites, including Santa Rita la Chica and those on the slopes of Cerro Baúl (Sims 2006; Williams and Ruales 2002).

APPENDIX I

SURFACE COLLECTION AT TUMILACA LA CHIMBA

In 2007, surface collection was conducted in twenty different units across the site (Figure 342). Ten were placed in what has been identified as the Tumilaca residential sector and ten in what had been designated the Estuquiña residential sector. Earlier investigators thought that the Estuquiña residential sector partially superimposed the Tumilaca residential sector but that the Estuquiña sector extended further east than the Tumilaca residences (Bawden 1989). The plaza that sits in the middle of the site had also been associated with the Late Intermediate Period occupation.

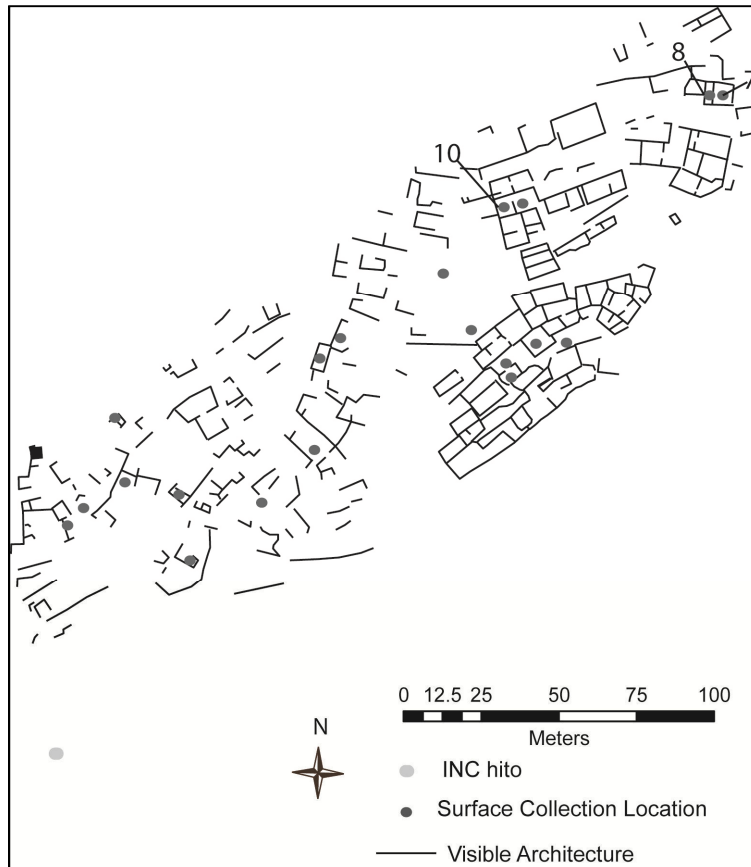


Figure 342. Location of surface collection units.

Surface collection was undertaken in circles, each with a diameter of 6m. All ceramic and lithic artifacts were collected. 4043 ceramic sherds were recovered. Analysis of these was the

APPENDIX I (continued)

same as that undertaken for the ceramic material from the graves and the structure in Unit 48. As expected diagnostic, decorated Tumilaca style sherds were recovered from the collection units in the western portion of the site, where the Tumilaca houses are not superimposed by Estuquiña architecture. They were recovered from all but two units in this part of the site, and no decorated sherds were recovered from either of those two. Tumilaca style sherds were also recovered from the two collection units in the plaza. Most surprising, was that Tumilaca style sherds were recovered from seven of the ten collection units placed in Late Intermediate Period structures. One of the remaining three (Collection Unit 10) had no decorated or diagnostic sherds at all. The other two both had distinctive Late Intermediate forms, including bowls with nubs. The seven units in the Estuquiña sector that did have Tumilaca sherds included two placed in the easternmost part of the site, beyond where the Tumilaca occupation was thought to have ended (Collection Units 7 and 8). Although this data does not have direct bearing on the primary topic of this dissertation, the suggestion that the Tumilaca occupation extended further than previously thought has bearing on interpretations of the site. It also strengthens the potential for further research at Tumilaca la Chimba to examine the transition from the terminal Middle Horizon to the Late Intermediate Period in the Upper Valley.

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